Exploring the role of socio-economic and cultural factors influencing the occurrence of VVF in Northern Nigeria.

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PhD 2023

Exploring the role of socio-economic and cultural factors influencing the occurrence of VVF in Northern Nigeria.

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A thesis submitted in partial fulfilment of Manchester Metropolitan University for the degree of Doctor of Philosophy

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Manchester Metropolitan University

2023

My interest in the topic of VVF

My interest in the topic of VVF was precipitated initially on a personal level. I am from Northern Nigeria, had my primary to university (B.Sc. Ed) education in Northcentral Nigeria and as a woman with three children, was already aware of some health issues affecting women in the region. I also nearly experienced VVF myself and this created a very strong passion for me to explore the factors predisposing women to it and I encountered women living with VVF in my previous professional capacity which was facilitated through my education career and my work as an educator. To fully explain and contextualise this, I outline my education and career history below.

I studied Economics and Geography at College of Education Oro Kwara State, Nigeria, between 2002 and 2005. I was teaching from 2005 and wanted to progress my career so I studied Geography at University of Ilorin till 2011 in Northcentral of Nigeria. However, after graduation, I was posted to Kebbi state, North-western part of Nigeria, for my National Youth Service Corps (NYSC), a Nigerian government programme to involve youths in nation-building and development. I was fully engaged in the service, which ranged from participating in camp activities involving advocacy for the Millennium Development Goals (MDG's), teaching in school and community services at the place of my primary assignment. My awareness of the challenges that women experience in Northern Nigeria increased and became even clearer when I began my NYSC which laid the foundation for my curiosity in VVF women.

In addition to teaching geography in a school, I was chosen as a coordinator for NYSC MDGs club in my place of primary assignment's local government area (Koko/Besse LGA). MDG's club by corps member was created for advocacy as

one of the ways to achieve goals set for 2015. As MDG's club coordinator my community engagements involved visiting different schools, hospitals and local authorities advocating for the eight Millennium Development Goals (MDGs). The advocacy involved explaining the MDG's purpose and the importance of its eight goals. These eight goals are: to eradicate extreme poverty and hunger, achieve universal primary education, promote gender equality, and empower women. It also includes reducing child mortality, improving maternal health, and combating HIV/AIDS, malaria, and other diseases; it involves ensuring environmental sustainability and developing a global partnership for development.

These advocacy activities exposed me more to a lot of the prevailing socioeconomic issues and associated health challenges in the region. For example, MDG's advocacy to schools as part of effort to achieve universal primary education exposed me to some of the problems school children were experiencing; for instance, lack of instructional materials created a lot of obstacles for learning activities. Therefore, I proposed we improvise, and it was approved, these included building a geographical garden with lots of features within the school where students could easily learn. While some of the children were out of school due to extreme poverty, some coped by going to school without adequate footwear or school uniforms. I recognised the importance of education for these children and was concerned that their life chances and health would be adversely affected if they did not attend so I approached local authorities to ask for assistance but unfortunately although they supported what I was doing there were no funds available. I bought school uniforms for many of these children to encourage them to attend school.

Furthermore, my advocacy work involved visiting the hospitals and community health centres in the local government area as part of effort to reduce child

mortality and to improve maternal health. These visits identified some cultural practices around women's health and the effects of poverty on their access to maternal care. For instance, many pregnant women did not go for antenatal and child delivery care while others went without delivery items they were required to buy before the delivery day. I encountered several women experiencing VVF and the difficulties they experienced and the social stigma surrounding this condition prompted my intention to learn more about this VVF.

Additionally, as mentioned above, my experience while delivering my first child, where I narrowly escaped VVF, was another strong driver behind my decision to pursue this research idea. My educational background and role as a teacher with knowledge of geography, coupled with my advocacy experience, shaped my perception of VVF patients' demographic characteristics, which facilitated my decision to explore the socioeconomic and cultural factors to explore and identify disparity, why, and how of VVF to recommend appropriate interventions which may prevent the occurrence of VVF and support women.

My interest in healthcare propelled me to study master's in public health at Bedfordshire university Luton United Kingdom to familiarise myself with health issues and research methods. I engaged with the literature and realised that the phenomenon was such a big problem among women in low socioeconomic settings, particularly in low-income or middle-income countries like Nigeria, so I then had an academic as well as a personal, professional and social interest in the topic. Importantly, though VVF is a healthcare issue, its sources and causes go beyond health provision. My place of origin, Northern Nigeria is socially disadvantaged and am aware of cultural factors in the study area which make it difficult for women's health to be prioritised. Women do not always have a voice, and this was something which compelled me to undertake this study.

Abstract

Background

Access to a range of adequate care, and support during pregnancy and after delivery is required to prevent maternal morbidity, however, difficulties accessing appropriate healthcare by pregnant women is a significant problem in low- and middle-income countries, especially in Nigeria. Though there are multiple, significant, maternal morbidities or complications, obstructed fistula was identified as the one that impacts most women especially, in sub-Saharan Africa. There are two major kinds of obstructed fistula common in developing countries, namely, Vesico Vaginal Fistula (VVF) and Recto Vaginal Fistula (RVF) (Tebeu et al., 2012). This study focuses on vesicovaginal fistula because it has the most debilitating impact and is most prevalent in developing countries, especially Nigeria, where it is also increasing in prevalence in the Northern Nigeria geopolitical zones (Ijaya et al., 2010). VVF is an avertible tragedy, and a preventable complication of pregnancy resulting in an abnormal passage or channel between the vagina and the bladder. The impacts include stillbirth, physical and psychological trauma for the victim.

Maternal healthcare has been jeopardised especially in low- and middle-income countries giving rise to occurrence of VVF. While the quality of available healthcare is a concern, socioeconomic and cultural factors has been identified as critical factors leading to its occurrence. The literature review identified evidence gaps including, a lack of in-depth exploration of the individual's risk of being at risk (due to socio-economic/cultural factors), the experiences of VVF women, influence on practitioners' service delivery, available interventions, and the challenges in delivering VVF services.

Aims

This study aimed to (1) explore the socio-economic and cultural factors influencing VVF occurrence among women in Northern Nigeria and (2) Identify potential interventions to address the increasing prevalence of VVF in Northern Nigeria.

Methods

A critical interpretivist approach and purposive sampling was used to explore participant experiences of VVF. A 1:1 semi-structured interview was conducted with twenty-two VVF patients and ten VVF practitioners from across the three geopolitical zones of Northern Nigeria. The interviews were transcribed, and thematic analysis of the data completed guided by Braun and Clarke (2006).

Findings

The findings of this study produced three overarching themes which are:

- Socioeconomic and inter-connections with cultural factors influencing the prevalence of VVF.
- Occurrence of VVF and challenges hindering access to healthcare.
- Potential solutions to reduce the prevalence of VVF.

The findings indicate the negative impact of multiple, inter-related socio economic and cultural factors on women's health outcomes and experiences, specifically in relation to their perceived value and role in society, associated risk of VVF and access to preventative and treatment services.

Conclusions

Reducing VVF prevalence may not be realistic without in-depth exploration and adequate prevention of the risk of being at its risk. VVF may continue to thrive where there is no improvement in maternal healthcare services, poverty, poor quality of education status or access to education and dominance of predisposing cultural practices. This study identified causes and suggested strategies for preventing VVF occurrence, resulting in specific recommendations for future policy, practice, and research, whilst also highlighting the implications of leaving these unaddressed, for economic recovery and achieving Sustainable Development Goals (SDGs) among women in Northern Nigeria.

Acknowledgements

I dedicate this study to my God, the Alpha, and the Omega of everything.

I am grateful to many who aided the completion of this study and extend my heartfelt appreciation:

I want to thank the government of the Federal Republic of Nigeria, through the management of the Petroleum and Technology Development Fund (PTDF), for providing funding and appreciate my employer, the Federal Ministry of Education through the Principal of Federal Government College Kwali Abuja for the study leave to support the study.

I appreciate all the VVF patients and practitioners from the three geopolitical zones of Nigeria who participated in sharing their experiences to make this research a reality. Time will fail me to mention the names of the staff and management of the general hospitals, Federal Medical Centres (FMC), University Teaching Hospitals (UTH) and VVF centres in Northern Nigeria where the study took place; I sincerely appreciate you all.

I would also like to thank my previous supervisory team Professor Susan Powel, Dr Martin Holt, and Dr Neil Dagnall, for their guidance during the initial phase of this study. Special thanks to my present supervisors, Professor Anya Ahmed, and Dr Gillian Janes, for their inestimable advice, support, and expertise.

Thank you to my family members, my children Dorcas, Solomon, and Ebenezer Mze, for enduring my absences in some critical times of their life, and my parents, especially my mother, for encouragement and patience. I appreciate my wonderful siblings, especially my younger sister Mary Iyadunni Towoju for her immense support, especially during difficult times.

Thank you to my friends and colleagues at MMU Olaniyi Fafiyebi, Iliya, Efua, Clara, Eniola, Ghrob, and my church members whose concern for this work has also been a supporting push.

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List of Acronyms

ESC-Economic, Social, and Cultural.

FGM-Female Genital Mutilation.

MDGs-Millenium Development Goals

NC-NorthCentral part of Nigeria.

NCP-North-Central Practitioners.

NE-North-Eastern part of Nigeria.

NEP-North-East Practitioners.

NHREC- National Health Research Ethics Committee of Nigeria.

NW-North-Western part of Nigeria.

NWP- North-West Practitioners.

RVF- Recto Vagina Fistula.

SDGs- Sustainable Development Goals.

UN-United Nation.

UNICEF- United Nation International Children Emergency Fund.

UNFPA-United Nations Population Fund.

USAID- United States Agency for International Development.

VVF- Vesico Vaginal Fistula.

WHO-WordHealthOrganisation.

Chapter 1: Introduction

Socio-economic and cultural factors have been recognised as important factors influencing people's health and well-being, especially women in low or medium-income countries (World Health Organisation; 2005; Simkhada et al., 2008; Mendenhall et al., 2017). However, there are conflicting views and a lack of studies exploring the role of socioeconomic and cultural factors influencing the prevalence of Vesico Vagina Fistula (VVF) among women in Northern Nigeria, which is the focus of this study. This chapter offers the background to the study and introduces the study rationale along with definitions of the relevant concepts used in the study. It explores the evolution of vesicovaginal fistula, especially in Nigeria. Moreover, the chapter highlights the gaps in the literature, the resulting research questions and identifies aim and objectives for the study. Finally, this chapter outlines the structure of the research and a chapter-by-chapter summary of the thesis.

Background

Maternal health focuses on women's health during pregnancy, child delivery and postpartum. Koblinsky et al. (2006) posited that every intending mother desires a safe delivery, care, and support throughout her pregnancy, during and after delivery. However, access is required to a range of care to achieve safe delivery, and this access includes supportive healthcare and due vigilance for those awaiting a caesarean section. The World Health Organisation (WHO; 2003) estimated that among all pregnancies that lead to live births, about 10-15% develop life-threatening complications, requiring specialised and emergency interventions to prevalent lifelong disabilities or save a life. While approximately 350,000 women die yearly during pregnancy or childbirth, Ronsmans et al. (2006) and the WHO (2015) estimated that almost all die in developing countries. While South-East Asia and sub-Saharan Africa accounted for 33% and 66% of these deaths, they also occur in sub-Saharan Africa and South-East Asia; with Nigeria and India accounting for 19% and 15% of these deaths, respectively (WHO, 2015).

Similarly, WHO (2015) noted that the lifetime risk of maternal death in sub-Saharan Africa is estimated at 1 in 36 compared to approximately 1 in 4,900 in developed countries. Furthermore, there is a vast difference in maternal mortality within countries, which is associated with social or wealth status and location i.e., rural, or urban location (Rosenfield et al., 2007; Say and Raine, 2007). WHO (2011) defined maternal mortality as "the woman's death during pregnancy or within 42 days of pregnancy termination, regardless of the pregnancy duration or site, for any pregnancy-related caused or aggravated by the pregnancy or its management. A strand of the literature identified vital causes of maternal mortality as haemorrhage, obstructed labour, hypertensive disorders, infections, and terminations/delivery, while indirect causes include diabetes or cardiovascular diseases, HIV/AIDS, or malaria (Ronsmans et al., 2006; WHO, 2015; Chou et al., 2016).

Maternal health has been a significant issue in international health due to the vulnerability of women. In addressing the issue, the international health strategy has evolved. The Safe Motherhood initiative, an international health strategy, was launched in 1987. This focused on mobilising support for addressing developing countries' high maternal mortality (Rosenfield et al., 2007). This initiative focused on screening high-risk mothers during antenatal care and training traditional birth attendants on hygienic and safe practices during childbirth. However, this initiative's need for more meaningful progress propelled the need for a broader approach to address maternal mortality (Maclean, 2010). Rosenfield et al. (2007) noted that significant strategic changes occurred in 1994, which involved the provision of reproductive healthcare, which was adjured to be operationalised via a human rights-based approach.

The year 2000 ushered in a significant achievement for maternal health, including the United Nations Millennium Development Goals (MDGs). The interconnectedness between various MDG goals implies that four goals – 1, 3, 4 and 6 – impact enhancing maternal survival (Maclean, 2010; Starrs, 2006), while goal 5 focuses directly on maternal mortality (Filippi et al., 2006). Traditionally, a decrease in maternal mortality is used to gauge progress in maternal health. The International Conference on Population and Development (ICPD) clamoured for a 50% reduction in maternal deaths by 1990 and the remaining 50% eradication by 2015. On the other hand, the MDG's goal 5 targeted a reduction of 75% in maternal mortality from

1990-2015, emphasising the importance of improving maternal health. At the expiration of the MDG in 2015, the new global focus on maternal mortality was emphasised in goal 3.1 of the Sustainable Development Goal (SDG).

However, using sole dependence on maternal mortality to explore a country's maternal health status will discount the effect of maternal morbidity. Maternal morbidity is a driver of maternal mortality and an anticipated cause of low quality of life and lifelong disability (Ronsmans et al., 2006; Firoz et al., 2013). While Firoz et al. (2013) depicted maternal deaths as the "tip of the iceberg and maternal morbidity as the base," a strand of literature found that 20 to 30 women experience pregnancy-related chronic or acute morbidities for every female death (Donnay, 2000; Firoz et al., 2013). The WHO (2015) highlighted slow progress in attaining a reduction in maternal mortality target in South-East Asia and sub-Saharan Africa, despite attaining a 44% reduction in maternal mortality ratio globally. Chou et al. (2016) asserted that the global estimate of maternal mortality as of 2016 emphasised the contribution of indirect conditions to maternal deaths.

However, achieving the SDGs' Universal Health Coverage (UHC) focus will require significant attention is paid to maternal morbidity to address women's health, dignity, and productivity (Langer et al., 2013). The actual prevalence of maternal morbidity is unknown, as there are mainly undocumented data on its incidence (Koblinsky et al., 2012). However, WHO (2010) estimated that about eight million women suffer pregnancy-related complications annually. The absence of data is linked to the lack of a consensus definition and standard criteria for identifying morbidity and inadequate information systems to capture crucial data (Hardee et al., 2012; Chou et al., 2016). With a lack of standardised definition and case identification, the WHO set up a four-year initiative, The Maternal Morbidity Working Group (MMWG). The purpose of MMWG is to develop a framework for identifying and defining maternal morbidity as any health condition aggravated by or linked to pregnancy and childbirth which has a deleterious effect on the well-being of women (Chou et al., 2016).

While there are numerous and complicated drivers of maternal morbidity, they vary in gravity and duration and cover various diagnoses that require various treatments (Firoz et al., 2013). These morbidities have diverse aetiologies, with some linked to

the healthcare quality provided during pregnancy and childbirth. In contrast, others are linked with a broader range of personal, social, and other factors beyond the health system (Chou et al., 2016). Thus, maternal morbidity can be considered a spectrum ranging, at its highest severity, from maternal 'near misses' to non-life-threatening morbidity (Degge, 2018). Furthermore, Ashford (2002) posited that disabilities associated with childbirth impact women's productivity and health at the peak of their lives. Three-dimensional and overlapping aspects of women's lives are affected. One is the disruption of bodily integrity via reduced vigour and strength and continued ill health: another, the disruption of the household economy via productivity loss and debts; and finally, is the disruption of stability and social identity of women which can entail a social-status loss in the community and household (Wall, 2006; Storeng et al., 2010). There is evidence of a strong link between maternal disabilities and non-existent or inadequate medical care during and after childbirth (Ashford, 2002).

While the proportion of Skilled Birth Attendants (SBAs) increased globally from 61% to 78% between 2000 and 2016 (WHO, 2017), developing countries recorded only about 50% of all births in 2016 with an SBA in attendance. Lewis (2008) argued that women who experience complications during pregnancy or childbirth do not receive adequate, timely medical attention that might avert severe injury or illness. Similarly, a strand of literature, such as Ashford (2002) and Wall (2006) contended that such women and their families might not recognise complication-related warning signs or face poor treatment.

Poverty also poses a significant risk to maternal health. Filippi et al. (2006) and Johnson (2016) posited that out-of-pocket expenses, such as transport fares or user fees at health facilities, hinder medical care access. This signifies that maternal care, especially antenatal, delivery and postnatal care in developing countries, requires some out-pocket expenses from the patients, which may not occur in developed countries. For instance, Kalu (2013) stated that women in Nigeria spend about $9-99 (N1, 350-N14, 850) for maternal healthcare services and out-of-pocket expenses by the women themselves, household heads or husbands amounting to 73.3% of the costs. Additionally, the poor quality of obstetric care could make deliveries in healthcare facilities risky. Ashford (2002) noted that delays encountered between arrival at a health facility and access to the care required could lead to the death of a

child or maternal mortality or morbidity development. Morbidity and disability can either be acute or chronic. While acute affects a woman during or immediately after childbirth, chronic lasts for even a lifetime (Ashford, 2002; Chou et al., 2016).

There is a vast impact of maternal deaths and near-miss events on women and their families, often including gradual recovery with lingering consequences (Lewis, 2008). A body of literature, such as Filippi et al. (2006) and Koblinsky et al. (2012), posited that the long-term consequences are social, psychological, economic, and physical. Although reduced maternal mortality is an identified outcome for both the MDGs and SDGs, Filippi et al. (2006) noted the untold hardship that occurs with morbidity and continuous need for healthcare cannot be overlooked in healthcare systems as the duration and frequency of suffering can be detrimental.

Even though there are significant maternal morbidities or complications, Hardee et al. (2012) identified obstetric fistula as the maternal morbidity that impacts most women. The existing literature on obstructed fistula shows that three major theories explain its impact on women in Africa. The biological theory postulates that African women are inclined to obstructed fistula or dystocia due to their narrower pelvis compared to Europeans (Kolawole et al., 1978). The economic theory links the high incidence of obstructed fistula to poor health infrastructure and poverty. In particular, it is argued that poverty galvanises a chain reaction that emanates from malnutrition and drives child marriage. Although the economic and biological theories were identified, the third theory – the socio-cultural etiological factor – is multifaced, complex, and less fully represented in the literature.

1.1.1 Defining Obstructed Fistula

While the term fistula has a Latin origin and signifies pipe, cane, reed or ulcer, Wall et al. (2005) defined it as an abnormal connection or a hole occurring between the vaginal and the bladder or the rectum, leading to constant leakage or faeces or urine or both. On the other hand, Stamatakos et al. (2014) considered a fistula an abnormal communication between two epithelial surfaces, for example an opening

from the rectal wall or urinary tract linked to the genital tract, causing faeces and urine to leak continually.

1.1.2 Types of Vesico Vagina Fistula

Although there is much information on the aetiology and risk factors of Genital Fistula, identifying and focussing on the kind of fistula prevailing in a particular area may be significant for adequate treatment. There are two major kinds of genital fistula common in developing countries, and they are Vesico Vaginal Fistula (VVF) and Recto Vaginal Fistula (RVF) (Tebeu et al., 2012). This study focuses on vesicovaginal fistula because it is the most debilitating and prevalent in developing countries, especially Nigeria. Though both VVF and RF severely impact females, Angioli et al. (2003) argued that VVF is one of the most distressing complications of obstetric and gynaecologic procedures. Moreover, VVF is the most pronounced, especially in developing countries as Tebeu et al. (2012) established that rectovaginal fistula occurred in just one to eight per cent of the patients, while VVF occurred in about eighty to a hundred per cent of the patients, rectovaginal fistulas comprise 10% of the fistulas and occur less frequently (Mabeya, 2004). Globally, over 2 million women live with VVF, while an estimated 72,000 to 100,000 new cases arise yearly (Adler, 2013; Daru et al., 2011; Siddle et al., 2013; Tunçalp et al., 2014). While VVF is common in Nigeria, it is more prevalent in Northern Nigeria, as discussed on page twenty-six (26), which is why it is the study area.

A genital fistula becomes an obstetric fistula when it results from the labouring process or its management (De Bernis, 2007). Most urogenital fistulas in low-income countries are linked to obstetrics, caused mainly by neglected and prolonged obstructed labour (Waaldijk, 2008). The fistula associated with obstructed labour happens when the baby's head is impacted for a long time in the birth canal and presses the rectum or bladder onto the bony pelvis, resulting in tissue necrosis. The dead tissue sloughs off, resulting in at least one hole, which causes the

uncontrollable leakage of urine and faeces (Waaldijk, 2008). They typically lead to the baby's death during labour; the woman remains incontinent of urine and faeces (Wall et al., 2005). Obstetric fistula is one of the crippling maternal morbidities, affecting more than two million girls and women in low-resource countries (Tunçalp et al., 2014). While obstructed labour can last for many days, it could lead to the baby's death and the mother, in cases where she survives, can develop a fistula. Wall (2012) identified 1-7% of obstructed labour the occurrence of the obstetric fistula was 0-7, and the death rate was between 0-17%.

Although WHO (2006) noted that access to effective maternal care could assist in predicting, identifying, and treating such labour, five hundred thousand healthy young women lose their lives yearly due to complications of pregnancy and childbirth globally. Similarly, the WHO (2006) found that more than 300 million are facing short or long-term pregnancy-related complications, with 20 million new cases yearly.

Obstructed fistula, like other maternal mortalities and morbidities, is virtually non-existent in the developed world, as emergency obstetric care is available for a woman in labour. However, it occurs occasionally in developed countries because of intervention complications, such as cancer treatment and pelvic surgery (Wall, 2012). However, in Africa the obstructing issue is usually preceded by long hard labour that is not relieved due to a lack of or distant hospital required for a caesarean section. Among the maternal morbidities in sub-Saharan Africa, obstructed fistula is significant of relevance due to its deleterious effect on women's lives (Hardee et al., 2012), therefore the prevalence of obstetric fistula, especially in developing countries, is discussed in the next sub-heading.

1.1.3 Epidemiology of Obstetric Fistula

An estimated 2.3 million women globally live with fistula ((Wall et al., 2005; Tunçalp et al., 2014). While genitourinary fistulae occur globally, most of the approximately 100,000 new cases each year (Wall et al., 2005) occur in low-income countries. While the incidence of fistulae is poorly researched, available statistics are based on studies carried out in hospitals (FIGO & UNFPA, 2011). A survey showed that an

estimated 33,000 new cases occur yearly in sub-Saharan Africa (FIGO & UNFPA, 2011). While Guinea and Nigeria are precursors of this in West Africa, Nigeria accounts for almost half of the global prevalence of obstetric fistula, with about 800,000 cases and an annual incidence of 20,000 new cases (FIGO & UNFPA, 2011). Oduah (2015) posited that many women are affected by obstetric fistula but are too ashamed to seek medical help.

On the other hand, many cases occur yearly, and obstetric repair specialists cannot handle the accumulation of unrepaired obstructed fistula cases. However, Hardee et al. (2012) noted a higher success rate, in which almost 90% of obstructed fistula repairs are carried out. Daru et al. (2011) estimated it would take more than thirty years to clear the backlog of existing obstetric fistula cases in Nigeria. Women in low-income countries are afflicted with fistula due to unavailable obstetric care. When available, it is usually inaccessible, underutilised or low quality.

Similarly, the associated problems are propelled by political and socio-cultural conditions that sustain health injustice and inequalities. Generally, the incidence of obstructed fistula in sub-Saharan Africa indicates the poor level of maternal health coverage and shows glaring inequalities in healthcare access for women. The accompanying psychological and social impact of obstructed fistula on women is a significant issue. Wall (2006) contended that these social problems could be worse than death for these women. It prompted Harrison and KA (1983) to view obstructed fistula as a calamity too many, especially with the worsened societal traditions and hegemonies regarding reproductive health ideals, consequently increasing the risk of obstetric fistula.

The socio-cultural etiological factors include social constraints on skilled care access and caesarean section, folklore belief about the inevitable maternal injuries, women's low decision-making power, socio-political conditions perpetuating child marriage, and traditional belief about pregnancy and childbearing processes (Umoiyoho and Inyang-Etoh, 2012). These factors are mediated socio-politically and are beyond the control of women in most cases. A vast body of literature has offered descriptions of women with obstetric fistula. Some studies, such as Wall (2006) and Tebeu et al. (2012), categorised these women between the age of 9 and 65, with their mean age usually less than twenty years old.

The relevance of parity has also been explored with studies, such as Alio et al. (2011) and Lengmang and Degge (2017), noting that obstetric fistula occurs in both primiparous and multiparous women. Danso et al. (1996) represented VVF occurrence as a bimodal distribution. They concluded that the highest peak was found among primigravid women, followed by the multipara with over four deliveries, due to increasing fetal birth weight with subsequent pregnancies. On the other hand, women with obstetric fistula have poor socio-economic status and low educational backgrounds (Landry et al., 2013). While some studies, such as Muleta et al. (2007), claimed that most of these women typically reside in rural areas, a study in Uganda and Nigeria revealed that fistula is not limited to rural areas (Phillips et al., 2016). The following sections explain obstetric fistula, how it relates to Vesico/Recto Virginal Fistula (VVF/RF), the history of VVF, the global view and the situation in Nigeria in more detail.

1.1.4 History of VVF

VVF was found in the mummy of Queen Henhenit, wife of King Mentuhotep II of Egypt, who reigned around 2050 BC (Rock et al., 2008). At the same time, a thorough examination of her mummy showed a normal vaginal, a 10 cm long mass of tissue, intestine sticking out via the anus. Although Professor Derry returned the mummy to Cairo in 1923 for further examination, the result revealed a tear in the bladder connecting to the vaginal cavity. Similarly, it showed that the pelvic bone was an abnormal shape resembling apes. With the pelvis' width, the evaluator considered it too narrow or small to enable passage of the foetal head and concluded that the severe pain and damage to the vagina and bladder were responsible for the queen's death (Zacharin, 2012). Before this discovery, Avicenna, an Arab-Persian physician, first observed that urinary incontinence in women might be due to fistula consequent upon obstructed labour.

Having linked difficult labour to fistula formation, Avicenna offered advice on preventing pregnancy, especially among young girls and women who married young and patients with weak bladders (Mosavat et al., 2015). He also noted that the foetus in these patients might cause bladder tearing, resulting in urinary incontinence of

urine (Zacharin, 2012). Although Avicenna considered fistula incurable, the end of 1600 BC was a turning point in understanding fistula, propelling many clear descriptions. For instance, Felix Platter in 1597 described fistula as the resultant impact of the first labour of a young girl, which led to the opening of her bladder rent and resulting long gaping furrow. This injury resulted in a constant involuntary urine discharge and excoriated and inflamed the surrounding parts (Zacharin, 2012). The onset of the 19th century led to significant progress in the treatment and repair of VVF, with renowned physicians of that era including Bozeman, de Lmballe, Emmet, Sims, Simons, and Wutser. Marion Sims became famous between 1845 and 1859 for his significant discoveries of materials and instruments for closing large fistula.

1.1.5 Global View of VVF

VVF is historically not a new phenomenon and is considered a common global scourge. However, advanced and improved obstetric care in North America and Europe has put VVF into oblivion in those areas. Specifically, Rizvi et al. (2010) stated that VVF is almost obliterated in countries with universal healthcare and makes women's health a priority. However, these factors are vital when targeting services for women in low-income countries who are not likely to obtain timely emergency obstetric care (Kelly and Winter, 2007). Rizvi et al. (2010) noted that VVF leads to urinary incontinence in developing countries due to obstetric difficulties, while the associated bladder trauma causes 90% of these cases during hysterectomy surgeries. Although Wall (1998) observed VVF cases in industries countries, they are surgery or radiation therapy. This distinguishes the aetiology of VVF in industrialised countries from that in developing countries, which is driven mainly by neglected obstetric complications occurring under varying circumstances and the precursors to this, which have been outlined, e.g., poverty, local customs and beliefs.

While incidence in industrialised countries, such as the US, is debated (Villey, 2006), most discussion on VVF is centred on Africa. However, this needs to be revised, as other regions are also confronted with this problem. This compelled Wall (1998) to postulate that no current studies globally evaluate the level and places where VVF

occurs. In particular, Wall (1998) argued that questions regarding the prevalence and incidence of obstetric fistulas are typically separate from the standardised demographic and health surveys undertaken to explore the characteristics of the population and overall health status in developing countries. This explains the non-availability of accurate data on VVF, though VVF incidence is widely reported on the African and Indian subcontinent.

Nevertheless, the WHO (2006) reported an estimated 2 million women with untreated VVF and new cases of up to 100,000 are reported annually. On the other hand, it can be argued that these figures are highly under representative, considering the stigma associated with this condition. Hence, many unreported and unknown VVF victims live with in isolation and fear. Despite the associated stigma of VVF, Kabir et al. (2003) argued that VVF is a common distressing condition that takes women to hospitals in African countries. A series of studies in selected parts of Africa revealed that the VVF situation is underestimated in third-world countries and globally. Wall (1998) suggested that the global mapping for a VVF survey should incorporate Africa, Latin America, the Middle East, less developed parts of Oceania, some remote parts of central Asia, South Asia, Soviet-dominated Eastern Europe, and selected isolated parts of the former Soviet Union. While a high maternal mortality rate is linked to high VVF incidence, emerging countries with high maternal mortality rates are seen to have high VVF prevalence (WHO, 2006). This set of countries is undoubtedly in the third world.

Despite the terrible and devastating nature of the disease, many women are still at risk of VVF. Lambert et al. (2015) corroborated this, noting that VVF remains a public health concern in developing regions despite the improvement in VVF treatment in developed nations. At the same time, the WHO (2019) estimated that approximately 99% of global women's death arising from pregnancy complications occurs in sub-Saharan Africa. Notably, a strand of the literature identified a high prevalence of VVF in sub-Saharan Africa (Adler et al., 2013; Bacon, 2003; Daru et al., 2011).

Nevertheless, an assessment of the obstructed fistula in nine sub-Saharan African countries revealed that every country has distinct maternal health challenges embedded within societal norms and governing policies. Obstructed fistula is a cultural-based problem associated with broader issues relating to social justice and reproductive health (Velez, Ramsey & Tell, 2007). This propelled the United Nations

and its partners to motivate each country to develop its own policy agency to eradicate obstructed fistula, inculcating the inclusion of obstetric fistula policy within national development plans. Based on this, United Nations Population Fund (UNFPA, 2019) started collaborating with African countries to develop national policies to end obstetric fistula. Moreover, an indication of the continuous prevalence of fistula is the effort by UNFPA to develop another strategy in West and Central Africa which aim to achieve its eradication by 2030 (UNFPA, 2019).

1.1.6 Rationale for Nigeria as the setting for the study

Nigerians have low health status indicators and a lower improvement rate. For instance, life expectancy at birth in 2012 was 52.05 years (National Population Commission, 2009; Yaqub et al., 2012; Fawole and Adeoye, 2015). Similarly, Olaniyan and Lawanson (2010) found that Nigerians have a lower health status because healthcare financing in Nigeria is highly reliant on households, and the comparative share by the household is excessively against the North because of the increase in population and poverty incidence. Nigeria is Africa's most populous country, with over 173 million (WHO, 2015). While Nigeria and India account for one-third of the global maternal deaths, Nigeria's maternal mortality rate only reduced by 52% between 2000 and 2017 compared to India's 65% (WHO, 2019). The true incidence of VVF is relatively unknown in Nigeria due to the reluctance of most victims to register at hospitals and maternity centres to avoid stigmatisation and rejection. However, incidences based on different research locations are available. For instance, there is an average of 350 cases of VVF per 100,000 deliveries at a teaching hospital in Nigeria, and the issue of VVF is so severe in Nigeria that a cabinet minister puts the number of untreated VVF cases in the country at almost 1,000,000 (Valley, 2006). While many of these people live in rural areas with inadequate or no primary health facilities and education, Nigeria accounted for up to 40% of the global prevalence as of 2013 (Borgen, 2014). The lack of affordable and proper transportation equally worsens the traumatic experience of such women. Further, any lucky woman that eventually gets to the clinic is faced with the

additional problem of a lack of skilled attendants to handle the emergency obstetric procedure and healthcare facility.

Furthermore, Magashi (2006) noted that Nigeria has a maternal mortality ratio of 948 per 100,000 live births, while a maternal mortality ratio of between 339 to 1716 is consider the highest in the world; this is a signal that maternal health is a public health concern in Nigeria. Moreover, Alkire et al. (2012) estimated that of the developing nations, Nigeria is the second country after India with the highest preventable obstetric fistula and maternal mortality. Additionally, Hasan and Ekele (2009) estimated that 10,000 to 20,000 cases of VVF occur yearly in Nigeria, and more than 200,000 women are waiting for treatment. The annual estimated incidence of VVF in Nigeria increased from 0.4 in every 10 000 deliveries in 2008 to 2.11 in 2010; and further increased to 5 in every 1000 deliveries in 2014 (Baba 2017; Ijaya et al., 2010; Fehintola 2017). This upward trend of VVF occurrence in Nigeria indicates its growing prevalence, meaning it is likely to have the highest burden of VVF in Sub-Saharan Africa (Ijaya et al., 2010; Fehintola et al., 2017). For instance, Tollosa and Kibret (2013) estimated the number of new cases of VVF occurrence in Ethiopia yearly as 9000 and the incidence of 2.2 per 1000. In Uganda, the prevalence of VVF was 2.6-2.8 per women of childbearing age, while in Nigeria was 2-5 women per 1000 deliveries (Kasamba et al., 2013; Umeora and Emma-Echiegu, 2015).

1.1.7 Rationale for exploring socioeconomics and cultural factors in Northern Nigeria

While the determinants of health status continue to be biomedical, there is an increasing awareness of the underlying impact of socio-economic factors on ill health (Eneji et al., 2013). For instance, a high rate of illiteracy and lack of education leads to a high level of ignorance and resistance to using health facilities, especially by women of childbearing age. Similarly, other religious and cultural practices, such as superstitious beliefs and early marriage, have remained significant impediments to attaining higher health status. There is a continuous difference in health status

between North and south, poor and rich, rural and urban, and educated and uneducated in Nigeria. However, the lower status of women is often argued to be the primary reason for differences in health status between males and females in Nigeria.

Women generally have limited access to health facilities, often leading to restricted decisions on issues affecting their lives and welfare. Additionally, the high fertility rate, with limited or non-existing family planning, reduces women's health status (Alawari and Maureen, 2020). While Njoku et al. (2016) noted no accurate VVF survey in Nigeria, notably concerning areas of concentration, they estimated that 200,000 cases exist, with 10,000 new cases annually. VVF cases are predominantly in northern Nigeria relative to the southern part; most women affected are teenagers. This implies that VVF constitutes a significant danger to the future mothers of Nigeria.

There appears to be a difference in prevalence between southern and northern Nigeria. Sunday-Adeoye et al. (2011) estimated the rate of fistula cases in southern Nigeria to be 6 per 1000 deliveries compared to 1-2 per 1000 deliveries globally. However, Ijaya et al. (2010) argued that the northern part of Nigeria has more VVF occurrences than the south. According to Ahmed (2013), about 85% of the 800 000 VVF women in Nigeria waiting for treatment are in the North. Similarly, every maternal death is accompanied by about 10 to 15 women with debilitating morbidity, including VVF, in northern Nigeria (Ijaiya et al., 2010). The attendant stigmatisation or discrimination faced by VVF patients drives the low reporting by victims and undermines the validity of accurate data extracted from hospital records (Changole et al., 2017).

This research explores the reasons for the prevalence of VVF across three different geopolitical zones in Northern Nigeria to see if the differences in culture and political context impact VVF prevalence. The rationale for focusing on northern Nigeria is the high prevalence of VVF patients (Ijaiya et al., 2010). As a result, these patients populate the general hospitals in each geopolitical zone because general hospitals are mostly the first contact of people in the community. Thus, the study will focus on VVF patients in hospitals in the three geopolitical zones: North-west, North-east, and North-central. The choice of participants in different geopolitical zones will offer

opportunities to explore the cultural diversity of VVF patients in northern Nigeria and evaluate the variation among VVF patients in different geopolitical zones.

While Egziabher et al. (2015) noted that 80% to 98% of VVF cases could recover, the insufficient number of surgeons in developing countries impedes the process of VVF repairs. Therefore, identifying and preventing the causes of VVF is necessary. However, varying opinions on the perceived factors are responsible for its prevalence, especially in Northern Nigeria. Basak and Bag (2008) contended that fistula could result from different issues, such as malignancies, pelvic surgery, infection, and trauma. On the other hand, pathologists believe that obstructed labour is the primary cause of VVF in developing countries (Stamatakos et al., 2014). Nevertheless, the WHO (2005) emphasises that fistula is a condition caused by the coactions of several socio-cultural, physical, and political factors that affect women's status. These coactions also include socio-economic and cultural practices, which tend to determine the state of health of women. Shea et al. (2016) argued that poor socio-economic factors predict poor health outcomes.

1.2 Current gaps in the literature and importance of the study (Justification)

Over the last three decades, the United States Agency for International Development (USAID 2010) has supported Nigeria to eradicate fistula, using various initiatives such as Fistula Care and The Fistula Foundation. In particular, efforts were geared towards capacity building, human resources, and institutional development for safe motherhood delivery, focusing on emergency obstetric services. Similarly, many doctors and nurses had training to perform obstetric fistula repair surgery, culminating in over 10,000 repairs.

However, most studies used a one-size-fits-all approach, generalising the results without considering nuances relative to the study area. Similarly, obstetric surgeries are expensive for most women, and some women abandon public hospitals to access private, faith-based clinics with limited basic infrastructures (Velez et al., 2007). Umoiyoho and Inyang-Etoh (2012) argued that it is ironic that Nigeria provides care to foreigners but cannot offer adequate healthcare to its citizens. The agenda for the country-specific framework for eliminating obstructed fistula is likely

only to be effective once there is a full understating of the factors driving its prevalence. Thus, this study focused on developing a localised strategy to solve the problem.

Some previous studies considered the prevalence of VVF as a medical condition, and many datasets have concentrated on maternal morbidity and mortality. However, this must be balanced with the influence of socio-economic and cultural factors on VVF prevalence in Nigeria (Odimegwu and Dolapo 2017). Some studies have identified socio-economic and cultural factors as predisposing factors of VVF (Bazi, 2007; Cape et al., 2011; Ezegwui et al., 2005; Gulati et al., 2011; Ojonuga, 1992; Roush, 2012; Tabeu et al., 2012). However, the influence of socio-economic and cultural factors on VVF is multifaceted and individualistic.

The review of the literature for the current study established five major themes that are widely agreed upon from existing literature. These include: vesicovaginal fistula and its consequences, classifying VVF, causes or drivers of vulnerability to fistula development, the experience of VVF women/referrals to health facilities and women's life after VVF repair. However, most of the studies conducted in Nigeria only identified VVF occurrence, without any in-depth exploration for why and how socioeconomics and cultural factors influence VVF occurrence from the perspective of the patient and practitioner—for instance, specific individual socio-economic and cultural factors and the reason behind such factors. According to Link and Phelan (1995), the individual's risk of being at risk must be explored to achieve maximum effectiveness in the nation's health intervention and improvement.

Despite the lack of consensus about the experience of VVF among women in Northern Nigeria, most studies, especially in Nigeria, have a narrow focus, concentrating on some locations to the detriment of other areas. This study agreed with Sirdifield et al. (2016), who argued that the patient's involvement and satisfaction are significant indicators of quality health care. Moreover, Crawford et al. (2002) argued that healthcare practitioners remain the ultimate mediator of how much value is attached to patients' care opinions. It may assist in devising a localised strategy (UNFPA, 2019) to solve the problem since the agenda for the country-specific framework for eliminating obstructed fistula would only be effective once a complete understanding of the factors driving its prevalence. It is also

necessary as this study may help provide strategies to achieve the goal of ending obstetric fistula in 2030 (UNFPA, 2019).

Therefore, the current study thoroughly explored the patient's knowledge of how socio-economic and cultural factors drive the occurrence of VVF in Nigeria. Additionally, this study explored the available VVF programmes and challenges that VVF practitioners experienced in trying to prevent VVF occurrence and delivery VVF services. In this way, it addressed an existing gap in the literature regarding VVF practitioners' views on the effect of socioeconomics/cultural factors on their service delivery and programs designed to reduce VVF and its challenges. The current study also synthesised the perspectives of VVF patients and VVF practitioners to provide a more explicit and in-depth analysis than has been done previously. This information may therefore play a vital role in informing the development of active maternal health care interventions to combat VVF in northern Nigeria.

Kahissay et al. (2017) asserted that the knowledge of the patient's perceptions of the causes of common sickness in their communities might assist the policymakers in designing effective and appropriate unified primary healthcare approaches to serve the communities. The use of the qualitative method and thematic analysis, basing the findings on participants' interpretation, enabled the study to identify possible holistic solutions and strategies for designing or formulating an active policy to reduce and prevent VVF occurrence from the perspectives of those directly affected by it. Such a study may also aid in designing an appropriate awareness campaign in the affected region. This study was inspired by a critical approach, which may lower the maternal morbidity and mortality rate in Northern Nigeria by seeking to address the persistent and serious public health problem of obstetric fistula in Northern Nigeria. Alkire et al. (2012) estimated Nigeria as the second country after India in developing countries with the highest preventable obstetric fistula, and Ahmed (2013) estimated that about 85% of 800 000 to 1 million unrepaired cases of Fistula in Nigeria waiting for treatment are in northern Nigeria yearly.

1.3 Research Questions

- What socio-economic and cultural factors influence the VVF prevalence among women in northern Nigeria?
- How do these socioeconomics and cultural factors affect the VVF among women in northern Nigeria to make recommendations to; mitigate the condition?
- What potential interventions address the increasing prevalence of VVF in Northern Nigeria?

1.4 Aim and Objectives

This study aims to:

1. Explore the socioeconomics and cultural factors influencing VVF occurrence among women in Northern Nigeria.

2. Identify potential interventions to address the increasing prevalence of VVF in Northern Nigeria.

This aim will be addressed using the following research objectives.

- Explore the socioeconomic and cultural context in Northern Nigeria that VVF women experience.
- Evaluate how those socioeconomic and cultural factors drive the prevalence of VVF among women in northern Nigeria.
- Evaluate available programmes to address the increasing prevalence of VVF in Northern Nigeria.

This research may recognise areas where improvements might be made from the practitioner and patient's viewpoints. It may assist in identifying the socioeconomics and cultural factors influencing the occurrence of VVF that are peculiar to individuals in each geopolitical zones of Northern Nigeria.

It may provide an appropriate preventive measure for the policy maker/government agency or non-governmental organisation interested in preventing and eradicating VVF in Northern Nigeria. The result of this study may have a significant implication

for the economic recovery strategies for women in Northern Nigeria. It also helps achieve the Sustainable Development Goal aims to raise the rate of school enrolment and increase literacy levels among women in Northern Nigeria.

It may also assist in shifting strategies to address fistula management from clinical care to a holistic approach.

1.5 Outline of the Thesis

This section is the road map of what to expect regarding the structure of the chapters in my thesis, including a brief introduction to each chapter. In chapter one, the research context, in terms of the background to the study regarding maternal healthcare as related to obstetric care, and its links to obstructed fistula and its epidemiology has been explored. Moreover, vesicovaginal fistula is defined and its history, along with its impact globally and in Nigeria specifically, were introduced. The study's importance, research questions, and objectives have also been discussed.

In chapter two, the review of the current evidence base examines various perspectives on the occurrence of VVF, especially in low- and medium-income countries. Moreover, it identifies the main themes within this body of knowledge, which include Vesicovaginal Fistula and its Consequences; Classifying VVF; Causes or Drivers of Vulnerability to Fistula Development; and Experience of VVF women and Referrals to Health Facilities. Chapter two concludes with the identified gaps in the literature, which this study addresses.

In chapter three, the theoretical framework guiding the study is presented. Here, the adoption of a qualitative inductive approach, and the philosophical stance for the study are justified, and key aspects of the execution of the study discussed, including the role of researcher reflexivity for example. This chapter will also present the demographic characteristics of the study participants.

The study achieved the aims of this study in chapters four, five and six and they represent the study findings, while chapter four focus on the socio-economic and cultural factors influencing the prevalence of VVF, chapter five presents the occurrence of VVF and the issue surrounding women's access to healthcare. Chapter six explores the potential solutions study participants suggested to reduce

the prevalence of VVF. Finally, chapter seven present the overall conclusions from the study, within the context of the limitations of the study, and recommendations for future practice, policy, and research.

Throughout the thesis, the gaps in the literature are identified. Chapter 4 addresses the previous lack of understanding of the specific individual socioeconomic and cultural factors and the reasons behind such factors which contribute to VVF occurrence. In the findings chapters, 4, 5 and 6 the gaps regarding the missing perspectives of VVF women and healthcare practitioners working with them are discussed in detail. These three chapters address a further limitation, namely perspectives of healthcare workers. Additionally, chapter 6 considers the effectiveness of current provision and suggests potential solutions or intervention to reduce the prevalence of VVF in Northern Nigeria, and this addresses a gap identified in the literature regarding the ineffectiveness of available VVF programmes and interventions.

Thus, having set the context for the study along with specific aims and objectives, the next chapter (chapter two) explores what is currently known about VVF based on a review of the literature.

Chapter 2: Literature Review

This chapter reviews the existing literature and examines various perspectives on VVF. It helps to identify gaps in the literature and sets the direction for this study.

In exploring the literature, the review was initially designed as systemic as a quantitative study was originally planned. As the study progressed, it became clear that the methodology needed to be recalibrated as a qualitative study. The systematic review had already been conducted, and there were significant time pressures to complete the thesis. To address this incongruence with the literature review and the adopted methodological approach, the chapter concludes with a narrative review of the findings from the systematic review. The rationale for the initial systematic review methodology and subsequent shift to a narrative review approach is first discussed. The chapter then outlines the search strategy and selection of studies included in the initial systematic review before providing a narrative summary of the findings. The findings are presented under the following overarching headings: Vesicovaginal Fistula and its Consequences; Classifying VVF; Causes or Drivers of Vulnerability to Fistula Development; and Experience of VVF women and Referrals to Health Facilities.

Rationale for employing the narrative approach.

The initial systematic review of the literature was undertaken because the original plan was to conduct mixed method research. However, the outcome of the pilot study and the initial findings of that review suggested that the qualitative study would be most appropriate because the potential participants' knowledge gap was more significant than was initially apparent. This required an in-depth, contextualised approach to better understand the exposure of women to the factors identified in the review that resulted in reduced socioeconomic status, hindered health education and access to appropriate care and increased risk of VVF. Therefore, it was appropriate to look in more detail at women's lived experiences of VVF, including their engagement with healthcare systems and with providers involved in delivering services to gain in-depth and wide-ranging perspectives on the reasons for their circumstances leading to VVF occurrence, which cannot be achieved using quantitative methods. When it became apparent that my study would be a qualitative study, I presented the findings from the literature review in such a way as to support

the analysis of qualitative data by using a narrative summary to underpin my theoretical analysis of the data.

Table 1 provides a summary of the typical characteristics of systematic and narrative reviews to illustrate the relevance of this change. However, as a result of the factors identified above regarding the refocusing of the study, the review presented here includes features of both approaches to reviewing the literature, to provide the most appropriate foundation for the subsequent study.

Table 1 Summary of the difference between systematic and Narrative review

Systematic review	Narrative review
Research question is focused, and guided by (Population, Intervention, Comparison or control and Outcome) PICO. The literature source is explicitly and comprehensively outlined. Describes in detail the review methodology to enable reproduction of data and answer to specific, often quantitative, research questions. Involves the development of a strict protocol for the study selection before the review begins and adherence to this throughout, including consistent application of pre-identified inclusion and exclusion criteria. Selection follows PRISMA guidelines. Based on focused, systematic, and comprehensive findings from every available source, avoiding subjectivity and minimising bias. Usually includes	The topic can be specific but is generally broader or more general. Most suitable where relevant articles are likely to use a qualitative approach. Sources may not be provided. Does not necessarily describe or follow a specific methodology that would enable reproduction of data nor the answer to specific quantitative research questions. Specific, pre-identified study protocol and selection criteria not necessarily provided. Usually involves qualitative summary of information based on author's interpretation of the information. The focus is to get deeper understanding and wide-ranging perspective on topics in a certain research

only empirical evidence.	area. Provides readers with detailed information or knowledge about an issue or topic from contextual or theoretical point of perspective.

2.1 Search Strategy and selection of studies included in the systematic review.

The review of existing literature on VVF initially involved continuous assessment and refinement of related studies (McKeever et al., 2015). With the study exploring social, economic, and cultural factors influencing VVF prevalence, suitable keywords or synonyms relating to the research theme were used to search for related studies.

These keywords were searched individually or combined with any of the Boolean operators: AND, OR and NOT. A wide range of relevant studies was assessed and examined through these keywords and Boolean operators: (exploring or discovering) AND (role or impact or influence), AND socioeconomic status AND (culture or cultural or ethnicity or identity or values) AND (prevalence or incidence) AND (Vesicovaginal fistula or VVF) AND (Nigeria or northern Nigeria). These studies were searched in various databases, including PubMed, Bioline International, EBSCO, Cochrane Library, PROQUEST, MEDLINE, CINAHL, PsycINFO and Web of Science. Similarly, African journals were searched through the MMU library search and supplemented with information from the WHO Reproductive health library, Google scholar, and searched articles' reviewed references.

Furthermore, reports from governments and various health agencies such as World Health Organisation (WHO) and United Nations Population Fund (UNPFA) were searched. Additionally, conference proceedings and dissertations were included in the search, as they offer helpful evidence on VVF despite not formally published in scientific journals. While studies published globally were included in the search criteria, the search was limited to articles published in the last twenty years (2000 to 2020). The adoption of this time frame allows for evaluations of studies over time to provide relevant and credible content about the topic. However, some of the few earlier referenced articles were used to support the study in the absence of recent relevant articles.

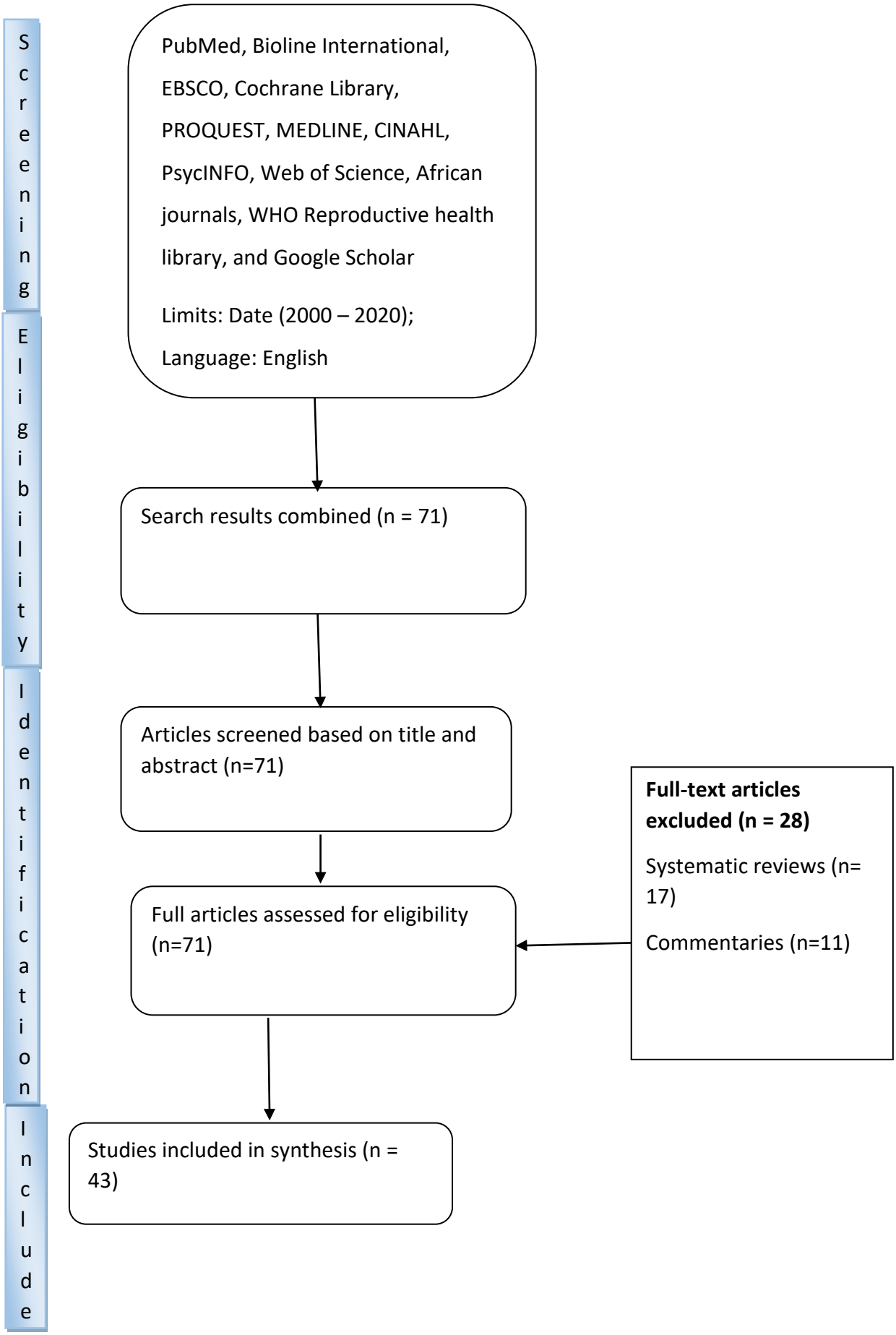
Table 2 Inclusion and exclusion criteria for literature review

Inclusion	Exclusion
• Published articles between 2000 and 2020. • Studies focusing on VVF. • Studies published in English	• Published articles before 2000. • Studies focusing on other research themes, except VVF. • Studies published in other languages

The relevance of these studies was first ascertained by screening titles and abstracts, followed by the full articles, contents. Similarly, these studies were further confirmed through skim-reading, while document scanning was used to evaluate their relevance to the research theme. Scan-reading allows for previewing, reviewing, and determining the article's main idea and saves laborious reading time. While skimming enables a 'bird's-eye view' of the article, the goal of scanning is to locate and 'swoop down' on specified facts in the article. The utilisation of the inclusion and exclusion criteria in Table 2 yielded an initial search of 71 articles. However, some of the articles were duplicated in different databases.

Similarly, some articles were removed because they were systematic literature reviews. Furthermore, some of them did not meet the search criteria. The removal of all these articles reduced articles from 71 to 43, as shown in the PRISMA flow in Figure 1 and the summary of the selected articles in appendix 1.

Figure1:PRISMA



2.2 Findings from the systematic review

While the extant literature on VVF has widespread focus, the evaluation of these studies shows that they utilised three major methodological approaches: qualitative, quantitative, and mixed-method approach. A critical appraisal of all the identified studies was carried out using frameworks from Caldwell, Henshaw & Taylor (2011) for qualitative and quantitative studies and Long (2005) for mixed-method studies. The titles of all the studies reflected their objectives and the content of the articles. Similarly, participants used in various studies were duly identified, and critical information was provided on the locations used for the studies. Although such information offered the required contextual basis for the research findings, most of the authors using the qualitative method applied little reflexivity. In particular, the authors did not discuss their subjective roles in the research process (Darawsheh & Stanley, 2014) as in the current study.

Similarly, most studies administered their data collection tools in participants' local languages and later translated into English for analysis. However, most of these studies did not discuss this as a limitation. Similarly, the methodological premise of these studies varied, and most of them failed to justify their methodological choice. While various studies utilised different data collection techniques, three were prominent: questionnaires, interviews, and surveys. However, most of them did not justify the chosen data collection techniques. Even among studies that adopted a similar methodological approach, the methods of data analysis vary. Moreover, most studies offered no rationale for their choice of data analysis methods. Despite differences in methodologies and methods, the critical appraisal of these studies identified five major themes. These were vesicovaginal fistula and its consequences, classifying of VVF, causes or drivers of vulnerability to fistula development, experiences of VVF women/referrals to health facilities, and life of women after VVF repair as shown on the table (3) below.

Table 3 Synopsis of the themes/categories of papers analysed.

Themes / Sources	Vesicovaginal fistula & its consequences.	Classifying VVF	Causes or Drivers of Vulnerability to Fistula	Experience of VVF women and Referrals to Health	Life of women after VVF repair
Ali (2019)					x
Alio et al. (2011)				x	x
Baba (2017)			x	x	
Bangser (2007)				x	x
Bashah et al. (2019)	x			x	x
Blum (2012)	x				x
Browning (2008)					x
Daru et al. (2011)	x		x		
Dolan (2008)	x				x
Degge (2018)	x			x	x
Donnelly et al. (2015)				x	x
Ekine (2015)	x			x	
El-Gazzaz et al. (2010)				x	x
Emma-Echiegu (2014).	x			x	
Essendi (2011)	x			x	
Farid et al. (2013)	x				

Gebresilase (2014)	x				X
Ibrahim (2000)	x			x	
Johnson (2007)			x		
Kabir et al. (2003)	x			x	
Khisa (2011)			x		x
Landry et al. (2013)				x	x
Mashi (2016)			x		
Melah et al. (2003)			x	x	
Meyer et al. (2007)			x		
Mohamed et al. (2009)			x		
Molzan (2007)			x	x	
Mselle et al. (2012)	x				x
Muleta et al. (2007)					x
Muleta et al. (2008).	x				x
Mwini-Nyaledzigbor (2013)	x		x		x
Nathan et al. (2009)	x			x	
Nielsen et al. (2009)					x
Nisar (2010).			x		
Pope (2011)					x
Roka et al. (2013)			x		x
Siddle et al. (2013).	x			x	x
Tebeu et al. (2010)	x				x
Umoiyoho et al. (2011)					x
Velez (2007).	x			x	

Waaldijk (2004)					x
Wall et al. (2004)			x		
Yeakey et al. (2011)	x			x	
Total	20	4	13	19	24

To arrive at the narrative summary of the literature review findings, the initial sub-themes identified from the 43 papers included in the review were combined to comprise five majors themes based on their focus and findings. table 3 presents the mapping of the papers included in the review that comprised these themes.

As table 3 illustrates, a similar volume of the literature across the themes, except for 'classifying VVF'. This is perhaps not surprising as this is a very specific, though relevant aspect of the review.

Thus, the review identified higher concentration of the current literature on different experiences and consequences of living with VVF with less on exploring factors influencing the occurrence of VVF. Moreover, the focus of the current literature is majorly on the implications of VVF rather than exploring its root cause, to enable more effective preventive interventions, which is the gap in the literature the current study sought to address.

2.2.1 Vesicovaginal Fistula and its Consequences

VVF remains one of the drivers of maternal mortality and morbidity globally (Bello, Morhason-Bello & Ojengbede, 2020). It is characterised by the unconscious release of urine through the birth canal. VVF is an anomalous passageway or conduit resulting from a disorder or injury that causes a hollow organ to the body surface or another hollow organ (Thaddeus et al., 1994).

WHO set up a four-year initiative, the Maternal Morbidity Working Group (MMWG). The purpose of MMWG was to develop a framework for identifying and defining maternal morbidity as any health condition aggravated by or linked to pregnancy and childbirth, which have a deleterious effect on the wellbeing of women (Chou et al., 2016; Filippi et al 2018). Vesicovaginal Fistula (VVF) can be referred to as one of the drivers of maternal morbidities resulting from obstetric complication (Bello, Morhason-Bello & Ojengbede, 2020), it is characterised by health problems women face during childbirth and postpartum period. While Maternal morbidity

was defined as ‘an overarching term that refers to any physical or mental illness or disability directly related to pregnancy and/or childbirth’ (Koblinsky et al 2012 P.125). He identified Obstetric Fistula or vesicovaginal fistula as one of the Chronic morbidities or conditions caused by the birthing process. Even though there are significant maternal morbidities or complications, Hardee et al. (2012) identified obstetric fistula as the maternal morbidity that impacts most women.

Identifying the deleterious impact of VVF Wall et al., 2001; Anastasi et al., 2017 stated that its occurrence led to stillbirth, expose women to injuries, a foul smell, social exclusion, and psychological disorders which are some of the features of maternal morbidities. Likewise, AbouZahr, (2003) opined that at least 30% of women’s death is linked to disabilities, infections, or injuries that are usually unspoken of, untreated, and usually embarrassing, painful, and debilitating including VVF. Kabir, et al 2003 also itemised vulval dermatitis, foot drop, amenorrhoea, recurrent urinary tract infections and dysmenorrhoea as medical problems associated with VVF, moreover, CDC (2018) identified association of psychological trauma, Depression, and anxiety with the occurrence of VVF which are linked to bathing process, and all have a deleterious effect on the wellbeing of women. Corroborating the above statement by CDC (2018) a body of literature, such as Filippi et al. (2006) and Koblinsky et al. (2012), posited that the long-term consequences of maternal morbidities are social, psychological, economic, and physical.

Maternal morbidity can be considered as a spectrum ranging, at its highest severity, from "maternal ness misses" to non-life-threatening morbidity (Degge, 2018). Furthermore, Ashford (2002) posited that disabilities associated with childbirth impact women's productivity and health at the peak of their lives. Three-dimensional, and overlapping of women's lives are affected. One, the disruption of bodily integrity via reduced vigour and strength and continued ill-health. Two, the disruption of the household economy via productivity loss and debts. Three, the disruption of stability and social identity of women, which could entail the social-status loss in the community and household (Wall, 2006; Storeng et al., 2010) which are all associated with the occurrence of VVF.

Nevertheless, morbidities have diverse aetiologies, with some of them linked to the healthcare quality provided during pregnancy and childbirth while others are linked with a wider range of personal, social, and other factors beyond the health system (Chou et al., 2016). Although there is evidence of a strong link between maternal

disabilities and non-existent or inadequate medical care during and immediately after childbirth (Ashford, 2002) as Lewis (2008) argued that women who experience complications during pregnancy or childbirth do not receive adequate, timely medical attention to avert serious injury or illness. The negative implication of poor socioeconomic status cannot be overemphasised Filippi et al. (2006) and Johnson (2016) posited those out-of-pocket expenses - such as transport fares - or user fees at health facilities hinders medical access. Delays encountered between arrival at a health facility and access to required care could lead to the death of child or maternal mortality or morbidity development (Ashford 2002). Although the economic and biological theories of obstructed fistula were identified, in the literature the socio-cultural etiological factor – is multifaced, complex, and less fully represented in the literature Thus, this study focused on exploring the socioeconomics and cultural factors influencing the occurrence of VVF.

The fistula was a common global phenomenon; it was eradicated in the western world towards the end of the 19th century (Wall et al., 2001). This was made possible because problems associated with labour can be anticipated during antenatal care, and difficult labour was avoided through Caesarean Section (Wall et al., 2001). However, women in developing countries continued to face the scourge of fistula, with many developing fistulae due to inaccessibility or lack of antenatal care for vulnerable women. The occurrence of VVF can lead to stillbirth, expose women to injuries, a foul smell, social exclusion, and psychological disorders (Wall et al., 2001; Anastasi et al., 2017). Global and national efforts to end fistula through policies and therapeutic approaches, such as VVF repairs, the Save Mother Initiative, and Millennium Development Goals (MDGs) 5, are in place (Amodu et al., 2018).

Despite the curative and scientific improvement and policies focusing on the cure for VVF, its prevalence is on the rise, mainly in developing countries. For instance, MGDs-5 aimed at reducing maternal mortality in 2015 by 75% and substantial resources invested by the global community, and Nigeria responded with strategies to achieve the goal (Amodu et al., 2018; Bailey, 2009). These strategies include the deployment of midwives to the rural primary health centre to provide round-the-clock maternity care (Guerrier et al., 2013). While the equitable distribution may be questionable, however, the outcomes fell short of MDGs' expectations (UNICEF, 2014).

The inclusion of maternal mortality in the Sustainable Development goals still signifies the continuous effort for its reduction. Similarly, the World Health Organization (WHO) recognised the accessibility of emergency obstetric care and skilled birth attendants as essential in reducing maternal mortality and morbidity by pregnancy complications, such as obstructed labour (WHO, 2009).

The outcome of obstructed labour in the absence of a caesarean section (CS) may lead to VVF and ultimately result in the death of the mother and baby (Betran et al., 2007; Bailey, 2009; WHO, 2009). However, Nigeria's CS rate is low, with 1 to 2 per cent compared to the expected minimum range of 5-15%, raising the risk of VVF. Moreover, based on the economic capacity of women in Nigeria, statistics show that the CS rate dropped below 1% among 80% of people in Nigeria (Bailey, 2009; Betran et al., 2007; WHO, 20092). Data reveals that more than half a million women globally die annually during childbirth and pregnancy (WHO, 2006). Similarly, an estimated 300 million women in developing countries experience sicknesses from problems arising from childbirth and pregnancy, including VVF, while an estimated one million women in Nigeria seek VVF treatment annually (Daru, 2011). Evidence abounds that fistula affects many women in developing countries, with approximately one million women developing it in Asia and Sub-Sahara African (UNPFA, 2004). However, Wall (2012) noted that the actual fistula prevalence is unknown, while this identified the research gap, requiring intervention, it was estimated that over 2 million women are receiving treatment in sub-Saharan Africa. Similarly, the likelihood of a woman dying in developing countries because the complications arising from childbirth and pregnancy was high (WHO, 2004). However, maternal morbidity is only the tip of the iceberg. About (2003) opined that at least 30% of women's death is linked to disabilities, infections, or injuries that are usually unspoken of, untreated, and usually embarrassing, painful, and debilitating, VVF is an example of such a condition. Therefore, it is imperative to devise a means of putting an end to its prevalence. Achieving this goal may necessitate examining issues that limit women's access to healthy living. While access to maternal health services is vital it varies across countries, primary emergency obstetric care coverage differs in African countries. In particular, Pearson and Shoo (2005) found 1.1/500,000 and 4.3/500,000 for Kenya and Rwanda, respectively, compared to the UN-recommended level of 4/500,000. Despite these figures, Pearson and Shoo (2005) noted a substantial gap in the coverage of essential emergency obstetric care services, as most

health centres are unable to perform assisted vagina delivery and retained product removal.

While Adler et al. (2013) established that obstructed labour is the primary cause of VVF, it is essential to understand the conditions underpinning obstructed labour. Fistula is a condition that can be caused by actions of several political, social, cultural, and physical factors as long as it affects the status of women (WHO, 2005). These coactions, which include socioeconomic and cultural practices of women, tend to determine the status, health, fertility, nutrition, and women's vulnerability to VVF development. Living with VVF is multi-faceted negative experiences that affected women, their families, and the community. However, Bangser (2007) is a notable exception to studies emphasising the adverse treatment of women.

2.2.2 Classifying VVF

There appears to be no consensus about an agreed universal procedure by which medical practitioners classify or describe fistula. While this is linked to the level and form of the injury on its victims, most authors classify fistulas based on the anatomical injury structure, fistula size or their preferred classification (Beardmore-Gray et al., 2017). For instance, Sims (1852) cited in Arrowsmith (2010) utilised four classifications based on the effect on the vagina. The first is called the urethra-vaginal fistula, which occurs when the anomaly is restricted to the urethra. The second is where the fistula is located at the root of the urethra or the bladder neck, destroying the trigone (an even three-sided region of the inner urinary bladder). The third is where the fistula involves the bladder's body and the floor. The fourth refers to utero-vesical fistulas, which is where the fistula's opening is connected to the cervical canal or uterine cavity and other authors have carried out the classification of fistulas in various ways Streit–Ciećkiewicz et al., (2021). Though, the classification of fistula is important for its prevention and treatment, Petros, Williams, and Browning, (2015), the implementation should base on harmonisation of different available classifications Streit–Ciećkiewicz et al., (2021) and wide knowledge of VVF experts. While VVF classification is important the comprehensive understanding of the drivers of its vulnerability is essential as discussed below.

2.2.3 Causes or Drivers of Vulnerability to Fistula Development

In addition to issues around classification, it is equally challenging to link VVF globally to a particular cause. However, most studies view the causes of VVF from physical and socio-cultural perspectives. While the physical causes are considered the direct cause, socio-cultural causes are underlying or contributory factors to VVF.

2.2.3.1 Physical Causes or Vulnerability to VVF

Some surgical procedures can create a fistula between the vagina and the rectum. Additionally, injuries can occur in arteries, veins, stomach, and the skin. Crohn's disease, a chronic disorder causing inflammation of the digestive or gastrointestinal tract, is also a potential cause of a fistula (Torkzad and Karlbom, 2010). Such inflammation occurs in any part of the gastrointestinal tract, from the mouth to the anus, and mainly affects the small intestine and colon (McNamara et al., 2004). Crohn's disease causes bowel inflammation and leads to a weak wall spot, which could cause fistula between the vagina and rectum or within the intestines themselves, and this will require surgical repair. Schwartz et al. (2001) posited that an inflammatory disease could cause a fistula in parts of the body. Crohn's disease is often linked with ulcerative colitis due to their similar symptoms. The two diseases are part of a large group of inflammatory disease illnesses, and they indicate an abnormal response by the bodily immune system (Sharif et al., 2002). While the immune system protects the body against infection, in this case, it mistakes microbes, such as bacteria, for invading/foreign substances. It attacks and pushes the body to send white blood cells into the intestine's lining, where chronic inflammation is produced and leads to ulcerations and bowel injury (Thomas and Baumgart, 2012).

Malignant diseases, such as cervical cancer, in low socioeconomic and poor access to primary medical care, such as cervical cancer screening, are increasingly becoming common (Longombe et al., 2008). Evidence abounds that woman have limited or no access to cervical screening, and the growth of cervical cancer may spread into the bladder and vagina, causing a fistula (Biewenga et al.,

2010). While tumours can result in tissue breakdown between organs and other structures, Narayanan et al. (2009) opined that radiation treatment could weaken the tissue between these two areas and causing the development of a fistula later. Fistula caused by radiation treatment is typically diagnosed after two years following treatment (Chrouser et al., 2005).

Moreover, Bello (1995) considered a pregnancy-related accidental surgical injury, obstructed labour and crude induced abortion as physical factors driving the VVF incidence. The physical causes relate to situations, which directly expose females to VVF. Prolonged and difficult labour is a predominant cause of VVF. WHO (2006) reported that obstructed labour could make the unrelenting pressure of the baby's head against the pelvis reduce the soft tissues' blood flow surrounding the bladder, rectum and vagina. This situation often injures the pelvic tissue, creating a fistula or hole between the urethra and the bladder (Moir ,1967), similarly, the other form of fistula occurs due to improper utilisation of obstetrical instruments. While this is an accidental injury, it is a bladder-related injury during obstetric operations performed within the formal healthcare system. Zacharin (2012) premised that the attendant destructive operative procedures during child delivery might cause trauma and aggravate fistulae. In particular, imperfect instruments, such as decapitation hook or perforator, may slip and cause damages to the bladder and vaginal wall. Sometimes, incorrect utilisation of obstetric substances into the urethra may lead to the abnormal extension of the bladder, causing eruption and ureteric injury. On the other hand, many cases of VVF in developing countries emanate from the lack or inadequate maternity care in those countries.

In contrast, women in developed countries with adequate access to maternity care are not affected by VVF incidence from obstructed labour (Dolea and AbouZahr, 2003). With adequate facilities and prenatal care in the developed countries, an endangered mother or baby can be saved via caesarean section. WHO (2006) highlighted those physical causes of fistula arise from a lack of access to primary maternity care and the absence of fistula repairs-related knowledge. Evidence abounds that most pregnant women in developing countries lack access to such facilities (O'Donnell, 2007; Strasser et al., 2016). Similarly, Hilton (2003) and Emma-Echiegu et al. (2014) considered complications of criminal abortion as another direct factor driving the VVF incidence. Most criminal abortions are carried out by untrained individuals who claim to know such areas. Some females have

seen their birth canal unknowingly damaged with wrong instruments, which may lead to VVF if not repaired adequately or on time.

Another physical vulnerability to VVF is through violent rape, mainly occurring during wartime (Wood, 2010). For instance, Cohen (2013) documented various cases of rape during the war in Sierra Leone when soldiers inserted assault weapons into women's vaginas and fired after raping them. Consequently, many women were treated for VVF resulting from serial rape after the civil war. Similarly, tissue destruction diseases, such as lymphogranuloma venereal, can be virulent, as it eats into genital tissues and causes fistulas, which are typically irreparable (Haber et al., 2017). While some fistula cases emanated from direct tearing caused by rape or other forms of vagina trauma, Mumbi (2013) established that 91 fistula cases were caused by sexual abuse or rape within marriage.

However, it may be challenging to estimate fistula prevalence as many victims do not often seek treatment for fear of stigmatisation or lack of healthcare access. The severity and extent of trauma to rape survivors during armed conflicts vary. For instance, vaginal destruction is considered a war crime in the Democratic Republic of Congo (Brown, 2011). Such internal conflict is on the rise and has led to increased gang rapes, broken bottles inserted into girls and women to violate them. While this often resulted in vaginal fistulae, Brown (2011) estimated that 91% of the women of rape survivors in the South Kivu region of DRC suffered from at least one rape-related illness.

Similarly, Kagwanja (2009) noted that women living in low-income areas in Kenya suffered 2007/2008 post-election violence through violent gang rape, resulting in the obstructed fistula and other damages. However, half of the rape victims were below 18, while the Burmese government used rape as a weapon of war while suppressing a local rebellion in the Shah state since the 1990s (WHO, 2020). Nevertheless, the rise in violence in Northern Nigeria specifically, Boko-haram (education is forbidden), leading to kidnapping of Chibok girls and other violence all around the world is a concern as it may increase the global prevalence of VVF (Maiangwa, and Agbiboa, (2014).

2.2.3.2 Demographic-related Vulnerability

Obstetric fistula is driven by several demographic characteristics, notably socioeconomic factor such as poverty, lack of education, marital violence, and rural residence Johnson (2007). The evidence from this study and available information from the medical literature showed that obstetric fistula is linked to biological characteristics of women, cultural factors, and the social context in the developing world (Nisar et al., 2010). Though WHO (2002) noted that improved access to obstetric care is a vital step towards preventing fistula occurrence as the report found inadequate healthcare facilities for primary emergency obstetric care. For instance, one obstetric facility is for 500,000 inhabitants in an extreme situation. A vast body of literature explored the drivers of the occurrence of VVF, Behzadifar et al. (2016) opined that socioeconomic and cultural factor are central links to an individual's state of health. It, however, requires effective precautionary measure of public health to avoid health complications before, during or after delivery such complications include Vesicovaginal Fistula (VVF). Particularly, in Nigeria, Oyewale and Mavundla (2015), estimated maternal mortality in Nigeria to be more than 544 deaths per 100 000 deliveries. This study linked the dire state of maternal mortality in Nigeria with inequality in women's socioeconomic status. Specifically, Oyewale and Mavundla (2015) showed that most women in poor socioeconomic conditions are less likely to receive proper health care during pregnancy. Additionally, Ahamed (2013) predicted rising ill-health, especially among poor women of reproductive age in Northern Nigeria. Furthermore, women are more at risk of diseases and death, which may be attributed to their inability to access necessities of life, such as good health care, education, and employment.

While the above underpins economic status, the increasing ill-health among women is also driven by various cultural belief and practices. Nevertheless, since the vulnerability is the state of susceptibility to the emotional or physical health or injury (Kottow, 2005), various factors can predispose a woman to fistula's susceptibility. Such vulnerability could be driven by demographic factors including socioeconomic status, gender-based, cultural practices, or belief system, biophysical, and trauma or violence-driven vulnerability which are discussed extensively below.

2.2.3.3 Socioeconomic Factors and the Occurrence of Vesicovaginal Fistula

Socioeconomic factors have a powerful implication on the state of health of individuals, especially women (Behzadifar et al., 2016). Women are vulnerable as a lack of requirement for healthy growth and body development from childhood is likely to create a severe consequence for their reproductive capability in their adulthood (Royston et al., 1989). For instance, a household with a low level of education is likely to have a low paid job, a high number of children, resulting in the inability to provide food with nutritional value necessary for body vitality (Mashi and Yusof, 2016). According to Filippi (2018), women from underprivileged socioeconomic circumstances do not access the required health care services as more affluent women. The socioeconomically disadvantaged women may have a more adverse prenatal period and poor health outcomes than richer women. Similarly, the socioeconomic status of women is another determinant of fistula. A strand of studies showed that obstetric fistula commonly occurs among low economic-status women compared to their better-off counterparty (Johnson, 2007; Meyer et al., 2007). Women living in rural areas are more at risk of developing fistula because they are marginalised regarding health infrastructures, and they often reside in places far from clinics to receive timely care (Cook et al., 2004). While literature identified poor level of education poor income and unemployment as common socioeconomic factors among VVF patients. The possible link between them and the occurrence of VVF were further discussed as follow:

2.2.3.4 The role of education in VVF occurrence

Education, as a facilitator of learning, worth, skills, credence, and habit, is an important indicator of health outcomes. It is a socioeconomic factor capable of defining the healthcare assistance someone seek for or accessed because it relates to other factors such as employment, income, and extensive range of outcomes such as, better health (Harrison, 1983). Lack of education may hinder people from going to the hospital, especially when they are uncomfortable around healthcare professionals from different ethnic or cultural backgrounds, or those

who speak different languages or uphold different customs (Murphy et al., 1981). Similarly, another strand of literature showed that maternal education, influenced the risk of fistula (Ibrahim et al., 2000). Johnson (2007) and Muleta et al. (2007) found that maternal education is a factor that limits the risk of fistula. This association is influenced by the positive effect of education on an individual's knowledge and the ability to process information relating to healthy pregnancy behaviours. Nevertheless, women who did not attend antenatal clinics may be at risk of pregnancy complications, which may lead to VVF occurrence. For instance, Wall et al. (2004) identified many uneducated among VVF patients and Molzan et al. (2007) asserted that most of the women in the study were unable to read or write. Similarly, Mabeya (2004) found that 59% had no formal education. Edstrom (1992) opined that education gives women a more significant opportunity for accessing healthcare, employment alternatives, thereby promoting the status of women. Hence it identified education a socioeconomic factor as means to accessing available healthcare.

Moreover, education may reduce the high risk and level of unwanted pregnancy by increasing access to contraception and fertility reduction. Furthermore, the longer girls stay in school, the higher the age at marriage and the age of the first birth, leading to a more mature pelvis that can prevent VVF occurrence during childbirth (Mohamed et al., 2009). However, despite the importance of education as a determinant of health, most VVF patients in Nigeria, especially the northern part of Nigeria, had no formal education (Ijaiya et al., 2010; Landry et al., 2017). The distribution of uneducated females in Nigeria is given in Figure 2.

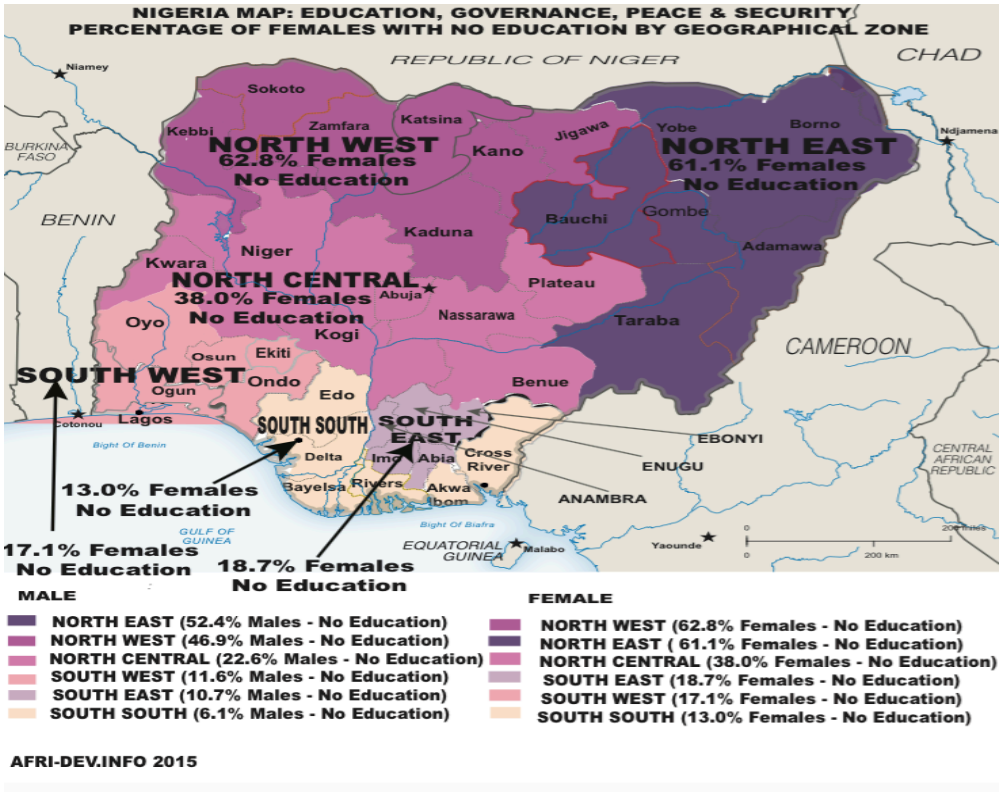


Figure 2: Distribution of uneducated females in Nigeria (Afri-dev.info. 2019).

However, individual income levels are essential in obtaining education and healthy living as discussed next.

2.2.3.5 Income and poverty on the occurrence of VVF

Financial independence is crucial, as it brings about happiness, freedom, and confidence to an individual (Goffee and Scase, 2015; Sanchez, 2004). The income level of an individual is essential to their health status. It is essentially vital as the lower-income level is conversely linked with the quality of life and food consumed by an individual (Demakakos et al., 2008; Duncan, 2002). It is in line with Jonson & Storey (2004) adage that says, cut the coat according to the resources. For instance, poor pay may lead to difficulty buying quality food items, which may lead to low consumption of healthy foods, such as fruits and vegetables, that may promote good health outcome. Benzeval and Judge (2001) argued that continuous paucity of nutritious foods is harmful to health.

It follows then, that poverty plays a crucial part in exposing women to VVF. For instance, under-nutrition caused by low income may cause poor tissue

development and serve as a co-factor in the occurrence of vesicovaginal fistula during childbirth. According to Ashworth (2008) and Qua 2016), malnutrition is the primary cause of immunodeficiency worldwide. The outcome of lack of food with good nutrients may be weak growth, impaired intellect, and increased susceptibility to morbidity and mortality (Ashworth, 2008; Qua 2016). Poverty is often associated with malnourishment, poor living condition, illiteracy, and access to good obstetric care. Zacharin (2012) equally argued that two-third of fistulas caused by difficult labour are linked to the contracted pelvis, which emanates from poor nutrition, with frequent adolescent and childhood infections. women in developing countries are chronically poorly nourished and anaemic (Adler et al., 2007; Walker and Gunasekera, 2011). With poverty, it is difficult for people staying in rural areas to afford good nutrition. WHO (2006) also found that women with fistulas typically come from low-income family settings with a subsistence farming background. Similarly, this study established that 124 cases per 1000 deliveries of VVF cases in sub-Sahara Africa are linked to rural areas, with virtually no cases in urban areas.

The cost of emergency Caesarean Section (CS) was prohibitive for some families as the estimated cost was put at almost USD135 compared to an average family income of USD115 in Tanzania (WHO, 2002). The United Nations (UN) (2019a) estimated that 736 million people globally lived below the international poverty line of USD 1.90 in 2015, while approximately 8% of global workers and their families lived on less than this amount per day in 2018. Apart from this number, a fifth of the poorest women in 56 developing countries will still have six births compared to 3.2 births in the developed world (UN, 2019b). Additionally, developing countries faced various reproductive issues regarding pregnancy and childbirth. It is therefore, suggested that there is a nexus between poverty and seeking treatment, as the former limits the likelihood of accessing effective preventive and treatment services. It is clear then, that the level of poverty limits the choice and utilization of available health service and dehumanizes individual (Ganle, 2015).

On the other hand, poverty levels have made it difficult for some Nigerian parents to send their children to school, while high bride prices, especially for virgins, galvanise some parents to withdraw their girl child from school to give out in marriage (Balogun, 1995). However, such girls are typically sent back to give birth at their parents' house when pregnant. In the case of complications, such parents might be unable to afford the exorbitant cost of obstetric care or intervention.

Similarly, such girls and parents might find it difficult to afford transportation cost to transport the VVF victims to the hospital and medical services for repairs when VVF arises. However, levels of income mostly depend on employment.

2.2.3.6 Employment

Excellent and quality employment is a way of increasing economic and equal opportunities and the social co-existence of the individual in society. The wellbeing of an individual or a country hinge on its economic, employment and market policies, as well as its ability to guarantee a means of income (Bilevičienė et al., 2016). Economic indicators describe the economic situation, and these pointers include unemployment and employment level. Therefore, it is clear that there is a relationship between employment, class of employment, and people's quality of life. While Mabeya (2004) found that 72% had no formal occupation, Ngwakwe (2002) stated that female discrimination in Nigeria extends to all sphere of employment, career, or business practices. However, this is violating women's economic, social, and cultural (ESC) rights and denying them the opportunity to access proper health care. Lack of employment may lead to lack/low-income status. This view was corroborated by Ijaya (2010), who revealed that many VVF patients are under-employed or unemployed in Northern Nigeria. On the other hand, the Gender-based Vulnerability and cultural context plays significant roles in the risk of fistula as discussed in the next sub-section.

2.2.3.7 Gender-based Vulnerability

Kyomuhendo (2003) posited that gender inequalities persist in areas where there is prevalence of obstetric fistula and the value of a woman in the society is premised on her ability to fulfil the role of a mother and wife. The marriage of some girls in their teens is an act supported by some religions and cultures. Similarly, gender-based factors occur due to the marginalisation of women in the community, for instance, evidence abounds that woman are often unable to make

decisions regarding access to obstetric care (Essendi et al., 2011). Kyomuhendo (2003) also noted that men are in control of the financial resources, and women often need to get their husbands' permission or that of their mothers-in-law before seeking care, even when they are in labour. Such seeking of permission creates an unnecessary delay, especially when obstructed labour sets in. Additionally, gender-based education inequality exists in Asia and sub-Saharan Africa (Muleta, 2004). This offers women limited employment opportunities; hence, they remain financially dependent on their husbands (Kyomuhendo, 2003). Such gender-power imbalance may impact on women's ability to influence their sexual and reproductive health, in particular, women are sometimes forced to undergo harmful cultural practices, such as female genital mutilation (FGM). Although efforts to prevent fistula focus on offering women adequate obstetric care during delivery, gear efforts are essential to prevent obstetric fistula (Roush, 2009). Specifically, efforts should be geared towards factors that hinder access to adequate care, such as transport to the hospital, no or low level of education, and financing the payment of obstetric care services. However, many women still attempt to use traditional birth attendants for delivery in the village even when they have access to adequate care. Kyomuhendo (2003) and Roush (2009) opined that the use of such traditional birth attendants often has a disastrous impact, which indicates a missing link in the healthcare-seeking process. On the other hand, Roush et al. (2012) asserted that women's low status is a significant driver in the occurrence of obstetric fistula and advocated for women empowerment. However, the current study will contribute to the available literature by creating an avenue to reducing the roles of a male counterpart, the in-laws, and other drivers of VVF occurrence through obtaining and making available for public consumption, the information on its resolution from the stakeholders. This study may also serve as eye opener for women to improve their level of education and to explore employment opportunities that will give them access to financial control.

2.2.3.8 Cultural Factors and the Occurrence of Vesicovaginal Fistula

The socio-cultural circumstances confronting women serve as leading factors to their poor maternity conditions, which propel VVF incidence. These circumstances

mainly drive the prevalence of VVF as they propel the underlying conditions and behaviours such as gender inequality that propagate VVF. Cultural factors encompass the beliefs, customs, and practices unique to some group of people, which influence the divergence in women's health outcomes. Although the meaning of beliefs, custom and practices are interwoven and used interchangeably, most studies use the factors based on their interpretation of the literature reviewed. Cultural practices, beliefs, and customs within populations, especially in developing nations, presents obstacles to many policies targeting many women's diverse health care needs. Graham et al. (2016) posited that cultural diversity underwrites discrepancies in the extent of maternal mortality.

Moreover, cultural diversity and divergence are the contributes to deprived maternal health in the present generation as custom, beliefs/religion, cultural practices and other factors have steadily widened the gender gap (Okunna, 2002; Olayinka, 2013). Society, especially the male subgroup, sees women and their ambitions as inferior, resulting in trivialization, labelling and marginalization of women in Nigeria (Okunna, 2002; Olayinka, 2013).

2.2.3.9 The impact of belief systems

While there are different cultures, they have different belief systems harmful to obstetric health (Igberase, 2012). Some of these harmful belief systems may facilitate fistula development. For instance, a woman who develops prolonged labour is often accused of infidelity in some cultures like Malawi, and the culture expects her to shout the names of those she had extra-marital with before the baby could be "released" through the birth canal (World Health Organisation, 2002). On the other hand, the husband is equally expected to reveal his secret sexual partners. Similarly, this harmful belief system could discourage delivery at healthcare facilities for fear of being accused of seeking institutional delivery assistance due to anticipated labour based on her or their husband's past infidelity. Such behaviour results in labelling and guilty verdict on such women.

Similarly, women in certain parts of Nigeria prefer to give birth in churches despite receiving care from unskilled people. They choose the church because they

believe it would protect them from spiritual attacks from witchcraft or evil forces sent by jealous neighbours (WHO, 2002). Furthermore, most rural women in Uganda give birth at home as they believe a real woman pushes out the baby independently. Additionally, women in the remote district on the Kenya coast have no say in deciding where and when to seek assistance during child delivery (WHO, 2002). Specifically, the male head of the household has the prerogative to decide on this, regardless of the extent of labour (Omare, 2009). Despite such beliefs being harmful, they are vital determinants of health-seeking behaviour for maternal services. Beliefs may determine people's responses to the uptake of a health care option, such as prompt health-seeking behaviour towards the occurrence, prevention, and cure of diseases. Padela and Curlin (2013) premised that it is likely for Muslim devotees in America to reject contraceptives, as they believe that pregnancy is a blessing from God. It is also common for an average Muslim in America to believe that illness is God's will. It may, therefore, make them either delay or reject the medical option in favour of their religion, traditional treatment, and obligations (Padela and Curlin, 2013). Similarly, common causes of fistula in developing countries are obstetric (Hilton, 2001; Ruth, 2007).

Nevertheless, malnutrition as noted earlier contributes significantly to the underdevelopment of a woman's body, resulting in physical problems during childbirth (Royston et al., 1989). However, some belief systems increase females' malnutrition in some cultures, as they are not seen to be as important as male children (Ekeus et al., 2006). The males are often assumed to need more food, resulting in feeding the female less and lacking some of the nutrients required for their development during puberty (Ekeus et al., 2006) and many women experiencing VVF do so as a result of abnormal pelvis-bone growth due to being malnourished (Balogun, 1995). Similarly, women are prevented from eating some foods during pregnancy, even though these foods could have enhanced their body development and put them in good shape for child delivery. This is based on the belief that a larger food quantity will enhance the baby's weight and complicate the mother's delivery process. Thus, a smaller food ratio is advocated for pregnant women. The females in such situations may not feed well generally in their lifetime, thereby makes them malnourished and faces the problem during childbirth, usually prolonged labour, which is a contributory factor to VVF occurrence.

Nevertheless, some Hausas in the Niger Republic and Northern Nigeria believes there must be an optimal body balance between sour and sweet and salty and bitter substances (Edelstein, 2010). Obstructed labour is linked to an imbalance in the woman's body, resulting from too much salt known as gishiri that produces a membrane over the vagina, inhibiting the baby from coming out (Mumbi, 2013). In treating this condition, a sharp instrument, such as a knife or razor, is used to cut the vagina, causing injuries to the bladder, urethra or rectum, which results in an obstructed fistula. This procedure may equally be applied to other perceived problems afflicting women, and this has similar deleterious outcomes. On the other hand, many communities follow some ritual cleansing during childbirth, and this is believed to clean and restore the vagina for intercourse (Mumbi, 2013). In the same vein, some communities adopt this by packing the vaginal with salts, which produce a severe chemical reaction, such as stricture formation and shrinking. On the other hand, the caustic materials destroyed vaginal tissues and developed a fistula. Mumbi (2013) indicated that such cultural practices are intertwined with low educational levels and poverty.

2.2.3.10 Cultural Practices/customs

Customs are a feature of culture and can be described as the usual way of doing things by an individual or group of people (Bederman., 2010). It may also be reflected in the conduct of marriages. Traditional practices play a huge role in the VVF's aetiology in Nigeri, early marriage being one of them. For instance, a strand of studies, such as Meyer et al. (2007) and Muleta et al. (2007), argued that early marriage and childbearing are predisposing factors of obstetric fistula. While early marriage is a cultural norm in many African societies, parents seek early marriage for their daughters to protect them against premarital sexual activity and unwanted pregnancy (Obed, 2010).

When early marriage was popular and generally accepted, the nuclearisation of families played a significant role in ensuring that the husband does not engage in sexual activity with the girl until maturity (Amodu et al., 2018; Duze, 2008). However, things have changed with the husband having the final say in the family affairs and can force himself on the girl without any consequence for the man. This could aggravate the occurrence of VVF. Early involvement in sexual activity may

cause coital injury to the young girl penetrated by an adult man (Inuwa et al., 2013). While such injuries are often easier to repair than childbirth-related injuries, some traditional communities marry girls off as early as age ten, and they get pregnant immediately after menarche sets in. WHO (2002) report showed that over 25% of fistula patients in Ethiopia and Nigeria got pregnant before attaining the age of 15, and over 50% of them got pregnant before attaining the age of 18. This issue is compounded by extreme poverty and malnutrition among these people, leading to stunting growth. With early marriage and childbearing strongly linked in developing countries, young girls become pregnant immediately after marriage and their pelvis is not fully developed at this age, which may increase the risk of fistula (Muleta et al., 2007). A young woman between 10 to 16 years who are given out in marriage typically has a narrow and small pelvis. However, early involvement in sexual activities due to this early marriage could also lead to early pregnancy even when the pelvis' growth is incomplete and lead to cephalopelvic disproportion, which is a condition whereby the baby's body or head is too big to pass through the mother's pelvis (Mondal et al., 2013). A narrow birth canal impedes the passage of the baby, an obstructed and prolonged labour occurs and serves as a threat to the life of the child and the mother. The associated trauma faced by the mother may damage her birth canal, thereby resulting in reproductive tract infections. Consequently, this develops a fistula or opening between the urethra and vagina and allows uncontrollable passage of urine through the vagina (Arrowsmith et al., 2010). While mothers of different ages can have an obstetric fistula, the undeveloped pelvis may be an essential biological factor influencing fistula (Amodu et al., 2018). Furthermore, the global burden of child marriage on public health caused three infants' death out of 10 under-aged marriages with the ratio of maternal death to fertility rate ranging from 70:0.3 respectively and resulted in the reduction of skilled birth attendance by ten per cent (Marphatia et al., 2017).

On the other hand, the extended family can play a vital role in increasing VVF. In some situations, when most of the girls want to give birth, mothers-in-law tell them that their husband was born at home (Duze, 2008). While such parents considered hospital birth a waste of money, those girls rarely have a say in issues relating to their childbearing (Duze, 2008). Some of these extended families propagate the `Kunya' culture, which entails vaginal birth rather than surgical procedures, even during complications (Amodu et al., 2018).

The customary birth practices, predominantly female genital mutilation (FGM), is another prominent socio-cultural factor propelling the problem of VVF in Nigeria. According to GSN (2006), women involved in Female Genital Mutilation (FGM) are more likely to have an adverse obstetric outcome than those without FGM. In Northern Nigeria, the Gishiri cut is very prominent and involves the incision of vaginal parts with a large, curved knife or razor blade. Traditional birth attendants or healers often carry out the cuts to treat or prevent various conditions, such as prolonged obstructed labour, backaches, infertility goitre, coital and dysuria difficulties (Marcus, 2019). In some cultures, it is unacceptable for a girl to see the first menstrual period in her father's house in Northern Nigeria. Therefore, she must be married before the occurrence. If her vagina is undeveloped, it may extend through Gishiri cut (UNFPA, 2003). However, GSN (2006) stated that woman with FGM are potentially more likely to have adverse obstetric outcomes than those without FGM. Moir (1967) posited that these cuts are carried out to prevent premarital pregnancy and promiscuity and to guarantee social- and economic-secured marriage for the girl, indicating the impact of ignorance on VVF prevalence. Nevertheless, it is noteworthy that FGM comes in different forms, which aggravates VVF problems in countries where it is practised.

Although some studies argued that there is no clear evidence linking FGM to the direct cause of obstetric fistula, Mabeya (2004) noted that the practice involved the removal of a vast amount of vagina or vulvae tissue and causing the vagina outlet and birth canal to become constricted by thick scar tissue. This practice may enhance the chances of obstetric and gynaecological complications, including prolonged labour and fistula. Moir (1967) linked about 10% of the fistulas in a hospital in Zaria, a Nigerian region, to the traditional practice of female circumcision. Similarly, the study linked another 30% to the combined effect of genital cutting and obstructed labour. Tahzib (1983) corroborated this view by establishing that one-third of the 80% of the VVF caused by obstructed labour in Nigeria has experienced one form of genital mutilation. Hilton (2003) reported that one-third of the total VVF patients in Northern Nigeria had undergone FGM. Additionally, United Nations Population Fund (UNFPA, 2005) reported that female genital cut could lead to urinary incontinence, organ damage and obstetric fistula. With obstetric fistula, young women are abandoned to their faith.

Another cultural practice is purdah which is among the traditional practices in the Hausa regions. This practice means excluding women from public exposure and

results in the denial of women from participating in various aspects of socio-economic activities, such as employment that can positively impact their health (Nwagwu and Ifeanacho, 2009).

2.2.3.11 Male Involvement in Reproductive Health

While male partners globally are typically involved in reproductive health, antenatal care, delivery, and postnatal care is still a massive challenge for safe motherhood programmes (World Health Organisation, 1997). Despite the paucity of recent studies on the role of male involvement during motherhood, there are associated beneficial effects (Martin et al., 2007; Alio et al., 2011). Existing literature has shown that prenatal male involvement is linked with beneficial health outcomes, (Hohmann-Marriott, 2009; Alio et al., 2011). Similarly, Tsui et al. (1997) posited that family members are involved in the decision-making process about obstetric care, in many cases women must seek their permission on issues relating to obstetric care.

On the other hand, Tweheyo et al. (2010) established that men who are knowledgeable about antenatal services or have spouses who used skilled delivery during last pregnancy have a higher likelihood to accompany their spouses at antenatal clinics compared to those who live more than five kilometres from the health facility or wanted to have more children. However, Nanjala and Wamalwa (2012) established that male partners lack of knowledge about maternal complications is associated with cultural beliefs, uncooperative health workers, and higher fees charged for deliveries were contributory factors for male partner lack of involvement in activities relating to childbirth.

2.2.4. Experience of VVF women and Referrals to Health Facilities

The reviewed studies established that women lived with fistula for between one month to over ten years (Bangser, 2007), and they faced the following experiences before and within this period. Molzan et al. (2007) established that most women with fistula were sometimes referred to a health facility at a point during child

delivery, but the referral was carried out after the situation had worsened. Such referral is usually motivated by people around the woman when they fear for the lives of mother and baby (Kabir et al., 2003). Similarly, the study observed a considerable distance between where the women reside in the villages and a health facility, which created difficulty in arranging transportation. Many women resorted to walking or stretchers to carry them for several hours before reaching the health facilities. Such movement was often awkward and challenging, considering the stretchers were made of blankets.

Bangser (2007) established that there were referrals to a health facility for nearly all patients (92%) in the study, and this was done when they were experiencing labour. The facility was almost an hour away for almost half of them and eight hours away for one-fifth of them. The study also revealed that there was a lack of transportation facility for those nearby health centres. At the same time, this hindered the transportation of referred patients, the family to arrange for alternative transportation for these women (Molzan et al., 2007). Additionally, Bangser (2007) showed that it was usually too late for the babies when these women reached the health facility that could provide the required assistance. With the women suffering greatly due to time, the damaging effect propelled the formation of a fistula. On the other hand, El-Gazzaz et al. (2010) revealed that health facilities were referred to performed CS on 42% of them while another 42% had assisted vagina delivery, over 75% reported that their babies were dead during delivery, which exacerbated an already traumatic situation. This also create a negative signal which may further prevent hospital visit as a father of a VVF patient asserted that the health facility is not a panacea and that people who deliver in a health facility can develop this problem this insinuation may result from high rate of VVF complication in the health facilities. Nevertheless, going to health facility might not be the major cause but other determinant factors including delay access to health facility.

2.2.5 Timing of Fistula Occurrence and women's Perception

Bangser (2007) explored the pre-fistula experiences of women and established that most women realised their problem of leaking urine within five days after the delivery. However, the study showed that some women considered the leaking

urine as usual, and they assumed they were soaked with blood and urine due to the delivery. Specifically, they did not consider this as a problem until they return home within ten days. While this suggests that many did not detect the problem until they returned home, the study posited that those who discovered urine leakage at the health facility got limited information about the problem. For instance, a woman was given information about the possibility of fistula repair while another revealed they told her the problem would go away. This may provide a potential indication about some healthcare professionals' skills and knowledge regarding VVF.

While some studies explored the perceptions of women on the causes of fistula, their perceptions were mixed. While some linked the fistula development to delivery and associated complications, many lacked the details (Molzan et al., 2007). Bangser (2007) asserted that some women linked the fistula to a lack of antenatal care. In particular, they claimed they did not receive the required assistance from a trained healthcare worker during labour and delivery. Similarly, they reported that they did not visit any health facility for delivery. However, few women in other studies posited that their fistula occurrence could be attributed to the forcefully pulling out of their babies by the birth attendant; in contrast, others attributed their fistula to the young age that they got pregnant birth (Molzan et al., 2007).

Similarly, other studies, such as Wall et al. (2004), associated fistula to labour and delivery, with 96.5% of the cases linked to them. Karugaba (2003) established that most members of community members had limited knowledge about fistula. Further, the study contended that people believed it was caused by sorcery, adultery, and evil spirits. On the other hand, Roka et al. (2013) established a widespread belief that fistula is due to unfaithfulness, or the women having offended someone. Regardless of their belief, Molzan et al. (2007) opined that women and communities have a fatalistic attitude towards VVF. Specifically, the study noted that most women with fistula did nothing to ameliorate their condition, as they believed that life is full of blessings and curses. Based on this, they accept their condition.

2.2.6 Psychosocial Experience

Living with fistula is linked with experiences of multiple losses, ranging from emotional, physical to social (Bangser et al., 2011). Such experiences have a devastating effect on a woman's quality of life and identity. A survey by UNFPA asked women about non-clinical problems associated with obstetric fistula. The survey showed that they were ashamed to go out of their homes, stopping from working and rejected by their families and society. The psychosocial challenge is the most widely reported consequences of living with VVF (Farid et al., 2013). The experiences include stigma, loss of status and physical isolation due to physical changes associated with VVF (Alio et al., 2011; Gebresilase, 2014; Khisa and Nyamongo, 2011; Muleta et al., 2008). The stigma is equally compounded by the incontinence of faeces or urine, which resulted in constant wetness. The repulsive smell of faeces and urine is felt by the husbands of women with VVF, as well as their family members and the entire community (Mwini-Nyaledzigbor et al., 2013). Siddle et al. (2013) opined that offensive smell and wetness had the most distressing impact on women with VVF. Mwini-Nyaledzigbor et al. (2013) corroborated this claim noting that these women were insulted, shunned, and excluded from various activities. Khisa and Nyamongo (2011) also posited that these women were labelled as "spoilt" or "damaged" and considered valueless. Hence, they lose their social status.

Another strand of literature, which includes Alio et al. (2011) and Siddle et al. (2013), argued that such labelling or stigma made these women worthless, distressed and sometimes considered suicide. Similarly, Farid et al. (2013) noted that women with VVF could not engage in religious activities, such as prayers, which worsened their distressing feelings. The study further argued that this is worse for Muslim women because they are considered unclean due to incontinence, preventing them from performing religious rites. On the other hand, Gebresilase (2014) argued that this psychologically challenging experience makes the body of a woman with VVF become a barrier, resulting in a loss of independence. This leads to the inability to perform routine daily activities, especially the expected role of a wife. Gebresilase (2014) opined that this has a significant effect on women's relationships. Molzan et al. (2007) reported complaints of physical symptoms by women, with such complaints focusing on soreness, genital itch, burning sensation, dyspareunia, and other symptoms, such

as blood and pus in the urine. Browning and Menber (2008) noted that dyspareunia is the most reported sexual dysfunction symptom among sexually active women with VVF. On the other hand, a group of studies – such as Landry et al. (2013), Muleta et al. (2008) and Yeakey et al. (2011) – reported that some husbands are supportive and continue to live with their wives despite the fistula.

Apart from these women, their family members also experienced psychological stress. For instance, some studies, such as Molzan et al. (2007) and Yeakey et al. (2011), noted that some families were concerned about the plights of their wives and daughters. while Alio et al. (2011) highlighted the experience of loss of support due to expulsion and isolation from homes and community. However, a strand of the literature shows that some relatives of women with fistula were supportive and helpful, while some women were able to re-marry and had more children (Creanga et al., 2008). Alio et al. (2011) also reported that female family members and sometimes children offered the needed support for women with VVF. Additionally, some women with VVF received massive support from family members and society after their successful surgery for repairs. For instance, Pope et al. (2011) found that most (95%) women who recently underwent repairs were not mistreated in their community. While some of these women remained with their families, they isolated themselves from some community's activities and members. Muleta et al. (2008) also established that some of these women still eat and interact with family members.

2.2.7 Quality of Life of women with VVF

While studies investigating the quality-of-life utilised different tools, quality of life was generally lower for women with a fistula. Nielsen et al. (2009) utilised a validated tool, King's Health Questionnaire, to measure the quality of life of women with urinary incontinence. While the tool was translated into the local language, the study found that the quality of life was statistically lower with fistula. In particular, the study established that lower scores were obtained in areas that measured the degree of social interactions. In contrast, the World Bank's Quality of Life (WBQOL BREF) questionnaire was utilised by Umoiyoho et al. (2011) to measure the quality of life, focusing on mental, social, physical, and environmental health. The study

found that the social health domain had the lowest score and followed by mental health.

On the other hand, Pope et al. (2011) used the Perceived Quality of Life tool to measure the quality of life-based on a 10-point scale. It is noteworthy that this study modified this tool to accommodate the unique context of rural Tanzania, with an illustrated version used for illiterate women. This tool evaluated the level of social support, mental, physical, and financial wellbeing of women. Similarly, the study compared the perceived quality of life (QoL) for three groups: women without fistula (control group), women with fistula and women in hospital for repair. While the women in hospital for fistula repair had the lowest score, they showed a decline in scores from the pre-fistula period to the post-fistula development period. Gebresilase (2014) argued that psychosocial challenges resulted in the loss of control over normal daily activities.

2.2.8 Socio-economic impacts

Mwini-Nyaledzigbor et al. (2013) and Ekine et al. (2015) linked the experience of living with fistula to the inability to work due to ill health or stigma. It often results in economic hardship for most of these women and their family (Landry et al., 2013; Molzan et al., 2007). Similarly, Khisa and Nyamongo (2011) asserted that this makes them dependent on others for survival. Additionally, Yeakey et al. (2011) noted that their condition implies utilising additional resources to maintain their cleanliness, which leads to the financial drain of the families who are already confronted with meagre resources and incurring debt (Mwini-Nyaledzigbor et al., 2013). Similarly, Pope et al. (2011) posited that those who lacked financial independence before developing fistula, as well as those who lost their homes, faced more financial hardship. They become an economic burden, and their level of public and personal accomplishment reduces (UNPF, 2004). This made them depend on friends and relatives for food and often beg or live on donation. More importantly, they find it challenging to meet their basic needs, such as buying clothes and meeting their medical bills (Karugaba, 2003). However, Nielsen et al. (2009) noted that some mainly farmers continued their income-generating activities while living with the fistula, with only a few of them not working.

2.2.9 Coping with VVF

A strand of literature explores various ways women cope with VVF. Gebresilase (2014) and Mwini-Nyaledzigbor et al. (2013) established that women developed various coping mechanisms for their difficult daily existence, including washing and changing clothes. It also involved learning to cope with physical difficulties of smell and wetness, using lotions and perfumes, as well as bathing and using sanitary pads. However, sourcing water in areas with water scarcity became an issue for women with VVF and their families. Other coping strategies include limiting the intake of food and fluid, using plastic bags to cover protective cloth for padding and putting sawdust on the plastic bag to absorb the flow (Blum, 2012).

On the other hand, some women used the avoidance gambit to limit their contact with people and check their level of leakage protection before sitting in public. However, these strategies were found to be ineffective (Blum, 2012). Gebresilase (2014) explored coping strategies from a different perspective and described the emotion-focused and problem-focused coping mechanisms theoretical concept by Folkman & Lazarus (1980). The emotion-focused approach involves suicidal ideations, isolations or adoption of positive attitudes, while the problem-focused approach entails productive technique, such as orientating to reality, disposing of possessions and family support (Gebresilase, 2014). These mechanisms were found to assist women in dealing with pre-and post-repair of the fistula.

2.2.10 Care and Treatment of Women

Although Marion Sims paved way for surgical techniques to treat fistula, he operated VVF and RVF thirty times before cure (Wall, 2006a). In particular, Marion Sims experimental for seven years before publishing his fistula repair procedure in 1852 that resulted in successful fistula surgery (West & Irvine, 2015). Currently, the primary fistula treatment remains surgical closure when there is a failure of conservative treatment involving Foley's catheter (Waaldijk, 2004). Small, fresh fistulae of less than two centimetres can be treated by continuous drainage of the bladder with a Foley's urethral catheter for up to thirty days (De Bernis, 2007). There are three general fistula surgery approaches trans-vaginal, trans-abdominal

or combination (Waaldijk, 2008). The trans-vaginal is the usual and most comfortable method for patients.

The trans-vaginal approach offers an advantage of short postoperative recovery, low postoperative morbidity, short operation time and minimal loss of blood. In contrast, trans-abdominal surgery is relatively uncommon and used for complex fistula that requires combined routes and those that are inaccessible through vaginally, such as iatrogenic fistula following gynaecological surgery caesarean section (De Bernis, 2007). It is standard practice for patients to spend at least fourteen days in the hospital for strict catheter care following surgical fistula closure (Arrowsmith et al., 2010). The practice of continuous draining of the bladder promotes healing, as it prevents the distension of the bladder and tension on the suture line, which may lead to repair failure (De Bernis, 2007). In some countries like Nigeria and Uganda, fistula care is an integrated part of reproductive health policy at various care levels. While few hospitals can perform fistula repairs, operations are performed for most patients during surgical camps organised by expatriate and local surgeons (Creanga et al., 2008). While patient treatments follow the WHO guidelines, the women are examined before the surgery to establish the diagnosis and fistula are classified based on Waaldijk (1995) classification. Surgery is performed, and the confirmation of fistula closure is by a negative dye test conducted after the surgery completion, with subsequent introduction of a Foley's catheter for continuous draining of the bladder.

Despite the backlog, Goh (2004) posited that the reduction of catheter duration to ten days could enhance the number of fistula repairs by 30% while early discharge could achieve more. The improved surgical technology, anaesthesia and analgesia, and increased pressure on hospitals have decreased the length of time patients are spending in hospital (Kisic-Trope, Qvigstad and Ballard, 2011). Tiguert et al. (2004) and Hedman and Palmer (2009) observed that patients who underwent bladder surgery, such as hypospadias repair, prostatectomy and bladder cancer, are satisfied the early discharge with a catheter and with non-negative impact on the result. However, this approach has not been used in fistula care. The reduction in the hospitalisation time by early discharge of patients with a 5-catheter would increase the number of patients treated and could provide a more effective way of handling the backlog.

Levy et al. (2005) established that incorporating a protocol into the management of surgical patients based on scientific evidence facilitated safe outpatient

hysterectomy in most patients. More so, the study found that this optimised management can result in a cost-saving of up to 25% for these procedures. Although women undergoing hysterectomy are generally healthier, it is noteworthy that vaginal hysterectomy is an extensive operation relative to fistula surgery.

2.2.11 Care seeking experiences.

Yeakey et al. (2011) noted that the fistula treatment experience of women is a frightening and long journey. Alio et al. (2011) opined that it involved various failed attempts to access the proper care, with such attempts including patronising traditional healers and visits to various facilities (Yeakey et al., 2011). Apart from a lack of professional care at the hospital and financial constraints, Mwini-Nyaledzigbor et al. (2013) argued that access to care was hindered by a lack of knowledge on the available repair services. The study contended that these contributed to women patronising traditional remedy schemes. Similarly, Blum (2012) posited that care was accessed through medication purchase across the counter. Velez et al. (2007) noted that infrastructural services and human resources were lacking at hospitals, limiting the number of women who can access services and get the necessary treatment.

Furthermore, Bangser (2007) considered transportation from remote villages as a colossal hindrance to accessing case services. Siddle et al. (2013) asserted that introducing a transport scheme enhances the number of repairs, as evident in a 65% rise in the numbers of repairs after a year of the transport-scheme introduction. While Velez et al. (2007) noted a massive backlog of women seeking repairs, Yeakey et al. (2011) argued that women and their families faced huge bureaucratic hurdles to the limited treatment access. Suggesting importance of proactive preventive measures. Similarly, seeking a cure often requires women to be accompanied by a family member (Yeakey et al., 2011). With the family and community providing the needed support for women, this support includes providing finances, assistance during treatment, provision of emotional support and assisting with chores (Pope et al., 2011). It suggests that women seeking fistula cure can be hindered for those without family support and poor (Yeakey et al., 2011).

2.2.12 Treatment and outcomes

Some studies such as Alio et al. (2011), Molzan et al. (2007) and Yeakey et al. (2011) explored the treatment experiences of women with VVF. While Alio et al. (2011) and Yeakey et al. (2011) noted that treatment was typically through surgical repairs at the facility, Donnelly et al. (2015) and Molzan et al. (2007) argued that the outcome of the surgical repair often resulted in different continence levels for such women. Similarly, Donnelly et al. (2015) and Molzan et al. (2007) found that successful fistula closure with no leak ranged from 13% to 82%. On the other hand, Donnelly et al. (2015) and Yeakey et al. (2011) – noted that it took one to three repairs before women became continent but, some are still incontinent after several attempts. Blum (2012) reported that many women became discouraged after many failed attempts and some lost hope.

However, Browning and Menber (2008) and Muleta et al. (2008) noted that some women restored their continence over a period after discharge. Donnelly et al. (2015) argued that the psychological well-being of women improves through surgical repair. While women considered this a joyful experience, it gave them a sense of relief and gratitude. Similarly, Yeakey et al. (2011) argued that social change rather than a physical change in status affected women's experience during the surgical repair. Alio et al. (2011) and Yeakey et al. (2011) described social status as the ability to interact with friends and family and restoring a woman's value. These studies claimed that social status suggests hope of future deliveries. Molzan et al. (2007) and Yeakey et al. (2011) generally opined that woman undergoing fistula repair were satisfied with the repair despite the continence level. In contrast, Khisa and Nyamongo (2011) established that women were worse off after unsuccessful repair. Which means there is no assurance of perfection after surgical operation.

Another strand of studies emphasised that the treatment experience equally included various forms of psychosocial support. Degge (2018) considered psychosocial support as the interaction with other people with a similar problem on arrival at the treatment facility. Alio et al. (2011) and Gebresilase (2014) noted that meeting other women with the same condition offered the most significant health effect for these women. In particular, such a meeting is considered the first sign of

hope for a cure (Melah et al., 2003). It serves as a psychological healing process that transcends the treatment period (Alio et al., 2011; Gebresilase, 2014). This experience was considered an additional coping strategy for subjective interpretation, as observing changes in the lives of others assist them in adapting to changes associated with fistula experience (Gebresilase, 2014).

Similarly, successfully repaired women became advocates for facility repair in the treatment centres and community (Alio et al., 2011; Donnelly et al., 2015). Gebresilase (2014) and Yeakey et al. (2011) also emphasised the psychosocial support from the family during treatment. While women were offered some form of assistance while living with fistula (Gebresilase, 2014), Yeakey et al. (2011) argued that women without such support faced financial and emotional difficulties. Women were also provided post-repair rehabilitative counselling, which served as a form of psychosocial support. However, Yeakey et al. (2011) noted that this is not a general practice in all fistula repair facilities. On the other hand, post-repair rehabilitative counselling advocates viewed it as the most vital for effective integration (Muleta et al., 2008; Yeakey et al., 2011). Particularly, Donnelly et al. (2015) considered it a critical component of the holistic management care approach for fistula treatment.

2.2.13 Life of women after VVF repair

The life of women with VVF was explored and existing literature discussed the experience of VVF women after repair such as living with incontinence after repair, reintegration Services, life quality after fistula repair; sexual, marital and reproductive life, and socio-economic experiences after VVF repair.

Browning & Menber (2008) highlighted that some women experienced fistula breakdown after being discharged, the study confirmed women experienced fistula recurrence after manual activities like straining, tedious labour, sexual intercourse or riding along a wrong road. Blum (2012) and Khisa and Nyamongo (2011) – opined that unsuccessful repair cases could escalate adverse community treatment and increase the family's feelings of frustration. However, Dolan et al. (2008) argued that residual incontinence has a limited effect on the quality of life of women after fistula repair.

A considerable body of literature considered post-repair psychological support services, including rehabilitation programme, beneficial for reintegration (Alio et al., 2011; Landry et al., 2013; Mselle et al., 2012). While Pope et al. (2011) posited that these services are provided to ensure successful reintegration, Alio et al. (2011) and Muleta et al. (2008) suggested that obstetric fistula treatment should incorporate reintegration support and follow-up exercise. Reinforcing the essence of prompt intervention on preventive measure, Donnelly et al. (2015) noted that the existence of a standardised structure for post-repair support services for fistula care is uncertain, and Velez et al. (2007) opined that rehabilitation and reintegration service provision was hugely inadequate.

An alternative strand of studies evaluated the quality of life of women after their fistula repair. In general, women experienced improved quality of life after successful repair surgery, especially in the continent (Degge, 2018). This view is a consensus among the reviewed studies. Similarly, those who are still incontinent equally experienced an improved quality of life (Nielsen et al., 2009). While Umoiyoho et al. (2011) utilised the WHOQOL BREF tool, the study found a 90% general increase in the quality of life of women after repair in all domains. The social domain recorded the highest score and followed by the physical domain. In contrast, Khisa and Nyamongo (2011) and Muleta et al. (2008) reported continuous discrimination against such women despite being continent, resulting in further lowering self-esteem and hindering reintegration. Similarly, Gebresilase (2014) claimed that women refused to reintegrate into their family or communities after treatment to avoid rejection, stigma, and discrimination.

Four studies (Browning and Menber, 2008; Donnelly et al., 2015; Khisa and Nyamongo, 2011; and Mselle et al., 2012) explored the sexual and reproductive lives of women after reintegration. While Browning and Menber (2008) reported that one-third of the women resumed sexual activity after six-month post-repair, 90% of them felt no pain. Dolan et al. (2008) posited that women in the study reported sexual dysfunction symptoms, including dyspareunia, vaginal dryness, and disturbed sex life due to urinary symptoms. While the study claimed symptoms were somewhat burdensome, Nielsen et al. (2009) found that 71% of women had resumed sexual activity after 21-month post-surgery repair. In contrast, El-Gazzaz et al. (2010) used the female sexual function index to evaluate the sexual function of women and found that 47% of them resumed sexual activity after about 45 months after repair. The study also established no significant

difference between healed and unhealed women in all domains of arousal, desire, orgasm, lubrication, pain, and satisfaction. In general, studies such as Donnelly et al. (2015), Khisa and Nyamongo (2011), Muleta et al. (2008) and Pope et al. (2011) reported that the fear of fistula hindered sexual activity after repair. However, these studies attributed fertility issues to the inability to engage in regular sexual functions and identified cultural expectations in childbearing as reproductive health needs. Khisa and Nyamongo (2011) noted that loss of the uterus and post-surgical sex abstinence worsened for some women, while this study and Yeakey et al. (2011) claimed the sexual abstinence period hovers between three to twelve months after repair.

While the prognosis for future delivery is not fully demonstrated, Mohammad (2007) found 25 successful vaginal deliveries, no fistula recurring and one death among 145 rehabilitated clients between 1999 and 2006. On the other hand, Molzan et al. (2007) established that none of the repaired women was pregnant after six to ten months' post repairs despite engaging in sexual activities.

A strand of literature – such as Alio et al. (2011), Mselle et al. (2012) and Pope et al. (2011) – opined that the women desired to resume work and be self-reliant after their community return. Similarly, Mselle et al. (2012) argued that economic self-reliance was hugely associated with regaining dignity. On the other hand, Donnelly et al. (2015) opined that the ability to resume regular work was often impossible as these women were not physically strong to embark on their previous economic activities or chores. Hence, they typically engage in less strenuous work after their repair and become dependent on a heavily taxed family income for survival (Mselle et al., 2012). Moreover, Donnelly et al. (2015) noted that this situation was worse for those still incontinent.

2.3 Narrative summary of systematic review and gaps in the literature.

Recognising that a systematic review is not commensurate with the qualitative methodology that was ultimately adopted for the study, a narrative summary of the evidence on VVF comprising five major themes synthesised from the original review is now presented to as an overview and to underpin the research. These themes are the vesicovaginal fistula and its consequences, classifying VVF,

causes or drivers of vulnerability to fistula development, the experience of VVF women and referrals to health facilities and the life of women after VVF repair.

The reviewed literature provides evidence on the lives and experiences involved, including social, economic, cultural, and psychological factors of VVF. Similarly, it identified various coping strategies adopted by women living with VVF and investigated their experiences after fistula repair. It is clear that living with VVF had varying multidimensional consequences on women, their families, and the community. In some circumstances, young women and girls were abandoned and ostracised by their families after developing fistulae (Ahmed and Holtz, 2007). However, in other situations, families, friends, and even the community offered support for most women with fistulae (For example, Pope et al. (2011) and Umoiyoho et al. (2011).

A lack of uniformity on how this is perceived, and the variability of support offered to women after developing fistula indicates a complex picture. This necessitates an investigation of the social, economic, and cultural factors that could affect the support available to women experiencing VVF and the factors affecting women accessing this. Similarly, it is vital to evaluate the influence of these social, economic, and cultural factors on VVF women's marital status and childbearing experience. Furthermore, this review observed that women that received care had family support, which suggests that family support influences care. Thus, it is vital to determine the effects of social, economic, and cultural factors on family support and access to fistula treatment. Additionally, the review highlighted the women's care and treatment experiences. Most of the studies, such as Umoiyoho et al. (2011), Nielsen et al. (2009), and Pope et al. (2011), acknowledged the positive impact of surgical treatment on the quality of life of women with fistula though the measurement of the quality of life was done through various validated tools. While adopting a standardized assessment of the quality of life for women with fistula would be laudable, existing literature only mentioned the areas where the quality of life improved without linking these to various social, economic, and cultural factors. The reviewed studies did however show that accessing treatment was a herculean task for many women.

One notable omission that is evident in the current evidence base is consideration of the specific socioeconomic/cultural features of each study site and its impact on VVF occurrence and treatment access. For instance, Iliyasu et al. (2018) noted that Northern Nigeria has a conservative culture, and women who were accessing

hospital services, especially for issues relating to sexual activity, often require the support and approval of family members, such as husbands, suggesting that cultural factors might play a fundamental role in fistula repair. Therefore, promoting public health interventions and health promotion regarding VVF could be directed towards addressing the cultural and other factors that could affect the family and community's role in assisting women with fistula in accessing care. The review equally enumerated the dilemma in reproductive and sexual health issues despite successful repair. While this indicates the need for additional research addressing the post-repair fertility issue, it is equally important to evaluate the impact of social, economic, and cultural factors on this.

Furthermore, the review noted that incontinence after successful VVF repair was still a significant issue for some women. In particular, the review reported failed repair cases, and these remain a critical issue requiring attention. De Bernis (2007) posited that the WHO guideline on fistula repair focused on ensuring women regain their role within the community. While most studies established that rehabilitation programs resulted in the successful reintegration of women after repair (Alio et al., 2011; Landry et al., 2013), others argued that women who had their repair successfully integrated without requiring any form of assistance (Yeakey et al., 2011). However, none of the reviewed studies investigated the benefits of such rehabilitation programs from such women's perspectives. In particular, none of the studies evaluated these programs from the perspective of the social and economic factors affecting women.

Moreso, there appears to be an absence of a standardized treatment package regarding post-repair rehabilitative services, and a clear need to evaluate the effect of social, economic, and cultural factors on these services. Gebresilase (2014) and Yeakey et al. (2011) suggested that incorporating repairs with social- and psychological-related rehabilitation will be meaningful when social conditions exposing women to fistula were addressed. Gebresilase (2014) noted that these conditions hindered women's full reintegration back into their community and family life, as a result of their finding that none of the women returned to their families. This study corroborated others which observed that most of these women were divorced and partly explained their unwillingness to return to their community. Landry et al. (2013) opined that community-based institutions were better equipped to provide post-repair services. While research on post-repair rehabilitation services based on women's perspectives would be helpful, it would

be optimal to explore the effects of social, cultural, and economic factors on this. This review established that VVF repair is the beginning of the recovery journey. Therefore, successful fistula repair must be accompanied by efforts to restore women to their regular sexual functions, heal psychological wounds, enhance fertility, and return them to their everyday lives in the community. Though the repair, rehabilitation, and care of VVF women is essential for their recovery, Wall et al. (2004) argued that VVF transcends fistula repair, and Donnelly et al. (2015) posited that a holistic care approach encompassed holistic recovery for these women. While emphasis should be geared towards utilizing a multidisciplinary management care approach (De Bernis, 2007), identifying social, economic, and cultural factors affecting VVF occurrence may play a key role in this regard. Moreover, this would help shift strategies to address fistula management from clinical care to a holistic care approach and from a VVF management to greater emphasis on prevention. Exploration of which socioeconomics/cultural factors leads to VVF and how could inform the more successful preventive measures.

Overall, the review identified gaps in the existing literature which the current study aims to address. For instance, some existing literature identified socioeconomic and cultural factors that influence VVF but none of them explored how these led to the occurrence of VVF from the victims' perspective. Likewise, the literature focusing on Northern Nigeria lacks in-depth investigation on individual socioeconomic and cultural characteristics influencing the occurrence of VVF, to ensure individual specific needs can be met. Kottow (2005) emphasised recognising the importance of the specific need for individual care as a crucial counteractive measure against VVF vulnerability. As mentioned in chapter one Link and Phelan (1995), argued that achieving maximum effectiveness in the nation's health intervention and improvement, required exploration of the individual's risk of being at risk. Similarly, the existing literature, especially in Nigeria, does not explore the role of socioeconomics and cultural factors on the service delivery provided by VVF practitioners. Furthermore, most of the literature focusing on VVF in Nigeria did not consider the peculiarity of differences between the study locations i.e., different geopolitical regions, in identifying social, economic, and cultural factors affecting VVF occurrence in women.

The existing literature shows a lack of consensus on women's perceptions of VVF causes. While some linked the fistula development to the delivery process and associated complications, many lacked the details (Molzan et al., 2007). For

instance, Bangser (2007) asserted that some women linked VVF to a lack of antenatal care. In particular, claiming they did not receive the required assistance from a trained healthcare worker during labour and delivery. Despite the lack of consensus however, most studies, especially in Nigeria, have a narrow focus, concentrating on some locations to the detriment of other areas.

Finally, despite Sirdifield et al. (2016) asserting that patient's involvement and satisfaction, as well as family support, are important indicators of quality health care, it is rare to find studies exploring the cause of VVF from the patient experience perspective in Northern Nigeria (Gulati 2011; Eniya and Steele 2016; Odimegwu and Dolapo 2017). Therefore, based on the existing gaps in the literature identified, this study will explore the patient's perspective on the role of socioeconomic and cultural factors in the occurrence and their experiences of VVF. The patients' perspective will be supplemented by that of VVF practitioners, who were also invited to provide their views on the programs designed to reduce the effect of socioeconomic and cultural factors on the occurrence of VVF and suggested how the influence of socioeconomics and cultural factors on the occurrence of VVF can be better prevented in Northern Nigeria. The aim is to help recognize and prioritize areas where improvements might be needed and possibly be made from the VVF practitioner and patient's viewpoints. It may also help shift strategies to address fistula management from clinical care to a holistic care approach.

Chapter 3: Research Methodology

The quality of research depends on the suitability of the philosophy used to underpin it, the research strategy and instruments employed and their appropriate application to address the research aim and objective(s) in response to the research question(s). The research questions and objectives for this study are outlined in Chapter One. This chapter briefly describes Northern Nigeria and why it was chosen as the research site; it also discusses the research philosophy, ontology and epistemology guiding this study. Further, I outline and justify the appropriateness of the methods employed in carrying out each stage of the study; these include sampling and participant recruitment, data collection, analysis, and synthesis and the role of the researcher in this process.

3.1 Study Context

Two geographical areas in Nigeria were used for this study: one for the pilot study and the other for the main study. Nigeria is the most populous country in Africa and contains six geopolitical zones, as shown in Figure 3. The six geopolitical zones are North-West (NW), North-East (NE), North-Central (NC), Southwest (SW), South-South (SS) and South-East (SE).

Northern Nigeria was chosen for the study based on the high prevalence of VVF in the region which was likely to provide access to a rich data source to meet the study aims. Arsenault et al. (2013) identified access to data as one of the essential criteria for choosing the geographical area for research.

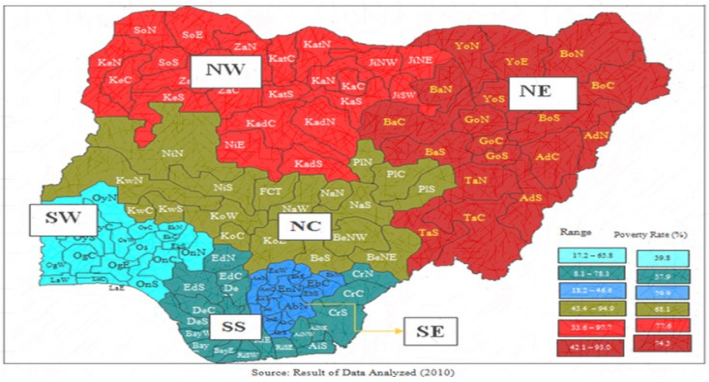


Figure 3: Study Area (Source: Olawale 2019).

Most inhabitants of northern Nigerian are mainly Hausas and speak Hausa, followed by Fulanis who speak Fulfulde. However, the inhabitants of NC speak other languages, such as Tiv, Gbagyi and Yoruba. While Hausas mainly inhabit urban areas, Fulanis live majorly in rural areas. The inhabitants of Northern Nigeria are predominately Muslims. However, different dominant groups in the North are connected through marriage, cultural practices, and religions (Abdu, 2005). Although Northern Nigeria occupies about 79% of Nigeria's landmass, it has remained the most impoverished region for decades (Mbachu and Alake, 2016). Its economic activities revolve around small-scale businesses and agriculture; however, agricultural activities are impacted by poor climatic and edaphic factors, affecting food security and economic development in the North (Onwusiribe and Mbanasor, 2019).

Similarly, there is a continuous increase in the population of Northern Nigeria compared to the South. Specifically, Northern Nigeria contains an estimated 60.4% of the 182 million people in Nigeria (Mbachu and Alake, 2016). However, the growing population at the expense of vibrant economic activities and food security could risk worsening sickness and disease (Sapolsky, 2005).

There are differences in various socioeconomic factors between the North and other parts of Nigeria. For instance, the literacy level is considerably lower in the North, which is more evident among females. The literacy level of women in the NE and NW ranges between 7.2 and 55.7%, whereas the range is between 90.1 and 96.4% in the SS, SW, and SE (Tyoakaa et al., 2014). Such a low literacy level in Northern women has a significant negative effect on their health as it may lead

to poor health awareness (Beniwal et al., 2011) and is consistent with a famous saying that 'illiteracy is a disease'. While much literature links illiteracy with disease Ahmed et al., (2013) and Doctor et al. (2015) established a high prevalence of disease in the North, which leads to morbidity and mortality of women. The above factors and the increased prevalence of VVF in Northern Nigeria which could be linked to the high rates of morbidity and mortality made this an appropriate area for this study, the findings of which could be used to prompt action to enhance current efforts to address these issues.

3.2 Research Philosophy

Research philosophy is a belief about the nature of knowledge and how information regarding phenomena should be collected, analysed, and used, and drives every aspect of the research (Žukauskas et al., 2018). This implies that research philosophy is the cornerstone of research and determines the selection of the research strategy, problem formulation, data collection, and analysis. The term paradigm describes a world view and ontology, and epistemology are the key philosophical concepts on which a particular world view is based.

Research philosophy enables researchers to demonstrate the beliefs and assumptions that underpin the research aims, study design and execution. Creswell and Creswell (2017) considered research philosophy as a fundamental set of beliefs that guide action, and Gray (2013) argued that it consists of ontology and epistemology. Saunders et al. (2015) support this view, positing that a particular set of beliefs drives the choice of research philosophy, of which ontology and epistemology are the basic tenets. While ontology is viewed as the philosophy of reality, epistemology is considered a philosophy of knowledge (Trochim and Donnelly, 2006). Despite the importance and enormous influence of research philosophy, Creswell and Poth (2016) posited that philosophical ideas in research are sometimes hidden. Researchers must therefore be explicit about their research philosophy while carrying out research (Moon and Blackman, 2014).

3.2.1 Ontology

Ontology is concerned with the world under investigation and the nature of existence (Crotty, 1998). While ontological issues focus on questions relating to existing societal issues, Al-Saadi (2014) stated that ontology can be understood as assumptions about the nature and type of reality and what exists. Similarly, McLaughlin (2012) defines ontology as the nature of the world and its exploration. Objectivism and subjectivism are prominent ontological positions (Bell et al., 2018).

Objectivism – associated with the epistemological position of positivism - emphasises that social entities exist in a reality that is independent of social actors and their existence (Hiller, 2016). Objectivist positions hold that an external world and a single objective reality to a research phenomenon exist irrespective of the belief or perspective of the researcher (Passalacqua and Pianzola, 2016). In contrast, subjectivism – associated with the epistemological positions of interpretivism or constructivism - holds that social phenomena are creations of perceptions and are consequent upon the social actions of actors within the context of their existence (Peck and Mummery, 2018). Interpretivism therefore holds that social phenomena and their meanings are the continuous accomplishments of social actors (Bryman, 2016).

For the aim of this study to explore sociocultural factors driving the perceived increased prevalence of VVF, and the need to understand women's lived experiences, the researcher adopted an ontological perspective based on subjectivism because this recognises the inherent subjectivity of the topic, and the researcher in scientific research (Ratner, 2002). Such subjectivity guides the researcher in formulating questions, selecting methods and data analysis which involve identification, interpretation of information and formulation of central themes. More so, the perception of researchers can vary even if they are exploring the same research theme. For instance, the interpretivist researcher conceptualises and interprets meaning based on their understanding of the data collected (Thanh and Thanh, 2015). For example, this study explores the socioeconomic and cultural context in Northern Nigeria in which women experience VVF, to identify possible areas of improvement in VVF prevention,

based on considering VVF practitioners' and patients' viewpoints. This might be conceptualised and interpreted differently by another interpretive researcher. Additionally, ‘interpretivist perspectives do not claim that respondents’ accounts are ‘untruthful’, but argue that truth is multiple, subjective, and ultimately an interpretation’ (Anya, 2010, p86). However, Ryan (2018) advised the interpretive researcher to be careful to prevent prejudice in their interpretation when reviewing events or people's experiences. While the issue of researcher subjectivity is a potential criticism of the interpretive approach, authors such as White and Dotson (2010) argue that the researcher's perspective can be used to enhance the study of the research phenomenon or participants of interest. This is relevant in this study as the focus is to inform a lasting solution to the issue of VVF in Northern Nigeria by addressing the lack of current evidence identified in Chapter two (literature review) regarding the experiences of VVF women in Nigeria, to inform more effective interventions.

Nevertheless, the researcher was aware and conscious of their potential influence on the research and therefore applied accepted criteria for ensuring the quality of qualitative research such as Koch and Harrington (1998, p 886). They suggested 'detailed and contextual writing and a reflexive account of the actual research process’ as criteria for evaluating 'research product'. As a result, explicit explanation of the research is provided.

3.2.2 Epistemology

Epistemology focuses on assumptions about the type of knowledge, its nature (Dana and Dumez, 2015) or how to find out about the world (Gringeri et al., 2013). Crotty (1998) opined that epistemology focuses on ways of viewing the world and making sense of it. Furthermore, Crotty (1998) noted that epistemology deals with the nature of knowledge, its scope, and the legitimacy of such knowledge. Additionally, Bryman (2016) views epistemology as an issue that focuses on what is or should be considered adequate knowledge in a discipline. While positivism and interpretivism relate legitimate research knowledge, the two have contrasting views about knowledge.

Positivism emphasises that factual knowledge gained through observation is trustworthy, which means factual knowledge is accumulated through the five senses (sight, smell, sound, taste and touch). Positivism argues that inquiry should be based on scientific research instead of social assumptions (Williamson, 2013). Bell et al. (2018) noted that positivism emphasises that studying social reality must be carried out by applying natural scientific methods. However, others argue that positivism is not appropriate for determining human attitudes, intention, and thoughts as these may not be determined deeply and explicitly through measurement (Hammersley, 2013, pp. 23- 24). In addition, the pursuit of generalisable findings can result in the neglect of individual truth about reality through participants' interpretation and understanding of an issue, event or phenomena. Further, it may also be challenging to apply the resulting findings, which typically do not take account of context, to a specific local situation (Johnson and Onwuegbuzie, 2004). In addition, positivist data collection methods are predicated primarily on researcher determined structure and content, offering little flexibility, and therefore limiting participants' ability to answer with maximum relevance to their specific context. A positivist approach was therefore not suitable for conceptualising the contributory factors and experiences associated with the occurrence of VVF among women in Northern Nigeria.

In contrast, interpretivism emphasises that good research must analyse how humans interpret activities using more appropriate methods rather than those postulated by positivism (Dana & Dumez, 2015). Interpretivism often involves collecting qualitative data and advocates the need for researchers to understand the role of humans as social actors (Ryan, 2018). It assumes that reality is subjective and socially constructed. Similarly, Bevir and Rhodes (2011) argued that interpretivism emphasises that social and natural sciences and socially constructed phenomena and therefore require different methods of study. Therefore, in line with the aim of this study to explore the socioeconomic and cultural factors driving the increasing prevalence of VVF, the researcher adopted interpretivism as the epistemology stance to enable a focus on exploring research participants' views. Such views are expected to vary across participants, though can be suitably explored using qualitative methods, which align well with interpretivism (Bahari, 2010). At the same time, Janes (2016) agreed that engaging patients in a one-on-one discussion about their health can be potentially

beneficial for their recovery process, especially when it allows them to bring out their interpretation of the condition.

Furthermore, gaining different interpretations and in-depth views (VVF patients and practitioners) about the role of socioeconomic and cultural factors influencing the occurrence of VVF may provide a deeper understanding of the lived experience of the phenomenon. In contrast to the positivist approach, interpretivism is congruent with qualitative methods which allow interaction with VVF participants to generate authentic or reliable information, using prompts and probes to explore unobservable research phenomena (Wellington & Szczerbinski, 2007; Tuli, 2010). Moreover, authors such as (Wellington and Szczerbinski, 2007); Tuli (2010); Enane et al. (2020), argue that uncovering unobservable phenomenon such as perceptions, value, views, thought, and feelings is essential for a deeper understanding of stigmatised patients, such as VVF women in Northern Nigeria. While the interpretivist approach is relevant to this study, it is also fundamental to researchers, public health policy and

organisations seeking to explore participants and service user/customers' experiences and/or satisfaction (Brooker 2003; Haydon 2018; Jane 2016; Santana et al. 2018).

An interpretivism/constructivism approach is particularly relevant for this study as it allows focus on participants' experiences of VVF to drive future action. However, it is limited to the views and constructs of the participants associated with the situation under study (Creswell, 2003; Cohen and Manion, 1994; Mertens, 2005) and neglects the societal or external influences such as ideology and political influence on social reality (Ryan,2015). Additionally, Mack (2010) stated that the interpretative view did not cover issues such as agency and power, typical characteristics in society. However, while this study identified the positionality of the researcher in respect of participants' experiences, it also recognised the influence of power and inequality on the occurrence of VVF. Tackling the menace of VVF in Nigeria is not new, it remains a public health issue in the study area (Daru et al. 2011; Ijaiya 2010; Nasiru and Abubakar 2019) despite the information available on the causes. This prompted consideration of adopting a criticalist perspective as a potential means of emancipating women from the pressure or agencies contributing to VVF occurrence. Criticalist theorists believe there are elemental powers and or structures which create world views and seek to

challenge them (Ryan 2018 p.10). Critical theory can be used to evaluate and provide ways of addressing subjugation by concentrating on societal mistreatment and how people interact with society and political characteristics (Bronner 2011; Guba and Lincoln 2011). In particular, critical theorists are cognisant of societal power in social institutions such as education, religion, economy, and other factors influencing the system of society (Asghar 2013). This is relevant to this study because of potential issues of power, social structure, mistreatment and subjugation of women as factors influencing their autonomy and health in terms of VVF risk and experience. Moreover, Bohman (2005) cited in Asghar (2013 p. 3123) argued that issues related to existing societal truth, such as identifying how to bring changes and transparent standards for evaluation and change, as suitable topics for the application of critical theory. Critical theory therefore fit well with this study which aimed to identify, describe, and interpret issues associated with VVF with its contributory factors (individual and societal factors) to suggest action-orientated changes in society that may reduce the prevalence of VVF among women in Northern Nigeria. In line with the interpretive nature of this study and the relevance of societal power and its impact on the occurrence of VVF among women in Northern Nigeria, a qualitative methodology, rooted within a critical interpretivist paradigm was therefore used.

3.3 Research Approach

There are two broad research approaches: inductive and deductive. The deductive research approach focuses on formulating a research hypothesis based on the existing theory and devising a research strategy to evaluate it (Southern and Devlin, 2010). This essentially involves using the extant literature to explore hypotheses and empirical analysis to evaluate them (Soiferman, 2010). The inductive research approach arises from experiential observations and uses findings to formulate and propagate theories (Gregory and Muntermann, 2011). While this implies that theory formulation results from the research, inductive theories are not wholly verified since they are based on observations (Soiferman, 2010), though they can be verified with the participants, stakeholders, or through member-checking (Thomas 2006). This research approach enables the researcher to work from the "bottom-up" by utilising the opinions of the research participants

to build broader themes and generate a theory that interconnects with these themes (Woo et al., 2017). The research reported here uses the inductive research approach to explore social, cultural, and economic factors driving the increased prevalence of VVF, which is an essential feature that aligns with the critical-interpretivist philosophical stance of this study.

3.3 Ethical approval

Ethical approval for the study was granted by Manchester Metropolitan University research governance and ethics committee (Appendix 10.1 and 10.2), the National Health Research Ethics Committee of Nigeria (NHREC) (Appendix 10.3) and the Research Ethics committees of each (Benue, Taraba and Kebbi) state hospitals and VVF centers where study participants were recruited (Appendix 10.4 to 10.6).

3.4 Research Methods

Research methods are the techniques used to explore a research question or topic and entail techniques adopted for collecting and evaluating a phenomenon to offer varying perspectives (Brownson et al., 2017). The method includes study design, sampling techniques, data collection methods and data analysis.

3.5. Pilot Study

There were some changes to the methodological and analytical approaches adopted as the study progressed; driven primarily by the outcomes of the pilot study. A pilot study was carried out to explore whether the method chosen would generally be appropriate for collecting data to answer the research questions. The pilot study was also designed to test the feasibility of the main study by enhancing the researcher's awareness of VVF patients' likely behaviours and attitudes,

especially in an environment like Northern Nigeria, where discussion about VVF is rarely entertained due to the attendant stigmatisation.

3.5.1 Sampling, data collection and analysis

The pilot study was carried out in Ogbomosho teaching/general hospital in Oyo state in the SW geopolitical zone. This location was chosen because inhabitants spoke a language the researcher understood; the aim was to test the likely reactions or attitudes of the interpreter and participants in preparation for the main study since the researcher did not understand the participants' language of the proposed main study area. Two data collection methods were employed. First, a questionnaire was used to gather demographic data. Hughes (2016) stated that gathering demographic information is vital in determining a phenomenon's dependent and independent variables. Demographic information regarding participants may also assist the researcher in recognising similarities and differences between them for example, due to culture, socioeconomic status, race, and ethnicity (Hammer et al., 2011). Generally, a questionnaire is a data collection instrument consisting of questions and various responses; it can measure the population's characteristics, attitudes, opinions, and self-reported and observed behaviour (Waltz et al., 2010). The pilot questionnaire for this study covered demographic information, pregnancy care, labour and delivery experiences and cultural beliefs. The second data collection method was a one-to-one storytelling-based interview to explore participants' experiences of VVF. The storytelling method was chosen because it is a means by which individuals' pattern of life can be understood and offers a suitable way of uncovering detailed content about previous experience (Wang and Geale, 2015). The fundamental rationale for using storytelling in this research was the expectation that the sense-making of an individual's world is personal and to support participant control in the data collection process.

Six VVF patients and four VVF practitioners were selected using purposive sampling complemented by snowballing technique. Purposive sampling is an appropriate technique for selecting underserved populations (Palinkas et al. 2018; Preen and Zwaagstr, 1994; Berg 1999). Suri (2011), Guarte and Barioss (2006),

and Moser and Korstjens (2018) also described purposive sample selection as appropriate for selecting the population that can provide the appropriate information needed for a particular topic of interest. It was adopted to target VVF women who are hard to reach because of the stigmatisation surrounding VVF and those who are most likely to be able to provide information on the topic of interest. Moreover, purposive sampling was suitable for this study since women in Northern Nigeria are relatively conservative and can therefore be reluctant to share their views on sensitive issues (Morka-Christian, 2018), such as VVF. Six VVF patients agreed to answer the questionnaire, and two participated in the storytelling interview. The patient sample was complemented by one VVF nurse, one doctor and two management staff members who also completed the questionnaire. The recruitment of participants was carried out after the researcher visited the hospital's managing director. The managing director introduced the researcher to the staff and patients; he also agreed to contact three patients on their referral list who agreed to participate in the study. The information sheet relating to the study was given to all the participants. The participants' written consent was sought and given before completing the pilot questionnaire, which comprised closed- and open-ended questions. The questionnaire was available in English and Yoruba languages and was given to the participants to fill out and return to the researcher as soon as they finished. Flexibility was also provided for those who could not complete the questionnaire there and then to return it to the hospital management, for later collection by the researcher. An interpreter member of staff who spoke the local language was assigned by the hospital management, to support both questionnaire and storytelling data collection activities to ensure that participants understood the questions. The literature review and the narrative review informed the development of the questionnaire because the questions were developed after reviewing relevant literature, and a

validated questionnaire adopted in Ethiopia (Biadgilign, et al 2013) was also modified to meet the study's needs based on the study aim. The data were analysed using descriptive statistical analysis. A copy of the questionnaire and interview guide are in the appendices 2 and 3.

VVF experiences were explored using a one-to-one storytelling interview with two patients who consented to participate; pseudonyms were used to preserve their

anonymity. The discussions were audio-recorded, transcribed verbatim and the resulting transcript was analysed using thematic analysis by Braun and Clarke (2006). This analytic framework is designed to support the robust conversion and transcription of oral data to text data and the use of repeated readings of the text data to enable the identification off central and associated sub-themes. The interviews were transcribed verbatim by the researcher and each respondent's transcript was checked against the audio recording to ensure accuracy. The analysis of pilot study data is presented in appendix 2.1 to 2.3.

3.5.2 Lessons from the Pilot Study

The pilot study was designed to identify any possible deficiency in the research approach and likely research challenges (Edwin et al. 2001). While the pilot study can generally be considered a feasibility study in preparation for the main study, Connelly (2008) opined that it could be beneficial for testing a research instrument to identify any inadequacy and enumerate potential shortcomings in the main study.

The lesson learnt in from the Pilot study is that it provided a good knowledge of implementing questionnaires for demographic data, but the focus of the study changed to only qualitative data collection method because it is more suitable for the study.

Additionally, the pilot study demonstrated the inadequacy of using a storytelling approach to interviewing based on the limited volume of data this approach elicited. This aspect of pilot data collection was more challenging probably due to researcher's new experience of using the method, as the participants frequently diverted from the subject of the study, such as asking for money or advice on starting a business (They were mostly talking about the effect of the problem (VVF) and what solution they could get instead of the causes which is the focus of the study). This prompted a switch to a semi-structured interview approach for the main study. Bailey and Tilley (2002) advised that the researcher should know that story narrators choose what they like the listener to know about their story. This was identified in the pilot study as participants were mainly interested in and

emphasised the issue of money. Nevertheless, it proved an inadequate data collection method for the main study because participants provided such limited information about their broader experiences of VVF that the study's aims may not have been met. Moreover, the educational attainment of patients may influence the rate at which they are explicit about sensitive matters such as VVF without a more structured interview approach, coupled with a cultural conservatism about sharing personal health issues. Thus, a semi-structured interview, which allowed for more prompting by the researcher to help maintain the interview focus to elicit more of the information needed for the study, was the preferred option for use in the main study alongside the demographic questionnaire.

Despite moving to a more structured interview approach, the participants still focused on the socioeconomic challenges they were facing, indicating this was an important aspect of women's experiences. The difference was that instead of directly asking for money and business development advice as they had done in the pilot study, the women shared a range of information on the economic challenges they faced and financial dependence they experienced in relation to the risk of occurrence and treatment of VVF. These issues are a clear feature of the study findings, as illustrated in Chapter 4 particularly.

3.6 Main Study

The main study comprised two data collection from two participant groups, one with women who had experienced VVF and another with VVF practitioners.

3.6.1. Sampling

Pragmatic research decisions are often required due to factors such as a lack of human resources, funding challenges and population dispersion (Wilson, 2016; Singh and Masuku, 2013). The study sample is critical in research and how its composition is determined and selected underpins the whole research process. There are two categories of sampling techniques: probability and non-probability sampling techniques. While probability sampling gives each population member an equal chance of being selected, non-probability sampling allows the sample to be

selected in a non-systematic way which can prevent equal chances of being selected in the population (Etikan et al., 2016). However, to meet the aim of this study, participants with specific experiencing or treating VVF were required therefore purposive, non-probability sampling was used to select the sample.

Purposive sampling allowed the researcher to focus solely on VVF patients receiving treatment in the designated study area and VVF practitioners, who could provide relevant and rich information; it also allowed the researcher to explore the views of selected participants from different geopolitical zones on the economic and sociocultural factors driving the increased prevalence of VVF. Healthcare provision in Nigeria is by the federal, state, and local government authorities (Riman and Akpan, 2012). The federal government is responsible for developing policy, regulating, general stewardship and provision of healthcare at the tertiary level (general/teaching hospitals and Federal Medical Centre (FMC) specialist hospitals). The state government is responsible for delivering secondary healthcare (General hospitals), while local government authorities handle primary healthcare issues. Although there is a referral system between these three health structures, it is not adequately organised and respected (Welcome 2011). Moreover, Welcome (2011) stated that illnesses that should be treated at the primary or secondary healthcare levels are frequently managed at the tertiary level because the other two levels are feeble, with insufficient infrastructure, staff, and other shortcomings at the primary level. With these shortcomings mainly experienced in the primary healthcare sectors, most people from the community patronise both secondary and tertiary healthcare. The study, therefore, sought to recruit a purposive sample of women and staff who could provide in-depth information about the study phenomenon (Ranjbar et al. 2012). Participants were recruited from FMC and VVF centres in NW, FMC in NE, and a teaching hospital in NC as they were the most appropriate, based on the varying organisation of health care in different states and where the target participants would be found. The study focused on VVF patients receiving treatment, and practitioners in charge of their care at the participating hospital. Table 2 presents the inclusion and exclusion criteria for the target sample.

Table 4 Participants inclusion and exclusion criteria

Inclusion	Exclusion
• Diagnosed VVF patients receiving treatment. • Diagnosed VVF patients between age 15 and 50 years. • Diagnosed VVF patients who are in hospitals located in the three geopolitical zones in Northern Nigeria • Practitioner/Nurses caring for VVF patients receiving treatment. • Management staff working at hospitals where VVF patients are receiving treatments.	• Non-VVF patients receiving treatment. • Diagnosed VVF patients that are younger than 15 years and older than 50 years. • VVF and non-VVF patients in hospitals located in the geopolitical zones in Southern Nigeria • Practitioner/Nurses caring for other patients, except VVF patients. • Management staff working in other hospitals

The choice of this study sample is multifaceted. The people of Northern Nigeria, especially women, are conservative (Morka-Christian, 2018). Recruitment could be affected by poor education and the difficulty of getting many participants to share their views on sensitive issues, like VVF, which is prone to stigmatisation (Chen 2017; Hamma, 2021; Kisha 2018). Though 18 years was established as the legal age of marriage in Nigerian law (Ityavar and Jalingo, 2009; Ahinkorah, 2021), this is being violated due to custom and religious practices (Anozie et al. 2018). Moreover, the legal age of sexual consent in Nigeria of 11 years (Petroni, Das and Sawyer, 2019) might strongly support teenage pregnancy, causing VVF in

Northern Nigeria (Ibrahim and Daniel, 2000; Kabir et al. 2003), therefore 15 years was selected as the minimum age for eligibility for this study to reflect local custom and practice.

3.6.2 Participant recruitment

Introduction to the managing directors was done through phone calls and sharing the study management documents and participant information sheets via email. Each managing director booked an appointment and introduced the researcher to the staff and the patients, and the researcher shared and explained the participant information sheet to these potential participant groups. After the participants read the information sheet, they were given opportunity to ask questions, made aware that participation was voluntary and that they could opt out at any time without repercussions. The timescale in which participants agreed to participate varied; some accepted after receiving and having the participant information sheet, while others consented after 24 hours to a week by contacting the researcher through the healthcare provider. Some participants consented orally because of their low level of education, and this was audio-recorded; others signed the consent form. Nine of the ten VVF practitioners gave consent over the phone and this audio-recorded, but one signed and returned via email.

3.6.3 Sample size

Though there is no fixed sample size for qualitative studies, the consensus is that saturation should be achieved (Mason, 2010; Malterud, Siersma, and Guassora, 2016; Ranjabar et al., 2012). However, Mason (2010) referred to time and

participant availability issues that were identified by Strauss and Corbin (1998) as an area for consideration. Similarly, while saturation underpins the sample selection in this study, the requirement for PhD researchers to provide details of sample size in the study proposal (Mason, 2010), necessitated pre-identifying probable sample size. Some guiding principles for sampling in qualitative research have been categorized in the literature based on the methodological approach, with others based on the researcher's experience. For instance, Guest, Bunce, and Johnson (2006) identified 30 to 50 interviews for ethnoscience and ethnography and 30 to 60 for most studies in ethnoscience. Moreover, they identified recommendations of 20 to 30 and 30 to 50 interview participants for grounded theory by Creswell (1998) and Morse (1994). Five to 25 and at least six participants were identified as the minimum sample by Creswell (1998) and Morse (1994) for phenomenological studies. Therefore, a target sample size of 42 was agreed for this study and the recruited sample (Table 5) was 32, which fit well with recommended sample sizes in the literature for the study methodology used. This included ten VVF patients from the three geopolitical zones though a much larger number (five) of these were from the NW; with three from Northeast and two from the Northcentral.

Table 5 Study participants (women experiencing VVF)

Geopolitical zones	VVF patients	VVF practitioners	Total
NW	14	5	19
NE	5	3	8
NC	3	2	5
Total	22	10	32

Moreover, this study's participants were recruited from three geopolitical zones to allow comparison and the identification of any consensus or variation in different cultural groups in line with Romney et al. (1986). Saturation was reached in terms of women with VVF as subsequent interviews were not contributing new/different

information and a second round of data collection specifically with VVF practitioners was undertaken to address the initial limited recruitment response and achieve saturation for that participant sub-group. The second round of data collection involved ten VVF practitioners comprising five VVF specialists and five nurses and community health workers. These were purposively selected from VVF centres and hospitals across the three geopolitical zones of Northern Nigeria as in Table 6.

Table 6 Study participants (VVF practitioners)

Number of Participants	Geopolitical zone of VVF centre
2	Northcentral
5	Northwest
3	Northwest

3.6.4 Data Collection Methods

These included a questionnaire to gather demographic information and semi-structured interviews. The questions used to gather demographic information were the same as in the pilot questionnaire. Interview types vary but the focus of this study ruled out structured interviews because these involves fixed questions with limited opportunity for follow-up questions (probes) that permit the further explanation required for exploring participants' experiences of VVF. In addition, the pilot study findings indicated that an unstructured interview was unlikely to enable effective achievement of the study aims as this approach provided limited structure which enabled participants to divert extensively from the study topic. Semi-structured interview entailed one-to-one verbal conversation between the

researcher and participant with the help of an interpreter, and focused on identifying participants' opinions, views, emotions, and feelings regarding the research topic (Stuckey, 2013). A semi-structured interview is a qualitative inquiry method incorporating question guides (Baumbusch, 2010). This approach was chosen to enable the researcher to keep the interview more focused on the research topic than was possible when using an unstructured interview and averted the risk of not effectively enabling elicitation of the key themes or information related to the study topic (Gill et al. 2008).

The opportunity semi-structured interviews provide for follow-up questions and probes is valuable in research of this nature, particularly considering the language barrier between the researcher and participants. While the researcher speaks English and Yoruba, all the participants were predominantly Hausa, Tiv and Fulani. Such differences can create a communication barrier between the researcher and participants even though an interpreter was recruited. Plumridge et al. (2012) posited that researchers using an interpreter may lose some control over the interview. For instance, the interpreter might resort to leading questions, and the three-way conversation can lead to disjointed conversation, limit interview spontaneity, and make prompting difficult (Pitchforth and Van Teijlingen 2005). The researcher shared the pilot study experience and interview guide with the interpreter to mitigate some of these risks during the interviews.

3.6.5 Data Collection process

Data collection in this study was preceded by the distribution of the study information sheet to all patients. The information sheet explained the aims of the research, the extent of participants' involvement, the importance of voluntary participation, anonymity and confidentiality, and secure data management. Similarly, the researcher answered participants' queries and clarified any aspect of the information; this process was aided by an interpreter to interpret in the participants' local languages – Hausa and Tiv. The researcher also confirmed each participant's consent before starting the interview. The data collection process in the main study was the same as pilot study, but only demographic information was collected using a questionnaire. However, the semi-structured

interview was pretested with two patients who were not involved in the study to address any possible issues with the interview process or guide prior to the main study data collection. No major problems were identified therefore this pretested interview guide was used for all other semi-structured interviews. The only issue observed was the inclusion of additional prompts to address questions responded to vaguely by participants. The interview guide covered topics such as the participants' educational level, employment, income, pregnancy care, and choice of healthcare and delivery. Similarly, it encompassed topics related to the living environment, diet, personal/family beliefs, gender segregation, and cultural and religious beliefs about VVF occurrence. Copies of the participant information sheet, consent form, and interview guide are in appendices 3,4 and 5 respectively. The semi-structured interview for VVF practitioners was done via telephone as this was most convenient for them due to their time schedule and COVID 19 restrictions. It was designed to explore their perceptions of the influence of socioeconomic and cultural factors on the occurrence of VVF. It also explored the available programme(s) and their perceived impact on reducing VVF occurrence. Themes from the VVF patient data were also reviewed with the VVF practitioners to enable practitioners to identify potential interventions to address the high prevalence of VVF in Northern Nigeria

Each interview was audio-recorded and transcribed verbatim as in the pilot study. Appendix 6 includes a section of one transcript as an illustrative sample.

3.6.6 Approach to data analysis

Grbich (2012) argued that data collected during research activity represents the voice of research participants and signifies what the researcher attempts to hear. Therefore, the researcher needs to ensure that participants' responses are effectively interpreted and reported for dissemination to others. Kawulich (2004) posited that data analysis is a process by which the researcher synthesises the raw data to provide a meaningful interpretation. This study used descriptive statistical analysis for the demographic information and the six steps of reflexive thematic analysis (Braun and Clark 2006) for the semi-structured interview data.

The same analysis processes were applied to VVF women and practitioner data sets.

In this study, oral speech is a relevant response of research participants therefore the researcher ensured that the transcripts represented the participants' views verbatim. Transcripts were analysed using thematic analysis by Braun and Clarke (2006) and relevant literature such as Adu (2019) and Saldana (2021) provided additional theoretical justification and clarification for the appropriateness of the coding processes. Thematic analysis is a method for identifying, analysing, and interpreting patterns of meaning within qualitative data (Clarke et al., 2015), offering systematic and accessible procedures for developing robust codes and themes. Thematic analysis aims to summarise the data content by identifying and interpreting vital features of the data as guided by the research aim. This enables the analysis and organisation of concepts identified from raw data and the development of themes from raw data extracts to build a thematic structure representing the whole data set. Braun and Clarke (2014) enumerated six phases of conducting a practical thematic analysis, namely: data familiarisation, identification of exciting features, theme search, theme review, defining themes, and report production and these stages guided the thematic analysis in this study.

3.6.7 Data familiarisation

This is the first phase of thematic analysis described by Braun and Clark (2006). In this study it involved verbatim transcription, transforming oral speech into a meaningful text (Tolley et al., 2016) by the researcher through engaging actively with the data by listening to the participants' accounts from the interview record. During this process the researcher checked that the meanings were not lost in translation. It also involved relistening to each audio recording and checking the transcript to ensure accuracy. This process allowed the researcher to remain focused on participants' experiences of VVF and supported reflection on early ideas regarding an appropriate coding strategy for the dataset. This involved critical observation to identify patterns or gaps/inconsistencies of experience and noting key information that might help to answer the specific research questions. The familiarisation process was used to generate initial codes within the context of

each research question, which Braun and Clarke (2006) and Terry et al. (2017) referred to as initial inklings or conceivable themes or systematic ideas of data analysis.

3.6.8 Identifying interesting features/generating initial codes.

This can be referred to as the general coding phase as it accommodates all the researchers' initial thoughts (temporary and constant ideas) about the data. While codes are initial analysis components that capture data relating to the research question, they also serve as the building blocks for themes (Guest et al., 2011). Thematic analysis involves creating short words (codes) identified from the data set, then grouping similar codes into clusters that are themselves then grouped. However, the researcher takes at face value the accounts of participants and, in this case, what they considered socioeconomic and cultural factors causing the increasing prevalence of VVF. Data coding is necessary because the participant's responses in text form are voluminous and may be challenging to manage and make sense of within a relatively short time in raw format compared to the coded form (Creswell, 2015).

Before the data coding, the researcher considered the appropriate coding strategy that suited the purpose of the study. Adu 2019 acknowledged three coding strategies, and the appropriate coding strategies chosen for this study are description-foc used and interpretation-focused coding. Description-focused coding describes research phenomena based on participants' responses, while this is similar to what Terry et al. (2017) and Braun and Clarke (2014) respectively referred to as semantic and critical approaches. Interpretation-focused coding goes beyond a mere description of data; it involves exploring and interpreting the underlying meaning of data. The interpretation may therefore depend on the participant's demographics, intention, and other research phenomenon (Adu 2019). Interpretation-focused coding is described as constructionist and latent coding approaches by Terry et al. (2017) and Braun and Clarke (2014) respectively. These two coding strategies were chosen because the data was considered as imbued with direct (description) and indirect (interpretation) meanings.

Description-focused and interpretation-focused coding strategies were therefore used to summarise the participants' responses based on their relevance to the study. The description-focused coding strategy was applied to the responses which directly addressed the research questions. At the same time, the interpretation-focused coding strategy was applied to those responses with indirect meaning. Interpretation-focused coding was used alongside description-focus coding to unearth the meaning of the responses that appear not to be directly answering the research questions within the data; this was done by considering participants' response indicators such as relationship with their environment before creating codes (Adu 2019; Saldana 2015), this was appropriate in this study which required exploration of data characterised by obscured meaning. Both description-focused, and interpretation-focused coding can be independently or jointly used to determine the appropriate meaning of a data set (Adu, 2019 Saldana, 2015).

Additionally, Adu (2019), Terry et al. (2017), and Braun and Clarke (2014) all agree that there is no rigid approach to coding, but the most important thing is to ensure that the codes generated are appropriately meaningful and answer the research questions. Therefore, codes can either be generated manually or via computer software. Saldana (2021) recommended manual coding for first timers and small-scale research, stating that the researcher gains more control and a sense of ownership of the coding output, which is preferable to enable focusing one's mental energy on the data rather than on computer software. Therefore, the coding approach employed in this study was manual coding. Saldana (2021) also identified three means of manual coding. The second style was adopted for this study, which involved highlighting the relevant information in the raw text and clicking the comment icon on the computer in Word to insert the relevant code(s). The identification of meanings in these responses was recorded as codes. This process underpins coding, which involves identifying narrative issues and enables the researcher to view the world from the participants' interview transcripts. Their perspectives were summarised initially through basic coding, identifying and selecting specific words or phrases from the transcripts that seemed essential to the participants.

3.6.9 Theme searches

Following the process of Braun and Clarke (2006) theme searching entails collating the identified codes into initial themes. Various codes were used to characterise themes in a meaningful and coherent manner to present the research findings. These themes were further grouped into broader categories to reflect other information derived from the data. This resulted in the identification of four initial themes for each geopolitical zone as this first stage of analysis. These initial themes included socioeconomics factors, how socioeconomic factors influence VVF occurrence, sociocultural factors, and how sociocultural factors influence VVF occurrence; these served as cross-cutting themes. Specifically, appendix (7) contains labels and excerpts of participant data relating to these initial themes.

3.6.10 Theme review

The review stage involved rechecking the themes against the initial codes and transcripts. In particular, the transcripts were re-read to check that the themes effectively reflected the whole dataset and represented the participants' opinions as closely as possible; codes identified from the VVF practitioners' data were incorporated with those of the VVF patients. The codes were further categorised into clusters based on similarities, resulting in themes that appropriately summarised the data. It was necessary to identify and separate each socioeconomic and sociocultural factor with a distinct label for each, as they were identified from the data. This resulted in the identification of main themes with their associated sub-themes. The themes review also involved a comparison of codes from the three geopolitical zones in Northern Nigeria to identify any commonalities and disparities among the zones. This process demonstrated that although there were similar themes across the three zones, there were also disparities, as shown in Appendix 8

3.6.11 Defining themes.

This is the phase where the meaning of each theme is established based on further checking each theme label in detail to ensure appropriateness. This was achieved by further developing the final theme structure. This involved collapsing some identified themes and sub-themes and developing more concise and representative theme and sub-theme labels where necessary, plus separating employment/income into employment and income/poverty. Further collapsing of similar themes was done across the three geopolitical zones to prevent replication of related information. For instance, many initial themes like ‘perception’, ‘poverty’, ‘preference for work’, ‘provision of education’, ‘only boy's school’, ‘no school’, ‘no daughter attended school’, ‘not valued’, ‘drop out’, ‘education’, ‘no money for school fees’, and ‘polygamy’ were consolidated into a broader sub-theme titled 'hindrances to female's education' under a main theme named 'education' as shown in column 2 of the in Appendix 9

Similarly, all themes and sub-themes from VVF patients and practitioners were further revised and, where relevant, combined to remove repetition to generate a more concise, inclusive, and comprehensively integrated summary from the three geopolitical zones. Additionally, combining, taking particular note of the intersections resulted in five major themes which are cultural, Socio-economic factors influencing VVF, Barriers for women accessing healthcare, current provision, and Potential solutions to reduce the prevalence of VVF.

A final round of theme review and more succinct definition of themes and sub-themes was done, which produced the final study theme structure. The three findings’ chapters present the findings from the final three themes and their sub-themes which are also summarised in Figure 7. in Chapter seven.

3.6.12 Report production

This is sixth and final phase of the reflexive thematic analysis (Braun and Clark, 2006). It comprises the write-up phase, which involves knitting together the critical

interpretation of data excerpts and putting the analysis and findings from the study into context with reference to the relevant literature (Braun and Clarke 2014)

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3.7 Trustworthiness

This deals with issues concerning quality assurance in qualitative research. Trustworthiness is the term used to refer to the justification of the credibility, dependability, transferability, and confirmability of qualitative study as a means of demonstrating its overall quality and robustness (Toma, 2011; Sinkovics et al., 2012).

3.7.1 Credibility

Credibility is a means of establishing the rigor of qualitative study. To achieve credibility in this study, five of the six strategies highlighted by Anney (2014) supported by Guba (1985) were adopted. These included extended rapport/engagement and debriefing of study participants, triangulation of data, member checks, negative case analysis and Persistent Observation.

3.7.2 Extended rapport/engagement

Building robust rapport was essential in this study to achieve a conducive atmosphere to maximise participants' openness in providing in-depth information. Interpreting in participants' local languages, meeting, interacting with them and explaining the study information and allowing them to ask questions before they agreed to participate, helped to minimise misunderstanding or any potential distortion of study information. The rich data obtained from the semi-structured interviews and all the contacted participants' willingness to participate in the study signalled good rapport with the researcher.

3.7.3 Debriefing

The members of academic staff who are my supervisors and participants enhanced the quality of study findings through providing feedback, comment on the research and data collection process to improve the quality of data generated.

3.7.4 Triangulation

Using different sources of information, by interviewing different group of participants (VVF women and practitioners) from the three geopolitical zones of Nigeria sought to enhance the quality of the data collected and quality of the findings, mirroring the approach of Anney, Hume, and Coll (2012) who collected data from different participant groups.

3.7.5 Member checks

This was achieved through repeatedly confirming with participants my understanding and assurance of their information during interview. This was also supported by careful analyses and interpretation based on the participants' information recorded during data collection and rigorous checking (Guba, 1981) before producing the final study output.

3.7.6 Persistent observation

Persistent observation of participants' information enabled the researcher to recognise participants' prevalent socioeconomic and cultural factors, qualities of life and other characteristics leading to VVF among women in the study area. In

addition, interacting extensively with the research content was used as encouraged by Guba (1981) to increase the understanding of the researcher regarding the study.

3.7.7 Dependability

This study shows dependability and precision in the process (Guba and Lincoln, 1989) of the findings through providing detailed documentation and evidencing of the research processes. Moreover, the precision of the transcription was ensured by checking them against the audio-recordings and using several checks during the analysis process to prevent any meaning getting lost.

3.7.8 Transferability

Detailed description was the benchmark used for each stage of the research, including the data collection and analysis processes adopted right up to the production of the final study report, to enhance the transferability. This approach provides the appropriate detail and clarity to enable others to appraise the transferability of this study to other contexts. In addition, the use of purposive sampling supports study transferability, as this allows the specific selection of participants with the required characteristics and experience required to meet the study aims and support in-depth analysis of the findings (Anny 2014).

3.7.9 Confirmability

The confirmability of this study is supported through participant and data triangulation, the provision of a clear study audit trial, and the researcher's use of a reflexive journal. While the triangulation strategies used in this study have been described above, the audit trail comprises of the provision of a detailed record of the research processes, including detailed explanation of the data collection

processes and exposition of the development of the findings. Moreover, basing the data analysis on the six steps suggested by Braun and Clarke (2006) provides a clear audit trail of a comprehensive and transparent approach to analysis. Additionally, confirmability was enhanced through the discussion of the researcher's positionality and the use of a reflexive journal which included personal reflections of the content and process of the study throughout.

3.8 Reflexivity

Reflexivity involves reflection on how the researcher's values, beliefs and attitudes influence the study and can be demonstrated through personal interaction, decisions about methodology, and the research context (Olmos-vega 2022; Janes 2016;). However, it is subject to change and varies as the study progress, which probably makes it difficult to measure (Doucet and Mauthner 2008; Olmos-vega 2022). The need for the researcher to acknowledge and manage issues of positionality is a crucial factor when undertaking critical interpretivist research. Reflexivity and researcher transparency are essential strategies for helping to address this to prevent damaging the quality of the research by unduly influencing the study's validity, especially in the data collection process (Ahamed 2010). Personal reflection in this study included how previous experiences drove my decisions, which involved conceptualising the term VVF and recognising disparities associated with the condition. My first experience with VVF patients was during my youth service. I visited the nearby general hospital and was with VVF patients in the waiting room, but I could not bear the stench, which illustrates why they are prone to stigmatisation. The experience prompted my intention to learn more about this issue.

Additionally, my experience while delivering my first child, in which I narrowly escaped VVF, was another strong driver behind my decision to pursue this research idea. Moreover, my educational background and role as a teacher with knowledge of geography and my perception of VVF patients' demographic characteristics facilitated the decision to explore the socioeconomic and cultural factors to identify and explore disparity. Those experiences and the ideas and questions I generated as a result signified the interpretive researcher stance

(Panhwar, Ansari, and Shah, 2017) I chose to adopt for this study. Moreover, my socioeconomic background, being female and a Northern Nigerian, represent my shared positionality with the study participants (Doucet and Mauthner, 2008). Ryan (2006) identified the perception of the interconnectivity of phenomena and all events as not reflective of the positivist position of knowledge generation. Similarly, Olmos-vega (2022) recognised the uniqueness and power of the participant researcher's relationship with the understanding of data, which needs acknowledging and addressing in order to ensure it does not inappropriately influence the study. Therefore, identifying the characteristics of this researcher's relationship with a study (subjectivity) drove the qualitative methodology employed for this study and the recognised need for reflexivity throughout I was aware that managing subjectivity is an ongoing process which needs attention to be paid to it so I kept a diary/field notes so I could reflect on my subjectivity throughout the research process.

However, the potential benefit of participant-researcher shared characteristics (insiderness) was identified and positively harnessed in this study to gather considerable information that may not otherwise have been possible. For instance, culturally in Northern Nigeria, especially in the Northwest, it is difficult for male strangers to approach women for information, but my female (insider perspective) enhanced my access to and ability to build rapport with the participants though I consciously avoided influencing them and sought to ensure they had maximum opportunity to relax and communicate as freely as they wished during the interviews. Nevertheless, there were areas of difference between the researcher and participants (outsiderness); these included cultural and level of educational attainment differences for example. In particular, my inability to speak their language (outsider language barrier) prompted the pilot study, use of an interpreter and change from minimally structured storytelling to semi-structured interviews. Moreover, being an outsider prompted the inclusion of VVF practitioners as participants to gain more insider perspectives on the drivers of VVF. Therefore, recognising my positionality and the implications of the insider and outsider elements of this enabled me to ensure these did not unduly influence the study whilst maximizing any potential benefits, to enhance the quality of the research outcomes (Kahuna, 2000; Serrant-Green, 2002).

3.9 My research journey

As identified earlier, this study underwent a series of changes. For example, the data collection and analysis approaches changed as a result of the learning from the pilot study. For instance, the literature review began as a Systematic Review designed to underpin a quantitative study on this topic. However, upon realizing that the required sample size that would have been necessary to provide the appropriate power for a quantitative study was highly unlikely to be achievable in terms of access to enough VVF patients in Northern Nigeria, it was recognised that a different approach was required.

Contextually, the researcher's positionality subsequently influenced the choice of data collection method. Storytelling interviews were the chosen method originally to provide as much flexibility for participants to share what was important to them about the topic. The pilot study findings indicated however that this approach would not be effective in the context of this study, hence the change to a semi-structured interview as a much more effective way of ensuring the study aims were addressed. Moreover, the retirement of two supervisors and reappraisal of the progress made provided additional challenge and ultimately resulted in in a change of data analysis approach from the originally planned social network analysis to a thematic analysis. This is an example of professional perception which may also influence the novice researchers' positionality; for instance, the advanced researcher supervisory relationship stimulated further appraisal of the best method of analysis to ensure a high-quality analysis that most effectively reflected the nature of the data.

The inductive interpretivist approach was considered fit for this study because it is exploratory, characterised by flexibility, based on qualitative research observation and analysis begins with the data itself, with themes derived from this (Liu, 2016; Jebreen, 2012). It enables exploration of assumptions, analyses of patterns and inferences to make general conclusions supporting the development of new theories. This aligns with the critical interpretive approach, the philosophical stance underpinning this study, as it supports the in-depth exploration, prioritises participant views and values individual perspectives and the interpretation of these

(inductive-interpretivism) (Creswell, 2009; Heracleous, 2004); in this case, regarding the socioeconomic and cultural factors influencing VVF occurrence.

A deductive approach was rejected as this aligns with positivist data collection methods which are predicated primarily on researcher-determined structure and content. It offers little flexibility and limits participants' ability to answer with maximum relevance to their specific context. It was therefore not the most appropriate approach to address the exploratory nature of the research aims and the subjectivist ontology and interpretivist epistemology on which the study was based. Positivism is not appropriate for exploring human attitudes, intentions, and thoughts as these may not be examined as deeply and explicitly through measurement (Hammersley, 2013, pp. 23- 24).

3.10 Ethical Considerations

3.10.1 Risk/benefit assessment

These processes were designed to ensure the safety of the researcher and participants taking part in the study and to maximise data quality (Oliver et al 2012). To minimize the risk of participants' distress, no questions were asked intentionally during any interaction with participants that could upset or caused embarrassment, recognising that the study topic involved a sensitive subject, mitigations were put in place to help manage this. For example, it was made clear at the onset that the researcher was not qualified to give advice on health or clinical issues. All efforts were made to ensure participants were comfortable and understood that they could speak to their health professional or counsellor about any issue that might have upset them during the discussion as explained in participant information sheet. However, no participant exhibited negative behaviours or gave any reason for the researcher to be concerned that they had found study participation stressful. Though there was no intention of raising sensitive, embarrassing, or upsetting issues, the study topic was a potentially sensitive one and there was provision for dealing with any participant who became distressed as a result. Should this have occurred the interview would have been stopped immediately and the participant given the opportunity to take break and then continue if they wished, or not to resume the interview. Any participant who became distressed would be offered support from a hospital counsellor, as agreed

by the hospital management during the planning for the study, since the interviews were conducted in a private room on the host hospital premises. Should any participant become distressed or be unable to complete the interview, the researcher would offer them a follow up/courtesy welfare call in addition to the actions already described.

Personally, the first way I managed the data collection phase in relation to the sensitive nature of the interviews was by acknowledging that it happens and reminding myself that by undertaking the study I was doing what I could to have a positive impact on women's lives in future. I also used proactive strategies for managing the potential risks involved such as engaging in research ethics training for postgraduate students, accessing mentoring and support by the supervisors through debriefing and feedback. I was also aware that I could seek advice from university counsellor.

Though, participants did share information on traumatic experiences during the interviews which were potential emotional triggers for me given my insider positionality as having almost suffered the same condition, the strategies I adopted enabled me to successfully manage this. For example, we had breaks between such sessions which enabled time to process my own emotions and responses to the topic (Silverio et al, 2022). In some cases, during the interviews with women in Northcentral, I was moved to give information about free VVF repair programmes that I knew were available in Northwest and how participants could benefit. Providing this information enabled me to give participants hope within the confines of my role as a researcher. In addition, undertaking peer support sessions with interpreter and keeping a journal in which, I reflected on my feelings and reactions also helped me to maintain emotional balance.

3.10.2 Consent

Elliott (2006) described informed consent as measures or procedures that can help researchers to achieve comparable ethical obligations to the public and facilitates participants' ability to make a considered decision about participating in research. To achieve this, the researcher collected the contact of the managing

director of VVF centres in each geopolitical zone and secured the relevant ethical approvals to carry out the study with the VVF women and practitioners before any contact with potential participants or study processes started.

3.10.2.1 VVF women

The researcher took informed consent from the VVF women and where necessary, the assent of the parent or legal representative of VVF patients below 18 years who were willing before allowing them to participate using the document in Appendix 5. The consent and assent were done either by writing, or verbally and audio-recorded, depending on the participant's level of education. All participants were given time to decide whether to participate or not, without giving a reason, and were informed that their decision would not affect the standard of their care. Some participants gave consent within 24hours, and some replied a few days later. Participants were also informed before the commencement of the project that they were free to withdraw at any time they wished by contacting the researcher and instructed on how to notify the researcher whether or not they wished their data collected before the time of withdrawal to be used in the study or not, by filling out a request to withdraw data from the research form, but no participants withdrew.

3.10.2.2 VVF practitioners

After ethical approval was granted, the researcher collected the telephone numbers of all the VVF practitioners. The researcher explained all the information about the study to eligible participants over the telephone and requested email details through which the participant information sheet could be sent to support understanding of the information. The researcher checked that the participant

understood the information and gave them opportunity to ask any questions about the study. Having confirmed they understood the information, the researcher sought participant consent, and this was audio recorded before they participated in the study. However, the researcher made each participant aware that participation was not compulsory, that their decision must be made on a voluntary basis and agreed before the interview began.

3.10.3 Anonymity and confidentiality

To protect anonymity, no participants' name was used in study reporting an all-identifiable information was removed from the transcripts before analysis. Confidentiality and data were protected by ensuring all study data was stored in password protected computer files on a secure university server and accessible only to the researcher and eligible university staff as detailed below.

The interviews with VVF practitioners were conducted by telephone from a private room; the researcher ensured that the participant's privacy was respected by keeping the door closed and hanging up a sign that she was not to be disturbed.

3.10.4 Access to Data

Besides the researcher, access was granted to authorised representatives from the Manchester Metropolitan University to permit study-related monitoring, audits, and inspections.

3.10.5 Record Keeping

The audio recorded data was deleted after transcription and the transcripts stored for up to five years until completion of the study when they will be securely

disposed of. Before moving on consider the study findings however, the participant demographic data is presented below to provide additional context for the findings.

3.11 Introducing the study participants.

The characteristics of the VVF patients and staff who participated in the study are presented below. Table 7 outlines the demographic analysis of the 22 VVF patient participants, revealing that two did not know their age, seven were less than 18 years of age and thirteen were either 18 years or more. Furthermore, nineteen married at less than 18 years of age, while two were married at 18 years or more. However, one participant did not know her age at marriage.

Additionally, sixteen participants were less than 18 years old during their first pregnancy, while five were at least 18 years and one could not ascertain her age during her first pregnancy. Only one of the 22 participants had completed primary education. Fourteen of the 22 participants were jobless, seven were involved in a low-income trade and one was an apprentice. Regarding religious belief, 21 participants were Muslims, while one was Christian. Their marital status indicated that 20 were married, with two participants divorced.

Table 7 Participant's (VVF women) demographic information

Participants	Geopolitical zones	Age	Education	Occupation	Religion	Marital status	Age at marriage	Age at first pregnancy	Spouse \occupation	Spouse education	Number of siblings	Who eat more	Number of children
1	NW	17	none	none	M	married	15	16	farming	none	1	male	None after 2
2	NW	18	none	none	M	divorce	14	15	Farming	none	7	male	None
3	NE	19	none	Petty business	m	married	15	16	faming	none	4	male	one
4	NW	15	None	none	M	married	<15	15	Farming selling farm produce.	none	3	Not know	none
5	NW	30	none	none	M	Married	<18	15	farming	none	8	Don't know	7-5
6	NW	16	none	no	M	married	14	Less than 15	farming	no	7	Both eat the same	2
7	NE	17	no	business	M	married	15	16	Farming/motorcycle driver	no	9	female	none
8	NW	15	no	Selling grain	M	married	14	<18	farming	no	5	Male	3-1

9	NC	18	no	tailor	M	married	15	15	farming	none	6	female	1
10	NC	24	none	Sell raw rice	M	married	20	21	farming	no	2	Not known	none
11	NE	Not know	no	Sell cheese	M	married	7	12	farming	no	6	Not known	1
12	NW	15	no	no	M	married	< 18	<15	none	no	4	female	4-1
13	NE	20	None	Sell ma ggi	M	married	<18	18	farming	no	7	Don't know	1-1
14	NW	26	none	none	M	married	16	16	business	none	6	male	4-3
15	NC	29	no	apprentice	C	married	20	16	farming	Sec school	6	female	3-3
16	NW	40	none	none	M	married	15	23	farming	none	7	Don't know	4
17	NW	28	none	none	M	divorced	13	23	farming	none	4	Don't know	none
18	NW	18	none	none	M	married	15	15	business	none	6	male	none
19	NE	20	none	none	M	Married	18	19	farming	no	7	female	none

20	NW	18	none	none	M	Married	16	17	Cattle rearing	no	8	Don't know	none
21	NW	15	none	none	M	married	12	14	Cattle rearing	none	5	Don't know	1
22	NW	Don't know	none	none	M	married	Don't know	Don't know	Cattle rearing	none	9	male	none

Regarding family composition, sixteen participants had more than four siblings and six had fewer than four siblings. Six participants stated that males ate more than females, while five disagreed; only one stated that both males and females ate the same food and ten could not say which sex ate more during childhood. Nineteen of the participants indicated their spouses were engaged in farming, with two businessmen and another jobless.

Although several similarities exist in the participants' demography across the three zones, some differences were also identified. For instance, the two divorcees were from the Northwest, while all VVF women from the Northeast and Northcentral were married. While previous studies, for example, Ampofo et al. (1990) and Ijaya (2010), have observed a high divorce rate among VVF patients, the lower divorce rate in the current study is consistent with others. For instance, Ekine et al. (2015) reported that 90.7% of their participants were still married even with VVF and attributed this to increasing awareness about VVF. On the other hand, women in Northcentral and Northeast were more engaged in economic activities than VVF women in the Northwest; this may reflect the Northwest as the area with the highest practice of wife seclusion. Though there is no study on the total population of secluded wives in Northern Nigeria as a whole, studies reporting wife seclusion and its consequences are concentrated on North-western Nigeria (Robson 2000); Nast, 1996; Callaway1984; Yakubu 2001; Barkow 1971; Werthmann 2002; and Schildkrout 1982).

In the current study, 40% of VVF women in the Northeast, 33.3% in the Northcentral and 50% from the Northwest have a single child, potentially indicating the negative influence of VVF on their fertility rate. Although the participants' demographic information shows that most were above 18 years old, their ages at marriage and first pregnancy were between twelve and seventeen years. The present study's findings also indicated that Northcentral participants married and had their first pregnancy slightly later than those from the Northeast and Northwest. For instance, all Northcentral participants married and had their first pregnancy between 18 and 21years old. In contrast, Northeast and Northwest participants were married and had their first pregnancy between 7 and 19 years of age and 12 and 17 years, respectively. This indicates that most participants were involved in early marriage. It may also explain the higher VVF occurrence reported in the Northeast and Northwest than in Northcentral, and partly explains difficulties

in recruiting VVF participants for Northcentral, although the lower turnout in Northcentral could also have been the result of the uneven distribution of healthcare programmes and facilities for VVF prevention and management identified later in this study among the three geopolitical zones. However, the finding regarding age at marriage and VVF occurrence in this study are consistent with Ampofo et al. (1990), who stated that the rate of VVF occurrence was higher among women who married at the age of 15 than those married at 18 years old. Adedokun et al. (2016) corroborated this claim by stating that women who are married between15 and 19 years of age are more likely to experience complications after childbirth than those between the ages of 20 and 24 years.

Tables 8 and 9 present the demographic data for the five VVF practitioners, nurses, and community health workers who participated in a single one-to-one semi-structured interview. The VVF practitioners were aged between 43 and 60 and comprised three males and two females. Two were consultant gynaecologists, a fistula surgeon, a medical officer, and a head of nursing, each with four to twenty years of work experience.

Table 8 Demographic characteristics of VVF practitioners

Participants	Age	Gender	Specialty	Years of experience	Geopolitical zone of VVF centre
NC1	48	Female	Consultant gynaecologist	4 years	Northcentral
NW1	43	Male	Consultant Gynaecologist	10years	Northwest
NE1	60	Male	Head of nursing	20years	Northeast
NE2	44	Female	Medical officer	5 years	Northeast
NW2	45	Male	Fistula surgeon	7years	Northwest

The remaining practitioner participants were three VVF nurses, a chief nursing officer and a senior nurse officer/community worker. These nurse/community worker participants were slightly younger (aged between 40 and 50 years). Moreover, they had slightly less working experience (three to 18 years) than the VVF practitioners, as shown in Table 7. There were fewer staff participants from the Northeast (i.e., three and fewer from the northcentral, i.e., two compared to the Northwest with 5. This mirrors the same trend seen in the first data collection phase as VVF women who participated from the Northwest numbered 14, with only five from the Northeast and three from Northcentral. The literature reviews also indicated that much of the current evidence focuses on the Northwest compared to other geopolitical zones. Some literature, such as Ijaya (2010), identified a high number of VVF patients in the Northwest compared to other regions; a VVF gynaecologist emphasised the perception that there are many VVF patients in Northcentral compared to other regions, but they are not necessarily seeking support. This can indicate inequality and uneven health promotion and

preventive measures distribution among the three geopolitical zones, which might have encouraged the identification of more VVF patients in the Northwest.

Table 9 Demographic information of Nurses and community health workers

Participant	age	gender	Specialty	years of experience	Geopolitical zone
NW3	40	Female	Fistula Nurse (CNO)/community worker	18 years	Northwest
NW4	39	Female	Fistula Nurse (Nursing officer 2)	3 years	Northwest
NW5	50	Female	Chief Nursing officer (CNO)/community worker	4 years	Northwest
NC2	40	female	VVF nurse	3 years	Northcentral
NE3	50	Female	Senior nurse officer/community worker	5 years	Northeast

3.12 Summary

This chapter has briefly described Northern Nigeria and why it was chosen as the research site, particularly considering the access to a rich data on the topic of study it offered to support achievement of the study aim. Moreover, this chapter has discussed the research philosophy, ontology and epistemology underpinning the study and justified the research methods employed. Exploring the sociocultural factors driving the increased prevalence of VVF and the need to understand women's lived experiences, the researcher adopted an ontological perspective

based on subjectivism because it rejects the notion of a single ‘truth’ and recognizes reality as constructed. This was complemented by the adoption of interpretivism as the epistemological stance, which is congruent with a subjectivist ontology, as it focuses on exploring research participants' views since reality is considered to be subjective and socially constructed. Additionally, grounding of this study in the principles of critical theory was explored as appropriate because this recognises the influence of power and inequality issues on phenomena and supports pragmatic action and advocacy, which fits with what is currently known about the potential challenges of addressing VVF. Finally, this chapter has explained the relevant ethical issues and how these were addressed along with the strategies used to enhance the trustworthiness of the study, including the issue of researcher positionality and reflexivity. The following three chapters report the findings of the study, therefore as a prelude to this and to provide additional context for these, this chapter concluded with an overview of the participants’ demographic data.

Chapter 4: Socio-economic and Cultural Factors Influencing the Prevalence of VVF

The participants demographic information collected are in chapter 3 of the theses.

Twenty-two VVF patients participated in this study with their age range 15 and 40 years old, their age at marriage ranged between seven (7) and twenty years (20) and first pregnancy between fourteen (14) and twenty-one years old. They are mostly unemployed with few of them involved in low-income businesses which prompted their dependent on family members for survival. Ten VVF Practitioners from the three geopolitical zones of Northern Nigeria participated in this study which involved Consultant gynaecologist, one Head of nursing, one medical officer, one Fistula surgeon five fistula nurses and three of them are community workers. Their age ranges from forty-three to sixty years old and working experiences ranges from three to twenty years.

The approach to data analysis is comprehensively explained in chapter three. This thematic analysis resulted in the development of three main themes, each with a number of sub-themes. Chapters 4-6 each present the findings from one of these three main themes: Chapter four deals with the socioeconomic and cultural factors influencing the prevalence of VVF; chapter five deals with VVF and challenges to healthcare access; and chapter six, potential solutions to reduce the prevalence of VVF.

The first main theme (socioeconomic and cultural factors influencing the prevalence of VVF), presented here in chapter four, has four sub-themes. These are: the role of education; the role of employment; cultural preferences and religious beliefs around pregnancy/ childbirth; and the intersection of socioeconomic and cultural factors. The sub-themes were developed by grouping together related issues women discussed, with each of these issues presented as sub-sections within the sub-theme narrative.

The approach used in analysing the data in this study was the six stages of thematic analysis by Braun and Clarke 2006 as presented on the table (10) below.

Table 10 Six stages of thematic analysis

S|N	Six phases of thematic analysis	Application in this study
1	**Data familiarisation**	Verbatim transcription. Engaged actively with the data by listening to the participants' accounts from the interview recording and checked that the meanings were not lost in transcription. Relistening to each audio recording and checked the transcript to ensure accuracy. The process allowed researcher to remain focused on participants' experiences of VVF and supported reflection on early ideas regarding an appropriate coding strategy for the dataset. Involved critical observation to identify patterns or gaps/inconsistencies of experience and noting key information that might help to answer the specific research questions. The researcher generated initial codes within the context of each research question.

<table>
<tr>
<td>2</td>
<td>Identifying interesting features/generating initial codes.</td>
<td>This is a general coding phase, it accommodates all the researchers' initial thoughts, (temporary and constant ideas) about the data. These were summarised initially through basic coding, identifying and selecting specific words or phrases from the transcripts that seemed essential to the participants.

Description-focused known as semantic or critical approaches and interpretation-focused known as constructionist and latent coding was used as coding approach. The comment function in word was used to highlight all the relevant information and phrases from the raw data in each transcript that seemed essential to the participants. and add the relevant code(s). Example of initial coding from participant’s socioeconomic and cultural factors

At this stage the researcher ensured that each code referred to the impression or feelings communicated by participants in that part of the text. The researcher collated all the codes into relevant groups to provide a summary overview of the main points and shared meanings that were consistent in the data between the VVF patients, practitioners and across the three geopolitical of Northern Nigeria as shown in appendix 7.1.
<table>
<tr><th>Extract of the interview</th><th>codes</th></tr>
<tr><td>Patients are with lower educational level, high risk patients, poor, they will not come to the hospital at the right time because they don’t have money or cannot access health care or are being guided by what they are told to do maybe by their in-law or husband. They are not educated to seek good health care however is not only about been educated we have seen some educated have VVF so many, but not poor people can also have fistula from any other issue/reason.</td><td>Low standard of education, lack of hospital, Poverty, Poor hospital attendance, in-law or husband instruction, multi-factorial causation, lack good healthcare, well-educated also experience VVF so other factors at play.</td></tr>
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3	**Theme searches**	This involved combining several relevant codes into initial themes which resulted in the identification of four overarching initial themes for each geopolitical zone as the first stage of analysis. The initial themes are socioeconomics factors, how socioeconomic factors influence VVF occurrence, sociocultural factors, and how sociocultural factors influence VVF occurrence. Any code related to education, employment income/poverty, ignorance etc. were assigned under socio economics factors and how it influences VVF occurrence, See appendix (7.1-7.4) for more information. Codes which did not fit under the four initial themes were dealt with in the next phase. These included for example, the environmental, individual factors and some codes from VVF practitioners' responses concerning the available interventions for VVF, challenges and what was needed for the available programmes to be successful.
4	**Theme review**	The transcripts were re-read to check that the themes effectively reflected the whole dataset and represented the participants' opinions. The codes were further categorised into clusters based on similarities, to comprise the main themes and sub-themes that appropriately summarised the data. For instance, education, employment and poverty became sub-themes within the overarching theme 'socioeconomic factors'. The themes review also involved a comparison of codes from the three geopolitical zones which demonstrated that although there were similar themes across the three zones, there were also disparities, as shown in Appendix 8. Moreover, the process of themes collapsing started to reduce repetition, as all the data codes from both the first and second coding stages were mapped in a table and where appropriate, combined in a process of further collapsing to result in more concise, but related themes representing the whole dataset. This process is illustrated in appendix 9.1-9.3 , resulted in a large number of codes, 36 initial themes, 30 sub-themes, seven themes with two overarching themes: socioeconomic/ cultural factors and available interventions to reduce the prevalence of VVF in Northern Nigeria.

5	**Defining themes**	The meaning of each theme was established based on further checking of each theme label in detail to ensure appropriateness. This involved further collapsing of themes and developing more succinct, representative themes and labels that reflected the content. This process reduced the themes to twenty-eight and overarching themes increased to five which are socioeconomics factors, cultural factors, barriers for women accessing healthcare current provision and potential solution to reduce the prevalence of VVF (see appendix 9.4). Final collapsing was done which increased sub-themes to thirty-seven (37) and further reduced the themes to twelve (12) with overarching themes reduced to three (3) (see appendix 9.5) It involved merging the socioeconomic and cultural factors as data identified that they are connected or intertwine at various points to influence the occurrence of VVF. Current provision was merged with the barriers to accessing healthcare and changed to VVF and challenges to healthcare access and the third theme became: the potential solutions to reduce the prevalence of VVF.
6	**Report production**	The sixth stage is the report production phase, which involved knitting together the critical interpretation of data excerpts and putting the analysis and findings from the study into context with reference to the relevant literature. This stage is reflected primarily in the discussion chapter which considers the study findings presented in chapters 4-6 within the context of the wider literature, implications for practice, policy, and further research ,as well as the strengths and limitations of the study, before concluding.

The current study identifies socioeconomic and cultural factors as being central to the occurrence of VVF among women in Northern Nigeria (see Bazi, 2007; Hamma, (2021, Alio et al., 2011, and Zaghbib et al., 2021). This chapter presents the findings in relation to understanding how and why socio-economic and cultural factors contribute to the incidence of VVF in Northern Nigeria. For this study, socio-economic factors encompass the role of education and the subsequent link to, and role of employment. Participants in the study were often illiterate and did not have appropriate knowledge of VVF or how to navigate health care systems, primarily due to a lack of education. Consequently, most of these women were unemployed and experienced poverty and dependency as a result. Cultural factors found to contribute to the incidence of VVF in this study are presented in terms of cultural practices. These cultural practices are also compounded by religious beliefs. It is important to note however, that socioeconomic and cultural factors intersect. This will be evident in the following discussion around nomadism, early marriage, polygamy, gender segregation and seclusion, culture and religious beliefs around pregnancy/ childbirth and their influencing roles on the increase of

VVF occurrence. Each of the socioeconomic and cultural factors are addressed in turn below and then revisited in relation to their intersection, or the way they are mutually reinforcing.

4.1 The role of education

Education is a fundamental human right that many women in Northern Nigeria are denied, as this study participants' demography shows low levels of education in table (5).

4.1.1 Low levels of education

None of the VVF patients from the three geopolitical zones had primary education. The only one who confirmed being to school dropped out in primary two but could not provide insight into why this was: *I started school, but I stopped in primary two (NW11).*

Though the conditions that prevented their education varied, poverty was common in the three geopolitical zones. School availability for boys only, and lack of perceived value of education, were common in Northwest whilst some issues attributed to their lack of education, such as low perception of value of female education in Northeast mirrored those of participants from the Northwest, seclusion practices and a nomadic lifestyle were additional factors for these women. Similarly, all three North Central participants reported not being educated because of poverty, parental neglect of education and lack of interest in schooling and they are discussed in turn in the next section.

Lack of education was not however limited to females, only one out of the 22 participants' spouses in the current study were educated. Similarly, Mashi and Yousif (2016), discovered that 38.1% of their VVF participants lacked formal education while 61.9% had a low educational level. This confirms previous findings that 75% of VVF patients were illiterate, and 62.8% had illiterate husbands (Mohamed et al., 2009).

A low level of education has previously been identified as a key socioeconomic factor negatively influencing the health and wellbeing of individuals (Van der Heide

et al., 2013). This may be because the more education an individual acquires, the higher their awareness and avoidance of risky health behaviour and vice-versa. Similarly, Wittink, and Oosterhaven (2018) reinforced the importance of patient education in achieving the effective transition from 'doctors know best to patient centred care' meaning that health awareness by the patient aids their healing process. However, the findings of this current study indicate that a lack of primary education has resulted in a high level of illiteracy among participants. Okour et al. (2012) discovered that the degree to which pregnant women and their husbands were educated in relation to health information was associated with knowledge of danger signs. At the same time, extant literature showed that illiteracy is a significant contributory factor influencing VVF occurrence (Kabir et al., 2003, Akter et al. 2020; Yousaf et al., 2004; MM, 2004; Bimbola 2013; Eyo and Dobang, 2014).

However, the reasons for ignorance or poor educational level of this study's participants resulted from various factors, essentially, the perceived low value and lack of interest in of female education as discussed below.

4.1.2 Reasons for Low levels of Education

Some of the reasons for low-level of education among this study's participants are perceived low value, lack of interest in female education, ignorance of its importance, and prioritising income. Additionally, early marriage, Quranic school and lack/only boy's school available led to participants' low-level of education**.**

4.1.3 Perceived Low Value, and Lack of Interest in Female Education

The perception of people in a culture or group of individuals is significant, especially in decision making. Two participants in the Northeast and one from the Northwest identified perceived low value of female education. Their responses showed that their perception or that of their parents about female education hindered their enrolment and attendance in formal schooling. Three respondents

considered formal female education non-essential and a pointless waste of money and time, because marriage is the end of a woman's career as illustrated by this comment:

> *'Whatever women become or acquire belongs to the husband after the marriage. We think schooling wastes money and time because it is not helpful after marriage. After marriage, your job is to cook and pound farm produce' (NW3).*

Another participant pointed out that attending school might not necessarily help with obtaining a better job, using her husband as an example:

> *'I have never been to school, but my husband attended primary school. Despite that, he is doing farm work (laugh). Schooled and those without formal education will end up in their husbands' houses, in the kitchen. That is our practice. So, education for us is unnecessary' (NE2).*

These findings confirm previous claims by Rufa'i (2006), that education of a girl child is hindered by substantial societal factors and barriers, including the notion that girls are responsible for domestic chores, so their education is a waste of money and time. This perspective is also present at society level…. as this statement of the present Nigerian president about his wife illustrates:

> '*The duty of a woman is in the other room not in the government issue*' (Guardian 2017)

Such perception about women could help explain why many initiatives attempting to address their education, have failed. Aja-Okorie (2013) highlighted this as a problematic situation, contending that the efforts of the Nigerian government have not yielded a significant impact on women's formal education for the past twenty years. However, UNICEF (2020) highlighted that investing in girls' education is laudable, leading to the transformation of societies, nations, and the whole world, because educated girls are less likely to marry early and more likely to live a healthy and productive lifestyle. Therefore, investing in girls' formal education may lead to transformation, however investment in education without the interest and demand of people for education can be futile. Appropriate intervention to change people's erroneous perceptions about formal education may therefore help to increase women's education level in Northern Nigeria. Though there may be knowledge and awareness of the potential of formal education in Northern Nigeria,

the findings from the current study signify there is still a lack of interest and ignorance in the education of women in the area due to issues identified below.

The perceived low value, and lack of interest in female education were further encouraged among the participants of this study through prioritising business/ignorance of importance of education, early marriage, parental negligence and interest in Quranic education and no School/only boy schools available.

A key reason for participants' lack of formal education, which may also reflect ignorance of importance of education to a business is participants' short-term focus on making money quickly:

> *'I did not attend school because I prefer to do business, and my parents like it. You quickly make your money in business than going to school' (NW5).*

The above suggested placing priority on business rather than pursuing education, unfortunately, there is no existing literature exploring this the concern is that it may continue to prevent women's education. Though prioritising income in terms of alleviating poverty may be understandable as people strive to meet daily living costs, the implication of neglecting education cannot be over-emphasised as it may have an enduring impact.

Another participant from the Northeast related her lack of interest in education to its potential implications for her marriage prospects, which appears to be the main priority:

> *'I do not think it is necessary because as a woman, you have limited time if you are going to school when you should marry it is a problem because if you go to school and the person you want to marry did not go, he would not like to wait for you to finish your school' (NE5).*

This participant supports the claim, another from the Northwest who highlighted the disadvantage of schooling in potentially delaying marriage, stating that:

> *Those who attend school do not get married so quickly because they must finish school before marrying. They marry around 17years and above (NW9).*

Additionally, Umar (2001) stated that the first era after independence observed a continuous lack of interest in western education. This study adds to the literature by highlighting some of the reasons for this lack of interest in education. Kyari and

Ayodele (2014) also confirmed that early marriage harms female education and identified its significant consequences on the girl child, youths, and the nation such as Nigeria. For example, Khan and Mahmood (1997) found that neglect of education in Pakistan, prevented economic growth and development. This signifies there is still a need for more appropriate intervention in rural areas to increase the interest in female education.

In addition to the perceived futility of education and its potential to result in delayed marriage as important factors preventing the Nigerian women engaging in education, the role of parents in prioritising children's education was crucial. For instance, a participant from Northcentral highlights how parental attitudes and priorities hindered her education:

> *'I do not like to go, and my parent did not bother to register me. They only registered me with the Quranic school and enrolled me in tailoring classes after returning from the Quranic school' (NC1).*

This indicates prioritising religious knowledge over formal education, which resonates with Lawanson (1995) findings that religious women were less likely to have western education because of Islamic teaching and the resulting lack of interest of Hausa women in formal education. Niles (1989) also identified unfavourable attitudes among parents, especially in the rural areas, concerning western education for girls, while parents in urban areas showed strong support for educating their daughters. Though the perceived value of education in Northern Nigeria may be changing, the current study confirms there is still the need for intervention to increase the perceived value of female education in the areas studied.

Availability, accessibility, and affordability of education infrastructure, such as a school building in every community, is very crucial and a key factor that is likely to facilitate access to education. Despite the importance of education and the effort of the government to ensure that every child has basic education, this study reveals that there are some communities, especially in the rural areas, without a school building. Six participants in Northwest, confirmed no school in their communities. Therefore, it was impossible for them to go to school. In the event of availability, it is only available for boys:

I didn't go to school because there is no school in the village; only boys go to school in another village which is a bit far from my village. That is why girls don't go to school (NW8).

The above finding is crucial, should be evaluated and prioritised as Li and Liu (2014) linked primary schools' availability in rural areas to improved educational attainment among girl children. Similarly, perceptions that women's education as unnecessary found in this current study may also prevent girls' schooling or drive parental bias in sponsoring only male children's education to the female child's detriment (see quote NW8 on page7). This finding echoes a Ghanaian study, Fentiman (1999), identifying different factors including perceptions of low value and parents' negative attitude toward education as influencing enrolment of children into primary school. Therefore, a critical investigation into those issues preventing female education should be prioritised to help prevent these consequences.

4.2 The Role of Employment

Employment and income level were found to be critical socioeconomic factors influencing the health outcome of women in Northern Nigeria. The employment status of this study's participants is outlined in Table 11 and indicates there are limited employment opportunities for women which, has an impact on their income/independence and is compounded by cultural factors.

Table 11 participants' employment status

Employment	VVF patients	
None	14	NW=13
		NE=1
Apprentice	1 NC	
Tailoring (small scale)	1 NC	
Low-income Businesses	6	NW= 1
		NE= 4

		NC= 1
Total	22	

Fourteen (thirteen in Northwest, and one in Northeast) of the twenty-two VVF women in this study were unemployed. A further seven participants (one from Northwest, two from Northcentral, and four from Northeast) operated low-income businesses while one from Northcentral was an apprentice. However, all the VVF women were either partially or wholly dependent on family members for income. The findings of the current study indicate that unemployment and low income were factors driving the poor standard of living and ill health, which increase the risk of VVF occurrence. For instance, Ijaya (2010) revealed that many VVF patients in Northern Nigeria were either under-employed or unemployed. Moreover, unemployment can reduce the amount of time people spend in good health. For instance, jobless people are less likely to afford quality food and more likely to consume unwholesome and convenience foods than healthier options without considering side effects, including inability to seek medical help (Cooper et al., 2006).

This study revealed that unemployment and low income are challenges commonly confronting participants from the three geopolitical zones. One out of twenty-two VVF patients identified herself as a fashion design apprentice, a role she started after experiencing VVF, when the wife of a prominent man visited the camp, she was living in because of their displacement by herders:

> '*Just learning to tailor, I started it after the occurrence of VVF when the governor's wife visited the camp we were living when herdsmen killed people in our village' (NC3*).

All participants who are employed from the three geopolitical regions referred to their employment type as a low-income business. For instance, they described making purchases on a small scale to resell, only one of these nine women able to do her business outside her private home:

> *'After going to market to buy the foodstuff I would sell, I just stay home expecting people to come and buy' (NE3).*

While some participants sold raw food or foodstuff, others engaged in selling chewing gum, raw milk, and seasoning. However, they complained of lacking enough income to cover their daily expenses, as summarised here*:*

> *'There is not enough income; it can only assist me to get some money to add to the one my husband gives for feedings'*(NE3)*.*

This finding supports previous work by Mwini-Nyaledzigbor et al. (2013) who identified three women working on small scale trades and seven unemployed out of ten study participants. Similarly, Basheer and Pumpaibool (2015) described most of their VVF participants as housewives, some doing daily menial jobs and petty trading, a few having animal husbandry/poultry and others reporting joblessness and small-scale jobs.

4.2.1 Reasons for Unemployment

Reasons for unemployment or underemployment include lack of education, seasonal jobs, seclusion, husband instruction and marital roles.

One reason for unemployment stated by VVF practitioners was a lack of education as summarised by this statement:

> '*If you look at gainfully employment in Nigeria, either you are self-employed, or formally employed you need education as a background*, *you cannot get suitable employment without education in Nigeria'* (NWP1).

However, the VVF women in the study reported seasonal jobs, seclusion, husband instruction and marital roles rather than lack of education as reasons behind their joblessness. For example, the farmers and dressmaker participants reported that their job is seasonal and complained about variable income:

> *'The only time that I make much money is when there is a ceremony like a wedding or during the festive period when people buy clothes to sew in the group, and if I get the money, I used to add to what my husband gives to buy food and other things we need in the house' (NC1*)

Some women were married to fulfil the obligation of their cultural practices regarding marriage. Kule, a Northern Nigerian term for a secluded wife, was mentioned as one of the most substantial hindrances to female employment in

Northern Nigeria. This was most prevalent among participants in the Northwest and Northeast, as this example illustrates:

> *'No, I had not started any trade before I got married and after the marriage. I became Kule, a secluded wife. We are not allowed to go outside and work, and there is no money for me to start an indoor business that others are doing' (NW6)*

Similarly, tributing her predicament to her in-law's business and spouse's counsel as a factor for her joblessness, another participant noted that:

> *'The only work I could have been doing was to sell nunu (raw cow milk) or farm produce like tomatoes, but my husband's sister and mum were selling those things before I got married, so my husband asked me to do just cooking and care in the house' (NW13).*

These findings support Robson (2000) who maintained that seclusion and various cultural and religious factors denied women improved socioeconomic development in Northern Nigeria. These issues, however, require the appropriate authority's such as governmental agencies intervention to improve women's socioeconomic status.

Many full-time homemakers, especially from the Northwest, linked their joblessness to their husbands, who only married them to carry out household chores full-time. For example, a VVF patient stated that:

> 'I *am not working or selling anything. I am a full-time housewife. My husband only wanted me to focus on the house chores and pound his farm produce (e.g., millet, maise, or guinea corn) whenever he brought them home (NW2).*

Other full housewives' husbands mainly engaged in small-scale business; for example, stating that:

> '*No, I am a full-time housewife. My husband is doing business selling tomatoes and other vegetables'* (NW7)

Some participants (Nomads' wife) were also required to keep their husband's company while he worked which prevented them from engaging in work themselves:

> *'My husband wants me to be with him as he goes about rearing his cattle (NW12)*

In the same way, some VVF practitioners indicated that women were required to consider their marital roles before choosing a job, which could also limit their chances of employment post marriage:

> *'As long as the job does not prevent them from taking responsibility for their family, if they are married, (NWP1).*

Some practitioners from Northwest and Northcentral gave examples of the types of employment that could fit around household chores.:

'Women can do Jobs that do not interfere with their responsibility as mothers and wives. Jobs that create time for women to attend to their marital duties are suitable, e.g., teaching' (NCP2).

Based on this, some participants gave examples of jobs they thought were most appropriate for women:

> *'As we need them at home, at least the married women… they can be doing jobs like fishing half time, even nursing if you are not on duty, you are at home or business, but I prefer fishing because they will have time' (NWP5)*

This example of a practitioner's preference for and recommending of low paid work for women could perpetuate female poverty and prevent improving economic status.

These findings are consistent with Sinai et al. (2017) who reported the influence of the husband's position on women in a typical Northern Nigerian household, stating that most women were neither economically nor socially empowered, as the husband makes all household decisions. Further reinforcing the above findings, Gage and Thomas (2017) exposed women's vulnerability to intimate partners' violence and victimisation while working and handling cash, especially in patriarchal decision-making localities. This may compel women to accept their low economic status despite its negative consequences on them.

4.2.2 Impacts of Unemployment for Women

Many participants were jobless, and those employed were in low-income trades, perpetuating their poverty and dependence on either husbands or other family members. For example, one participant reported:

‘Yes, aside from the little business I am doing, I depend on my husband for income (NW3)

Unemployment not only causes dependency among women in Northern Nigeria but also prevents them accessing medical care. For example, many husbands cannot afford the bills during emergency obstetric care:

'No am a full-time housewife. I have never worked. I do not know, but if I had gone, I might not have been able to pay for it because of a lack of money' (NE2)

Unemployed participants were either partially or entirely dependent on their family members for income, due to their inability to meet their basic needs themselves as this woman states:

‘No, I only buy little things (chewing gum, sweet, biscuit) and give them to my daughter to sell for me because, as Kule, secluded wife, the tradition does not permit me to go out and work’ (NW3).

While the above participant depended on her daughter for income; another depended on her father to supplement the low income from her business:

‘I sell seasoning in my house. However, such a business does not generate enough income required for all my expenses. But my father assisted me’ (NE5).

While this study identified inability to access medical care because of the cost, Gage and Thomas (2017) reported that non-cash work relative to joblessness such as full-time housewife was connected to all forms of intimate spouse's violence and victimisation. For example, this may result from the husband’s frustration when the financial burden of the whole family is solely on him as a result of the wife’s joblessness. Yick (2000) also identified unemployment as one of the reasons for spousal violence. Moreover, Adeyemi et al. (2016) reinforced the significance of women's employment, stating that raising female employment will release women from the snare of poverty and enhance their decision-making power in Nigeria. Therefore, the husbands or men’s groups must be engaged in any intervention to reduce VVF occurrence among women. Moreover, all marriages may be registered by government, guided by law, and an institution should oversee it to do referral to relevant institutions for help and be empowered

to create awareness of the importance of women's employment and factors predisposing them to VVF; the awareness should encourage women who are victim of violence to report and able to access adequate help.

Even though some participants were working, they experienced insufficient income and inability to afford hospital bills because their business activities were limited to their house and generally characterised by low patronage as a participant explained:

> *'I have never worked before marriage. I don't have enough money because I stay at home expecting people that will come and buy, there are some days that there will not be patronage (NE2)*.

This comment illustrates the link between insufficient income and poverty as a result of the limitations placed upon her by marital norms such as the Kule custom. It also reveals that the participant may not have enough experience with the business and lacks savings since she was not doing anything before the marriage, she also described her small-scale business, revealing she could only do it at home which makes her vulnerable as she has no savings/income to fall back on.

Though others could not afford to pay their hospital bills, one participant could afford a hospital card from her business income though still depended on her husband for other bills:

> *'The money I had could only pay for the card we got before the doctor attended to me. So aside from the tiny business, I engaged in, I depend solely on my husband for income' (NW3).*

Even however, a participant who could do her business outside the house also described her dependency and lamented the risk and the stress her small-scale business involved despite still not enabling her to earn sufficient income as she explained that:

> *'I sell furah de Nunu (raw cow milk and grounded corn); I hawk the milk from village to village until it finishes. It becomes sour and wasted if it does not finish, so I always ensure that it finishes, and people patronise it. I work from 10 am till 5 pm sometimes I only buy cloth with my income, my husband provides food for the family. My mum always pays the bills. I also depend on my brother (NE5)*

Even when they had worked pre-marriage, participants experienced dependence on family, after divorce for example as this case illustrates:

> *'I do not have work, and my husband only wanted me to focus on the house. Before I got married, I hawked little seasonal farm produce like oranges, vegetables, and bananas for my mother. I depended on my husband until this issue (VVF) started, but now that he divorced me, I am only depending on my parent, my mother, precisely' (NW6)*

The participant above identified multiple issues fuelling her dependence. For instance, her reliance on family came when independent income was stopped because of marriage/husband preference and then divorce post VVF. This is an example of women being disempowered by marriage which leaves them more vulnerable when a marriage breaks down. Therefore, women should work to prevent becoming stranded in case of husband death, divorce, and mistrust. However, the concern is the influence of cultural norms preventing women's employment in this study areas.

Insufficient income from small-scale businesses, being handicapped in participating in economic activities because of seclusion and lack of the capital to take advantage of operating retail trade at home led to poverty. Additionally, poorly paid employment such as farming, seasonal jobs and being an apprentice are common causes of poverty participants identified. These findings support previous work by Iheonu, and Nathaniel (2019) who identified a high level of disparity in income distribution, poor literacy level and poor skill as some of the causes of poverty as a whole in Nigeria and called for a strategy to boost productivity and employment. While boosting productivity is essential in reducing poverty and its consequences, there are limited employment opportunities for women, which has an impact on their income/independence, further compounded by cultural factors which inhibit it, such as the seclusion and cultural expectations of women as homemakers identified in this study. Therefore, it is necessary to evaluate, create employment opportunities for women and an enabled environment with equal opportunities for men and women to be empowered to maximise and jointly manage family income.

4.3 Cultural Preferences and Religious Beliefs Around Pregnancy and Childbirth

Certain cultural practices and religious beliefs about pregnancy and childbirth also influence the occurrence of VVF which include preference for many children, and belief that God is the cause of everything that happens to people.

Many participants, 12 from Northwest, four Northeast, and two from Northcentral preferred to give birth to many children, this view was particularly strong in two participants from the Northeast:

> '*I just like plenty children' (NE1).*

and a VVF practitioner confirmed this noting that:

> '*My mother gave birth to ten children (NWP2)*.

Awareness of the risk of infant death was also a motivating factor for this participant as she shared a story about her mother-in-law to signify the existent preference for many children in the family**:**

> *'Presently, my mother-in-law has a three-month-old baby after giving birth to twelve children, if not for my health condition, I would like to have seven children, including the ones God will take away' (NC1).*

The above quote signified the fear of infant death as one of the reasons preferring high fertilities.

Nevertheless, ten VVF women in the Northwest and three in the Northeast believed that God determines the number of children. These generally deterministic views affected different elements such as number of children, accepting it's out of their hands, and not questioning God:

> *I prefer any number that God give because it is God that determines everything that happens to man in life (NE1).*

Another VVF patient believed it is a generally acceptable norm asking:

> *Will you not accept even if God gives ten? (NW5)*

Others would not have alternatives because they believed God causes whatever happen to them as summarised here:

> *Whatever God do is the final; you cannot question Him (NE3).*

However, a participant identified her present condition with VVF and associated complications as a caution for her interest in bearing many children as she noted that:

> *I like four, but all are about what God gives because they told us that if we are pregnant, we should come here for CS, that if we go to have virginal birth and we are leaking urine again that we should not come back here for treatment again and with CS we cannot give birth to many children. So, children are good because if they grow up, they support their parents (NE5).*

And another participant from Northcentral indicated the less commonly held view, refusing the idea of many children, having considered the family's economic capability:

> *I only want at most four children, that is what I and my husband agreed to have and able to cater for (NC3)*

The more widely held belief of having many children indicated participant's fatalistic/passive attitude towards preventing health risks. They also believed that God is responsible for caring for all children and that family planning is wrong. Such widely held beliefs may be increasing poverty and a substantial hindrance to contraceptive use by women, thereby exposing them to pelvic stresses and complications from multiple pregnancies, which is also a contributory factor for VVF occurrence. Izugbara and Ezeh (2010) had different opinions on why women prefer many children, stating that some believed that deliberately giving birth to many children prevented their husband from divorcing them or being involved in a polygamous marriage. However, the continuous stress of childbirth (Multigravida/ grand multiparity) weakens the vagina, increasing the risk of VVF. According to Prasanthi and Revathy (2019), multigravida also brings a greater risk of maternal morbidity that requires improving the women's health status as they age to reduce the risk of pregnancy complications and implementing a better family planning service. Mgaya et al. (2013) also stated that grand multiparity remains risky in pregnancy as it is linked with high neonatal and maternal complications.

Relatedly, some participants especially in the Northwest and Northeast viewed their VVF as an act of God. The consequences of the belief that God is the cause of any sickness may also indicate their negligent attitude toward the necessary health precautionary measures that should be put in place to prevent or mitigate

disease. Participants' responses showed that many of them, especially those from the Northwest and Northeast, believed that God is the cause of everything that happens to them. Some of the responses summarise their belief:

> *'It is God; I cannot say it is childbirth because it occurs during the sixth pregnancy, not during childbirth' (NW1).*

Many VVF patients from the Northwest believed in bearing as many children as possible, which was discussed in page 32 of this study. Though there are limited recent studies on multiple pregnancies (Grande multipara), Luke and Brown (2005) stated that almost every pregnancy complication was increased by multiple pregnancy which can lead to the incompetent uterine cervix. Additionally, Tanbo and Bungum (1987) reported a high tendency of women in the grand multipara group experiencing a high prevalence of induced preterm delivery because of abnormal positions and presentations. Maymon et al. (1998) also revealed that multiparity is associated with a high risk of peripartum complications such as dysfunctional labour, haemorrhage, and caesarean section. However, continuous stress on the womb may also lead to pelvic tissue degradation, increasing risk. Consequently, a need for intervention to increase awareness of the implications of 'as many children you can have' as a prevailing health belief in Northern Nigeria.

Previous studies have also reported perceptions about God causing VVF (Bello, 1995; Basheer, and Pumpaibool, 2015; Baba 2017). Additionally, Padela & Curlin (2013) stated that it is likely for Muslim devotees in America to reject contraceptives, as they believe that pregnancy is a blessing from God. It is also common for an average Muslim in America to believe that illness is the will of God. This can lead to delaying or rejecting medical treatment in favour of religion-based options, traditional treatment, and obligations.

4.4 The Intersection Socio-economic and Cultural Factors

In addition to socio-economic factors, cultural practices play an important and interconnected role in influencing the prevalence of VVF. This section presents Nomadism, Early marriage, Gender segregation and wife seclusion as cultural factors influencing the prevalence of VVF in Northern Nigeria. Additionally,

polygamy, cultural/religious beliefs around pregnancy, and childbirth influences VVF among this study's participants as explained in turn below.

4.4.1 Nomadism

Nomadism is the practice of moving from place to place in search of pasture for animal herds without a stable settlement (Salzman 1967). This practice is common among the Fulanis in Northern Nigeria, and the movement usually involves the wife and daughter(s) of the herders because the expectation is that women perform gendered roles in terms of caring/cooking etc:

> *'My husband always wants me to be with him; I always cook for him' (NW12)*

As identified in earlier section, nomadism also reduces women's employment options. Nomadism was identified as a potentially predisposing factor for VVF in this study since this lifestyle prevents nomads' daughters and wives from accessing healthcare, especially when sick, and hinders pregnant women's access to antenatal care:

> *'We are not stable enough to attend antenatal because we move based on the season, and hospitals are always far from us in the bush' (NW14).*

Nomadism also hinders children's education, predisposing women to VVF because they often live-in places without schools**:**

> *'we do not have time to go to school, we do not stay in a place. We always look for places where we can feed our cows' (NE4)* and' *there is no school or hospital in the bush where we live' (NW12).*

Identifying nomadism as a factor influencing the prevalence of VVF is consistent with Basheer and Pumpaibool (2015), who reported nomads as one of the main sources of revenue for VVF patients in Northern Nigeria, which prevents access to healthcare. This was confirmed by El Shiekh and Kwaak (2015) in a Sudanese study, which identified nomadism as a barrier to health care services utilisation due to the characteristic mobile lifestyle and increased exposure to health risks due to teenage pregnancy, compounded by low levels of education and health awareness. Moreover, Khisa and Nyamongo (2011) identified nomadism as a factor contributing to obstetric fistulae due to nomads' reluctance to sell their cows to pay for their wives' hospital expenses because of the value placed on the

animal. This explains why the prevalence of VVF is high mainly in regions where nomads live. Therefore, the combination of a transient lifestyle, the perceived importance of livestock for survival and lack of education/healthcare awareness creates a situation where the prevalence of VVF in nomad women is high.

4.4.2 Early Marriage and VVF

Early marriage is another cultural practice identified in the current study as affecting the prevalence of VVF. The findings identified the strong influence of cultural practices and religious beliefs and interconnectivity with socioeconomics factors. For instance, poverty, illiteracy, and ignorance of marriageable age are associated with early marriage, also peer/parental influences and marriage out of pity, all identified as factors influencing the occurrence of VVF. Moreover, Walker (2012) linked a country with a high rate of early marriage to a high rate of poverty and population growth. Specifically, Musa et al. (2021) identified out of schoolgirls and poor education outcomes in Northeast and Northwest Nigeria, where there is a high rate of child marriage.

Participants in this study consistently reported the perceived benefits of early marriage in Northern Nigeria, the reasons why many of them married early included religion belief, considerable body stature of the girl, bullying, perceived risk of promiscuity. For instance, early marriage was seen as a way of preventing promiscuity frown at by religions:

> *'Marriage is beneficial whether early or late it is beneficial, now let me ask you one question, for your daughter to undergo promiscuous life, which one will you prefer? If you see your daughter acting strange, marry her out. It will put an end to that promiscuous attitude. Our people do not like seeing their children go into adulterous life' (NWP2)*.

However, it is challenging to address early marriage focusing on religion, as the International Centre for Research on Women (ICRW) report cited in Johansson (2015) did not identify the relationship between religious practices and underage marriage to avoid targeting a particular religion, it recognised participants' desire for it. Nevertheless, this current study suggest that early marriage may be influenced by religious beliefs. For instance, one participant believed her marriage is the act of God:

‘Nobody influences my marriage; it is just the way God want it’ (NE1)

A practitioner participant explained the commonly held religious belief that marrying out a daughter with virginity gives her father access to paradise:

> *'Someone told me that religiously, for a man in Islam, if your daughter gets married, and she is a virgin, God will favour the father and grant him AL Jannat (paradise). So, now you see why the father wants to ensure that he quickly marries his girl before she goes and starts getting engaged. Imagine a man having that at the back of his mind, and you go to tell him that please do not marry your daughter out early' (NWP1*).

Corroborating the view that religious beliefs hinder the reduction of early marriage practices in Northern Nigeria, another VVF practitioner affirmed that there is punishment for anybody caught in adultery and early marriage is the preventive measure commonly used:

> ‘*Let me tell you, in every religion; if there is a sin, there should be a punishment even in Christianity, if you go and commit adultery there is punishment, talk less of Islam so irrespective of age you are if you sin it follows with punishment; Anybody that sins will receive the punishment' (NWP2).*

This participant from North Central, confirms the interconnected influence of religion and cultural factors on early marriage:

> *'Early marriage is both religious and cultural, and there is nothing wrong with early marriage. For example, if I do early marriage and do not go to school, that is a problem. However, getting pregnant and taking care of oneself in early marriage is not a problem. Therefore, we should not see early marriage as the issue or cause of the problem' (NCP1)*.

Similarly, Kohno *et al*. (2019) reported the participants’ perceptions that prenuptial sex is sinful. They observed that such religious beliefs justify child marriage, particularly in Malaysia and similarly found that early/child marriage, or marriage before age 18, was high among their participants. Furthermore, the NCP1 quote above seems to indicate that the practitioner does realise the increased risk of early marriage or believes this risk can be managed. This poses a major challenge in that any intervention to reduce VVF would need to ensure the practitioners are educated as well as the women and men/families.

Further support for early marriage from this VVF practitioner is because the practice reduces perceived social 'vices':

> *'I support early marriage if they allow her to continue her education. It has advantages. It reduces social vices_that we face in Nigeria because early marriage does not depend only on the girl but also on the men. It could reduce promiscuity because some will hang with men if you do not marry them. Naturally, some women have a high level of libido. If you did not marry them off, they would have a problem, and at their early stage of life, you will even be surprised they know that thing, but early marriage will help them. It also reduces unplanned pregnancy, which can also reduce the rate of abortion that we have' (NWP4).*

This is another example of needing to educate the practitioners as this person seems to be adding a new caveat that early marriage is good so long it does not prevent completion of the girls' education.

Preference for early marriage was identified in the three geopolitical zones of this study area, reinforcing the preference for early marriage, this participant cited her own experience of early marriage and subsequent achievement as a positive example, arguing that:

'*Some of us married when we were in secondary school, and we continue, and today we are a doctor. Early marriage should not be an excuse; marrying a 14-year-old girl, the husband should support her to finish school' (NCP1)*

Early marriage was also considered as a means of ensuring quick adherence to the husband's cultural norms:

> *'Usually, a girl is given out for marriage at seven years based on our culture… if the lady marries early, she will blend effortlessly with the norms of the husband's house early enough; I married for three years before I started my menstruation' (NW13).*

This was confirmed by a VVF practitioner who expressed her support for early marriage and preference for early childbirth before education accomplishment:

> *'I believe the earlier she delivers her babies, the better for her; she will have time to continue growing and the children also growing, and by the time she starts her profession, she and have time for her carrier… (NCP1)*.

While the above quote signifies the influence of cultural practices, a VVF patient reinforced it that:

> *I was married off at the age of 15, based on the culture and norms of the community. I gave birth after two years of marriage and presently have six children. Getting married early is the practice in my community because if you are too old before getting married, people will start complaining that the person is messing up herself with all sorts of men (NW1).*

This quote seems more to do with early marriage as a means of preventing promiscuity and some participants prefer early marriage to prevent time wasting:

> *'Why will you be wasting time in your parent's house when you can get married early? After all, you will marry, and nothing is delaying you. I think early marriage is good because all girls must get married, whether early or late; I see late marriage as time-wasting' (NW14).*

The quote above also shows that the purpose of women in this society seem to be linked to cultural norms. Agreeing with their belief that early marriage helps to save time, a participant added that it might prevent unwanted pregnancy:

'I prefer early marriage because late marriage is a waste of time, and they may be impregnated in their parent's house' (NC2).

This quotation reinforces the previous discussion about using early marriage to prevent potential promiscuity. Some others perceived that the stage of puberty is highly attractive to the opposite sex and molestation, and therefore believing that early marriage is a preventive measure against it, to manage male behaviour:

> *'At that age, if you do not marry, boys will start corrupting you in the Village because your body will show signs of womanhood' (NW10).*

While some participants' preference for early marriage was internally driven, it also emanated from external forces, as some participants from the Northeast reiterated negative attitudes of family members toward late marriage as their basis for their preference for early marriage. For instance, a participant noted that:

> *'I prefer early marriage because they [family members] will complain of being too old' (NE2)*

Moreover, discrimination and bullying were identified as negative attitudes of the typical Northern Nigerian community towards those who did not marry early, which influenced some participants' preferences:

'If a female grows beyond 15 years, has a big body, and does not get married, she will be tagged as having lousy luck' (NE3).

Likewise, other participants did not see any problem with early marriage as it prevented sexual violence:

'Yes, because it has no harm. Even on VVF, the problem is coming to the hospital. No problem with early marriage. It prevents them from wasting with men, all the public harassment even raping (NWP5), and *unplanned pregnancy' (NEP3).*

It also seems to link with a previous comment about society using early marriage as a way of managing male behaviour this is critical as VVF practitioners also see it as a good reason for early marriage, therefore this study emphasis education among the practitioners. Moreover, another participant blamed the poor antenatal care in Nigeria for VVF, instead of early marriage:

My mother married at the age of twelve, and she gave birth to ten of us and never had VVF. Now, what are you telling me? She attended antenatal. If there is adequate antenatal, there is no way a woman can develop VVF. So, you cannot tell me that early marriage causes VVF. It is wrong; it is a predisposing factor (NWP2).

These findings are similar to previous studies in other developing countries. For example, Erulkar and Muthengi (2009), who stated that it is a traditional obligation for girls to marry either at or before puberty in an Ethiopian community. Likewise, Rahiem (2021) noted that some girls in some Indonesian communities were meant to get married based on societal norms, including a cultural practice of marriage at puberty for coming home late at night. This seems relate to perceived risk of promiscuity/unplanned pregnancy again and using early marriage to prevent it. Johansson (2015) also identified demand for traditional or cultural values such as dowry and virginity as potential causes of early marriage in Africa. Moreover, Pankhurst, Tiumelissan, and Chuta (2016) in Ethiopia and Kohno et al (2019) in Malaysia acknowledged child marriage as a normal cultural and religious practice among their participants. in their study.

Some VVF practitioners in this study argued that if there is availability and access to good maternal health care facilities, early marriage 'is not a problem. Such views may indicate risk in health care discovered by WHO (2015) that the lifetime risk of maternal death in sub-Saharan Africa is estimated at 1 in 36 compared to

approximately 1 in 4,900 in developed countries. Furthermore, while difficulties in labour were linked to fistula, Mosavat et al. (2015) offered advice on preventing pregnancy, especially among young girls, women who married young and patients with weak bladders. Therefore, in developing countries like Nigeria, where maternal health care is poor, prevention should be the Preference; this is corroborated by Ogunleya (2019), who stated that VVF repair is costly and complicated and that VVF women are always left with uncontrollable release of urine and or faeces in Nigeria.

Despite the perceived benefits of early marriage by some VVF practitioners this view was not universal. Five of ten VVF practitioners in this study expressed that child marriage can be considered abusive, as it violates children's rights and places them at high risk of VVF:

> *'Medically, I know it is not right psychologically because the children are not mature; they are not psychologically fit to decide on their own, and that is Intentionally an abuse, and when we come to VVF medically, the pelvic of a woman is not mature until they are 18 years old. Hence, they are at risk of prolonged obstructed labour, which is the primary cause of VVF. Apart from VVF, there are other obstetric complications like eclampsia, PPH, which could even result in the baby's death, and so many things, so they have a lot of medical challenges when they are below the age of 18' (NWP1).*

Likewise, Yaya, Odusina, and Bishwaji, (2019) noted that girls' pelvis may not be mature enough for pregnancy and child delivery. Moreover, although child marriage can lead to physical and emotional ill-health for the girl/women and even the community (Raj 2010; Yaya et al., 2019), it is still a frequent cultural practice that many women must observe in some parts of Nigeria. In fact, Yaya et al. (2019) identified Nigeria as one of the five sub-Saharan African countries with the highest number of child marriages. This is also evident in this study as eleven of fourteen participants in Northwest, four of five in Northeast and two out of three in Northcentral got married between the ages of fourteen and seventeen. Hence, the purpose of early marriage in Northern Nigeria must be seriously considered and tactically dealt with if there is to be any resolution to the increasing practice of early marriage and associated rising prevalence of VVF. It also requires swift action if global action in reducing child marriage by2030 is to be achieved. Additionally, the mixed perceptions of VVF practitioners require education to

overcome what might be their own cultural/religious beliefs about early marriage, is key to reducing VVF.

4.4.3 Limited Education and Links to Early Marriage

The current study findings indicate that some women were victims of early marriage but are still promoting it due to their or parent's ignorance about appropriate marriageable age. While some participants were unaware of the appropriate age at which a woman is mature for marriage and childbirth, others thought it was related to body development:

> *'It is not about the age, but when they (parent) discover that the body develops rapidly and the person is fat, the next thing is to send the girl off for marriage' (NW3)*.

Many, especially Northeast, participants considered it appropriate to get married at the age of 15 or 16:

'Mostly it is good to get married at 15 years, if you are growing fast, you get marry early but if not, you may not' (NE1).

The right age to get married among the Northwest participants was stipulated as around 12 and 16 years old:

> *'I married at twelve years old. However, the right age to get married is 15 because I will be more mature to carry a baby to fruition' (NW6).*

*though a*nother participant expressed regret that she married early:

> *'Wishes I married at 15 or 16 because I would have been more mature' (NW2).*

This potentially supports the point about ignorance of marriageable age identified in this study as the above participant's understanding of marriageable age is wrong compared to generally acceptable marriageable age of 18 years.

Nayak (2013) also identified ignorance as one of the determining factors of early marriage and Montazeri et al. (2016) particularly linked ignorance to the age of marriage. Therefore, understanding the appropriate age to marry is crucial to avoid early childbirth and its complications, with the attendant risk of VVF. Combatting the issue of VVF will therefore need to include healthcare staff as a crucial target audience for any education and awareness raising programme.

Early marriage is a cultural or religious practice that affects female education, though is not necessarily a view held by all members of Nigerian society, as illustrated by this participant:

> '*I have a neighbour who has a girl; we enrol the girl in school and sponsor her because the girl is brilliant, but today, they are giving her out for marriage because they (family members) are mounting pressure on them that how can they send their girl to school, all my husband and I tried was in vain'* (NWP4)

Another participant stressed the importance of education and funding in reducing early marriage:

> *'If everybody can go to school, why not? They cannot pay school fees because they do not have financial backing. How many public schools are available to have a good education? Those that are going to school have financial backing' (NCP1).*

Female children out of school are likely to opt-in for early marriage due to financial pressures? The period of education is crucial especially for a girl child. If the period is not carefully harnessed for education or other profitable activities, early marriage is likely. Early marriage was identified as an alternative to occupying the time the girl child would have spent on education by the participants, for example**:**

> *'It depends on the size of the body. If you do not go to school and do not work, the best thing is to marry early, if you have a big body' (NW5).*

Apart from young girls appearing older and seeming to be considered more mature (and ready for marriage), these findings support Sabbah-Karkaby, and Stier (2017) who reported that women without education are less likely to marry as an adult. Wilkie (2004, as cited in Okolo and Muhammed, 2011), many girls in Northern Nigeria are primarily used to hawking for their secluded moms. This deprives them of schooling and primary education, which affects the health of these girls and reduces their age at marriage. Therefore, the findings of the current study confirm the importance of prioritising primary education for all girl children in Northern Nigeria.

Income, poverty and early marriage

Participants identified poverty as one of the reasons for early marriage noting that some parents tend to shift their financial responsibility of girl's education to the prospective husband:

> *'why will you go for early marriage in the first place is because you are paying financial responsibilities, and then they push the children to go and get married and give the member of the family relief so that they have less to manage trying to remove the girl from their custody they are trying to put the burden on the husband then anything the person gets is what he will give to you'(NCP1)*

According to a number of participants, lack of school fees led to early marriage as illustrated here:

> *'When there was nobody to pay my school fees, I decided to get married at 16' (NC3).*

Child marriage, close to 77%, was reported by Musa et al. (2021) to be more common in areas with a high rate of poverty. Similarly, Stark (2018) stated that girls marry early willingly because poverty propels their adulthood, requiring them to support themselves at age 15–16. However, some participants from all the three geopolitical zones were forced to marry because their parent was enticed by money:

'I married him because my parents were enticed by money and because he can take care of me and our children in future' (NC3). Another participant corroborated that:

'I was married off by my parent because they considered how wealthy the man was before consenting to my marriage' (NE4).

Forced marriage, usually resulting in marital rape, is dangerous as it could lead to sexual violence and VVF. Stark (2018) reported many cases of poverty-driven, forcefully conducted early marriage. Similarly, Mumbi (2013) identified fistula cases emanated from direct tearing caused by rape or other forms of vaginal trauma and reported 91 fistula cases that were caused by sexual abuse or rape within marriage. While awareness of the negative implications of VVF is critical, citizens' financial status should also be an essential consideration for any

government intervention aiming to reduce forced marriage and the prevalence of VVF among women, especially in Northern Nigeria.

4.4.4 Peer and parental influences on early marriage and marriage 'out of pity'

Though there is significant influence of parents on the children's marriage, this study also revealed friends' powerful influence on the timing of their peers' marriage. While parental preference for early marriage was a key theme there were exceptions, for instance, this participant's parents prevented her from early marriage. Nevertheless, due to the influence of friends, she insisted on marrying at an early age stating that:

> *'My parent said they did not want me to marry at 15 or 16 years old, they wanted me to be more mature, but because many of my friends got married at that age, so I was left alone, and I am not happy about it, I just like early marriage and I do not know the reason' (NE5)*.

Furthermore, Rahiem (2021) and Emirie, Jones, and Kebede (2021) reported the influence of peer groups on underage marriages in Indonesia and Ethiopia. Research also shows the influence of peer pressure on adolescent pregnancies in Sub-Sahara Africa (Yakubu, and Salisu, 2018). Hence, peer groups, especially reproductive-aged women, should be targeted for awareness of the causes of VVF. Moreover, those exceptional parents who warned against early marriage, have implications for potential interventions as they could be developed into community influencers as part of an education campaign.

However, the marriage issue and the choice of a husband influenced by parents are prominent in participants' responses, especially in the Northeast and Northwest This participant narrated her ordeal of running away from early marriage, but because she was not financially secure in her hiding place, she consented to her parents' demand:

> *'When I ran away and could not sustain myself (financially) where I went, I agreed with them (my parent)' (NW2).*

Another participant recounted her vulnerability as parents married her out at tender age.

‘*My parent connected us, and I had no other option than to accept. My husband's parents told my parent that his child would marry me when we (I and my husband) were still small’ (NE2)*

Participants identified parents promoting community culture and their interest in the husband's family’s good behaviour as a criterion for choosing a husband:

‘They choose him for me because they like him and the family he comes from; they are good no information of bad behaviour from them’ (NW8)

Another participant agreed to early marriage just to make her parents happy:

‘If you are married, you will settle in your husband's house, and your parent will be happy that you obey them by marrying the person they like’ (NC1).

These findings are confirmed by Pankhurst et al. (2016), who stated that couples' parents usually take the initiative and arrange the child marriage. Similarly, Erulkar and Muthengi (2009) established that most child marriages were conducted without the bride's but with the parent’s consent.

Bunting et al. (2007), also revealed that early marriage assists in protecting the girl's virtue and making them responsible. Moreover, Basheer and Pumpaibool (2015) discovered that 77.8% of VVF women married between 12 and 15 years of age. Similarly, Ibrahim *et al.* (2007) and Velez et al. (2000) identified a high number of VVF occurrences among women involved in child marriage. The parents might be ignorant of the negative implication of their influence on their children's marriage. Therefore, public awareness about the negative implication of parental involvement in children’s marriage should be targeted toward all parents in Northern Nigeria. Moreover, the children, especially females, should be empowered regarding their marital choices as suggested in the earlier discussion on the importance of education.

Participants also highlighted parental friendship as influencing children's marriage in Northern Nigeria. For example, this participant narrated how her parents lured her to marry a family friend because the mother did not have a daughter helping them do house chores:

‘While my mother-in-law needed me to be with her because she had no daughter I was like their slave because no female would work with me in the house except my mother-in-law, who would sit down and keep sending me’(NW9).

Various Northwest participants voiced a similar point, this could also be the source of stress that some VVF patients complained about, which hindered them from attending antenatal care. Likewise, a Pakistan study, described the changing roles, household tasks and environment as a potential source of stress for new brides, especially those who married at a young age (Rajwani and Ali, 2015). Similarly, Khanna *et al*. (2012) described the experience of early married participants as an unexpected and stressful incident as they were not prepared for the associated roles and the tasks. Rahiem (2021) found the direct opposite to the current study, as some girls perceived early marriage as a means of escape from stresses such as schoolwork, house chores, and other responsibilities during the pandemic. Nevertheless, it is dangerous to embrace underage marriage by focusing purely on household tasks without considering the wider risks and complications such as physical, psychological, and economic consequences (Rahiem, 2021). These findings therefore suggest that reducing women's stress in marriage could reduce its negative influence on VVF occurrence.

4.4.5 Gender Segregation and Wife Seclusion

Gender segregation and wife seclusion are further cultural practices identified in this study as predisposing women to VVF occurrence in Northern Nigeria. These practices stipulate separate duties for males and females, boys only schools or schooling, males eating more food, and the belief that it is the responsibility of men to take care of women. These issues represent intersection of cultural and economic factors, contributing to VVF occurrence as they hinder women education and some economic activities. For instance, only boys schooling was identified earlier in this chapter. Cultural factors may also involve women living separate from their husbands while pregnant, as this participant explains:

> *'Males must go to the farm. The males in my family carry farm produce from the farm, drop it for the female and travel to the city to do business until another farming season. So, there is not enough time to stay with me and do house chores' (NW1).*

However, a husband abandoning a pregnant woman in pursuit of business for a long time may be a severe risk for pregnancy complications such as VVF. This is especially evident in the event of sudden labour reported by VVF women in this study, since many women depend on the husband for hospital bills as cited earlier.

Another implication of gender segregation on VVF occurrence identified in this study is the preferential treatment of male children to the detriment of females, especially regarding household chores and food portions. Some participants believe that males are the head of the family and need more food because they need to use more strength at work, as evidenced here:

> *'Our tradition is like that. Males are to bring food at home for the female to prepare. Based on tradition, the female does not go to the farm. Yes, males need more strength, so they eat more' (NW2)*

While gender segregation is enshrined in tradition, another participant blamed it on some mothers who continually shift the responsibilities at home from male children to themselves.

> *'It is the fault of the mothers. They took it upon themselves to work expected of male children. So, male children are not doing anything at home' (NC2).*

Consequently, the pregnant women are left to ensure that the house is well kept, even in a large family with few females/women. For example, one participant lamented that the stress and tiredness caused by house chores hindered her antenatal care attendance.

> *'I always feel tired because no other female would work with me in the house, am not consistent in antenatal due to tiredness'(NW9).*

Many previous studies have identified gender segregation, but it was discussed as negative implication of VVF on the victims (Murphy 1981; Obed 2010; Brown et al. 2021; Marcus 2020; Hamma 2021; Alawari, and Maureen 2020). However, this current study identifying gender segregation as a predisposing factor of VVF reveals its causative impact on women in Northern Nigeria, suggesting proactive measures to reduce its influence on women in the area.

Another indication of gender segregation identified earlier in this chapter is wife seclusion. This is related to gender segregation because it is a cultural obligation or practice that applies only to married females who are to be kept from public places (Danfulani 2016; Basheer, and Pumpaibool, 2015). Gender segregation prevents women from participating actively in physical, economic, and social activities that may directly or indirectly promote their well-being and healthy living

(Danfulani, 2016). It also prevents women from accessing medical care (Wall, 1998). Many participants regretted their involvement in the practice:

> '*Tradition does not permit me to go out and work, though I do not like it (seclusion), we cannot go against tradition since my parent want it and they said that is the way it should be I had to obey them*' (NW3).

Danfulani (2016) notes that attendance at adult educational programmes targeted at secluded women was high, signifying their displeasure with this practice and its hindrance to their education. Similarly, Nigerien women also reflect their displeasure in the practice as they absconded its confinement by attending all-female interventions which still incorporated- their treasured religion and cultural practices, Kudoadzi, (2014).

However, other women willingly embraced the practice explaining that:

> *It is our culture; there is nothing wrong with (kule matta) wife seclusion* (NW1).

Though surprising to note that some women accept seclusion despite its implications, this may be signalling their ignorance of its negative implications. It might also be reinforced by their religious beliefs as Yakubu (2001) linked seclusion with purity and an unpolluted household in Islam.

Although wife seclusion may not directly impact the occurrence of VVF, its connection with low levels of education and poor employment opportunity and the association of these factors with increased VVF prevalence cannot be overemphasised. For example, it prevents women's participation in various economic activities as identified both in the current study and by Yakubu (2001).

Seclusion also served as a snare and obstacle to education for women who married early and may be eager to further their education as revealed by Danfulani (2016). Moreover, seclusion may hinder necessary health information due to lack of education and deny women financial autonomy leading to inability to afford hospital bills.

Some participants lamented and wished they had an opportunity to be educated. They recounted their inability to attend schools due to issues, such as seclusion, stating that:

I have never been to school because I am the only child; if I go to school, nobody will be with my mother, and she cannot go on errands since she is Kule (Secluded wife) (NW4).

Therefore, this study recognises the necessity for systematic awareness creation of the negative implications of seclusion though without being seen to criticise the religion and strategies targeting increasing the level of education among women in Northern Nigeria.

4.4.6 Polygamy

Polygamy is the practice in which a man marries more than one wife (Zeitzen 2020). It is another cultural norm intersecting with economic factors predisposing women to VVF. Polygamy usually results in a large family, which depends on a meagre amount of income. For instance, a VVF patient explained her experience of polygamy and family food*:*

'My husband has three wives, and we are not allowed to go to the farm so that other women will not get angry that one person will harvest something that belongs to three people. So, only my husband will bring some food to share equally at home' (NW5).

The findings of the current study can be linked to VVF women who complained of lack of choice of food varieties during pregnancy as one of them stated that:

We are very poor, and we barely eat. I don't have the luxury of choosing different foods (NW11).

Polygamy was also linked to VVF by Geidam and Barka (2016), who reported that polygamy is common among VVF patients. Likewise, Iweke et al. (2017) also found that a significant proportion of VVF patients (63%) were in polygamous marriages. However, these previous studies did not explore in detail the implications of polygamy for VVF occurrence, probably due to the different methods and scope of their studies, which also took a quantitative approach focusing more on prevalence than explanation. Nevertheless, Tagurum et al. (2018) stated that participants from the polygamous community had more than twice the risk of experiencing post-traumatic stress disorder. The current study therefore highlights the link between polygamy, poverty, and health risks such as

VVF, especially among women of reproductive age. These findings, suggest that enabling proper awareness about the implications of polygamy on family income and health outcomes in developing countries is required. Additionally, there is a need for more research on the areas with a high rate of polygamy and its implications for VVF occurrence.

4.6 Conclusion

The current study identified a range of socioeconomic and cultural factors influencing the occurrence of VVF among women in Northern Nigeria which have been discussed in this chapter. These include the role of education and how perception of its low value and resulting lack of interest in female education influences the prevalence of VVF. Unemployment or underemployment and its consequences, such as poverty and dependence, also influenced the occurrence of VVF among this study's participants.

In addition to socio-economic factors, the findings indicate that cultural practices play an important role in influencing the prevalence of VVF, particularly as a consequence of common practices such as nomadism, early marriage, gender segregation and wife seclusion. Nevertheless, this study also identified polygamy, cultural preferences, and the belief that God determines the number of children as potential factors increasing the risk of VVF occurrence.

The findings of this study support the current evidence base identifying the connections between socioeconomics and cultural factors with VVF and added to them by exploring in detail the kind of socioeconomic and cultural factors prevailing and influencing VVF in the study area.

Though the previous literature identified some socioeconomic and cultural factors influencing the occurrence of VVF this study added to the 'what' and 'why' for how the socioeconomic and cultural factors identified predisposed women to VVF from the VVF patient perspective across the three geopolitical zones of Northern Nigeria. Exploring the risk of being at risk of VVF, identified the reasons for why and how the women's socioeconomic status exposed them to VVF, and the link between socioeconomic and cultural factors in influencing VVF occurrence. Lack of education, lack of employment, nomadism and poverty are socio-economic

factors associated with VVF among this study's participants. The reasons behind the VVF women's low socioeconomic status, for instance, the reasons for their lack or low level of education included seclusion, patriarchy culture, poverty, nomadism, polygamy, lack of school in the community, and a socio-culturally based perception that the education of women is not necessary. These socioeconomic and cultural factors are interwoven to further expose women to the risk of VVF. Therefore, an in-depth understanding of how and why they expose women to reduced socioeconomic status, hinder health education and access to appropriate care, exposing them to greater risk of VVF was needed to inform the development of more effective VVF interventions. This study found that cultural and religious beliefs in this population or community are so strong that they result in a fatalistic attitude where people – or women, believe that nothing they can do will make any difference. They do not think that they have agency or that their agency is important, primarily because of the religion-based culture of Northern Nigeria and norms around the role and status of women within this, which shapes the way people think and engage with healthcare.

While this chapter identified socioeconomic and cultural factors and their interconnectivity in causing VVF among the study population, the next chapter explores the occurrence of VVF and factors hindering women access to healthcare services which further disposes them to the risk of VVF.

Chapter 5: VVF and Challenges to Healthcare Access

The importance of healthcare access cannot be overemphasised in maintaining one's health through prevention, diagnosis, and treatment (Dams-O'Connor,2018) During pregnancy specially, the determinant of one's healthcare options and people's attitudes towards the available healthcare may prevent its benefits (Rupley et al., 2020). Poor healthcare during pregnancy has been connected to

the occurrence of VVF (Raji et al 2018). Thus, this chapter focus on the myriad challenges hindering women's access to healthcare during pregnancy. Such challenges include: lack of availability of healthcare services; poor healthcare services; poor perceptions of healthcare system and staff; poor transportation and telecommunication networks; location and geography; poverty; lack of Education and illiteracy; lack of knowledge about healthcare systems and provision; lack of knowledge about the causes of VVF; culture and religious beliefs; home birth as a cultural and religious practice; ignorance of the risk of childbirth at home; and ignorance of labour signs. The perceptions of the increased prevalence of VVF in Northern Nigeria by VVF practitioners are outlined to contextualise the significance of such challenges.

5.1 The Increased in VVF Prevalence

The VVF practitioners expressed insights about increasing VVF prevalence across the three geopolitical zones in Northern Nigeria. However, while the Northcentral and Northeast practitioners noted an increase in prevalence, Northcentral added referral from other places as a reason for the increase, as mentioned in chapter four. Moreover, the hospital's (in the village) location further encouraged increased patronage of VVF patients in Northcentral as they attempted to avoid the stigmatisation associated with a VVF diagnosis by potentially being seen attending a hospital in the city, Additionally, the participants highlighted the importance of increased awareness of VVF service provision, and proposed that lack of awareness of the services available was resulting in many VVF women not accessing necessary treatment:

> *'VVF patients are increasing here due to referral for VVF patients since they are aware that I and some of my colleagues conducts VVF surgical operation, where the condition is being managed. Also, being a village, it is easier for them to come for treatment and return. Therefore, it is not only the number of patients in Kwali that is increasing, but cases are increasing because patients from other cities of the country, there are many cases among women out there that need to be called upon and treated' (NCP1).*

The participants from the Northeast described the rate at which referral services influenced the number of VVF patients in their local area:

> *'Last year, we recorded immense victims of VVF in that local government area.' (NEP1).*

A participant affirmed the increasing prevalence in Northern Nigeria, she cited the worst scenario in another part of Nigeria as she argued that:

> *'Statistic is even more in another zone; in the past, everybody thinks is more in the North it is even worst in another part like west and southern Nigeria now' (NCP1).*

Another VVF practitioner estimated the number of patients' admission in one facility as seven weekly

> *VVF patients increasing Not enough bed We have 6-7 patients every week (NWP4)*

One participant confirmed the impact of the estimated increase in the occurrence of VVF on the repair capacity in Nigeria and the future implications of this*:*

> *'VVF is increasing, there has not been any survey to say the actual number, but we have estimated that 150,000 women have fistula as prevalence and incidence is about 12000 every year. The capacity to repair VVF is about 3000 every year. That means we add 8000 cases to the prevalence yearly (NWP1).*

However, while stressing that the occurrence of VVF is not improving, he identified that many women with VVF were not undergoing repair. Furthermore, he expanded by highlighting the potency of VVF increase arising from determining factors like poor maternal health, poor levels of education, and lack of accurate data available for effective health care planning:

> *'The figure has not changed in the last decade that I have been doing the fistula program, so I cannot say it is reducing because the maternal health services in the health system are getting poor day by day. No improvement: why should I expect fistula to reduce? Education status or access to education is still getting poor; why do I want to believe that fistula will reduce so as long as there is no survey to measure the incidence or the prevalence of*

fistula, which is an approach to maternal health care and education if they are still poor then I know there are still more fistula trend' (NWP1).

Additionally, based on their experience, another participant refuted the idea there was any significant reduction in the occurrence of VVF because of the influence of risky sociocultural practices existing among women in Northern Nigeria arguing:

'It is wrong now to say it is reducing; it will take a long time before you can convince them to stop risky cultural practices so that is the reason why we cannot specifically say that we have a drastic change nevertheless we have seen some reduced occurrence, but, for example, 5% reduction is not significant' (NWP2).

Nevertheless, VVF practitioners from the three geopolitical zones identified VVF repairs as the major response with no or little attention being paid to preventive interventions especially in Northcentral: *I didn't know about any VVF program designed* (NCP3). Though preventive intervention was available in some parts of Northwest and Northeast, other areas faced many challenges and continued to offer only repairs:

No program on preventive measures for now, government only paying for surgery (NWP4).

However, despite the repairs their report indicates new cases of VVF as this quotation summarised: *89% repaired successfully and we only have new patients* (NWP2).

Though general statistics or research confirming the increasing prevalence of VVF in Northern Nigeria has not been synthesised collectively, except for the studies based on specific areas or facilities, the clamour for prevention and indications of incidence in various available literature about the regions cannot be overemphasised. For instance, Marcus (2021) proposed implementing a policy to increase funding for VVF awareness, Umoiyoho and Inyang-Etoh, (2012) called for continuous enlightenment of people on the causes and treatment in Northern Nigeria. This current study also explored the challenges hindering women's access to healthcare as discussed below to identified potential solutions for VVF prevention in Northern Nigeria.

5.2 Challenges Hindering Women's Access to Healthcare

Access to healthcare may prevent disease and debilities and help detect and treat health conditions that improve quality of life and verse versa. For instance, Rupley *et al.* (2020) stated that inadequate or lack of access to vital obstetric care raises VVF risk. Unfortunately, some VVF patients in this study could not access medical health care services during pregnancy. For instance, 13 in Northwest, five from Northeast and two from Northcentral, twenty out of twenty-two VVF patients had no quality healthcare services available to them. Sub-themes regarding the reasons for this limited availability were perceived poor quality healthcare services and lack of confidence in healthcare worker/systems. Moreover, accessibility, affordability of healthcare, poverty, culture, and religious beliefs were also sub-themes identified in terms of the challenges women faced that hindered their access to healthcare.

5.2.1 Lack of Available Healthcare Services

Efficient healthcare services necessitate well-trained medical personnel, adequate infrastructure, diagnostic and medical apparatus, and drugs (Oyekale, 2017). However, lack of infrastructure facilities and health care services or hospitals was commonly reported by the participants. One VVF patient and one practitioner from Northcentral, six VVF patients in the Northwest and one from the Northeast explained why they did not attend antenatal care or visit hospital during pregnancy. While some identified lack of choice of healthcare, others cited lack of a hospital, for example:

> *I was at home because there is no hospital in our community, it is two years now that I have this sickness(VVF) because there is no hospital in our village we always stay and give birth at home' (NW3).*

Only one could boast of choosing healthcare and a provider out of twenty-two VVF patients who participated in this study. A lack of choice in healthcare providers may reduce the interest of a patient in seeking medical attention, which was

common in this study. This led patients to patronizing traditional herbal instead of professional medical care. For example, as this participant note:

> *'We may go for traditional herbalist; it depends on availability (NE1).*

Specifically, participants identified a lack of alternatives to traditional health care options in their community as a reason for embracing it:

> *'The Malama (Traditional birth attendants) used to come to our Village, and we used to gather in a place within the Village; that is the only option we have' (NW5)*

Similarly, some participants opted for traditional pregnancy care because there is no hospital in their village. Evidence in some of their statements includes:

> *'It is elderly people and my husband that was giving me some traditional pregnancy medicine. I did not go to another place because the hospital is not in my village' (NE2).*

One participant identified access to only one care provider stating:

> *'It is the only one hospital we have in our area' (NC2).*

Another participant articulated how they blindly chose any care provider somewhere else because of the lack of health care providers in their village as she explained:

> *'In my village, we do not have a hospital we have no preference for anyone we just believe which one can help at any time when in need of help' (NW3).*

A VVF practitioner also complained of lack of facilities and preventive programmes, even where they had previously existed:

> *Before we use to have preventive programmes like family planning but is no longer available, even the facility has been converted to another program and funding stopped (NCP3)*

Nevertheless, despite eventually resulting in VVF, complications and loss of baby, participants persisted in employing the service of traditional birth attendant:

> *'I was in labour in the morning at home, and we called a female traditional birth attendant. Then, I gave birth in the night. Although I lost the child, I did*

not perceive any problem in my body. However, after a week, I started leaking urine. It is the same way I gave birth to my first and second children' (NW6).

VVF practitioners in chapter six of this study also confirmed that poor local provision encouraged home birth/delayed referral. These findings conform with Gayawan (2014), who discovered differences between the choice of place of birth in South and Northern Nigeria; while many women in the South choose health care facilities, many women in the North choose to give birth at home. However, one of the primary reasons for their choice of place of birth in this study is the lack of availability.

Some participants, especially from the Northwest and Northeast, used self-care during pregnancy:

'I took care of myself, If I am not feeling fine, I always rest, but during pregnancy, I do not always fall sick; no hospital' (NE4)

While others relied purely on the help of family members,

'My mother, older adults and my husband cared for me. I did not go to any other place' (NE2).

still others juggled between self-care and hospital:

We do self-care first before thinking of a hospital (NW2), and Our practice is to take care of each other at home; we only go to the hospital whenever challenging to handle' (NW1).

Self-care may be encouraged for some patients but with the guidance of professional medical personnel, especially during pregnancy and via an antenatal clinic. Similarly, Hassan and Hassan (2015) highlighted the increased risks and complications associated with self-care without medical guidance, including premature labour, urinary and kidney infections. Northwest participants preferred self-delivery and self-care first before the hospital. This aligns with a study by Abasiubong et al. (2012), who found out that 72% of the study participants were involved in one form of self-medication or the other, but the current findings differ from this earlier study which stated that self-medication was not significant with the level of education. One reason for this may be their use of quantitative methodology which does not allow in-depth explanation of an issue studying.

However, Tamuno et al. (2011) linked self-medication using herbal medicines by pregnant women to people with a low educational level. Though Hughes, McElnay and Fleming (2001) noted that self-care could readily relieve severe medical complications, can save the time needed to see a doctor, may be cost-effective and save lives in critical conditions. Self-care can be advantageous to both the patients, care providers, and governments. While James et al. (2006) and Kayalvizhi and Senapathi (2010) supported the claim that the appropriate use of self-medication can prevent and treat illnesses that do not necessitate medical consultation and provides an inexpensive alternative for treating common sicknesses. However, the care of pregnancy and child delivery has not been accepted for self-care. Self-care or self-medication is a hazardous practice among uneducated and poor pregnant women since it has been recognised that when used it should be accompanied by appropriate health information, which must be influenced by a high level of knowledge of the care and expertise to prevent abuse of care (James et al., 2006; Geissler, 2000).

Additionally, a group of studies established that inappropriate use of self-medication results in wastage of resources and severe health hazards (Geissler, 2000; Hughes et al., 2001; James et al., 2006; Kayalvizhi and Senapathi, 2010; Tamuno et al., 2011).

Moreover, this study identified family support, lack of hospitals and complications as factors determining self-care, similarly, Panthumas et al. (2012) identified social support from family, self-efficacy, and knowledge as associated factor of self-care. Nevertheless, some participants lamented the impact of the non-availability of healthcare services in their villages as all the participants who did not attend antenatal or planned delivery in the hospital were eventually rushed to the hospital and needed emergency attention as this example illustrates:

> *'I was unconscious because of my condition; I was taken to the hospital in town, and they did CS to bring the baby out. Unfortunately, it nearly took my life. It resulted in trauma' (NE4).*

This finding is consistent with Abegunde et al. (2015), who identified inadequate availability and poor quality of the available services in one of the states in Northern Nigeria. Only 10.2% of the available facilities met the UN requirements, and none had the minimum acceptable number of five Emergency Obstetric Care facilities per 500 000 people. Therefore, the availability of quality emergency

obstetric care services should be evaluated and prioritized. Additionally, the available facilities and general health care system should be optimised for better outcomes.

5.2.2 Poor Healthcare Services

Another barrier to accessing medical care among the participants in this study is poor quality of healthcare services. This may prevent continuous patronage by the service users and create negative perceptions or information about the available medical care. A VVF practitioner narrated his experience:

> *'They go they do not have access to quality care, get disappointed, go to the community and contaminate everyone by saying, oh do not go there, if you go you are going to die, if you go, they will not take care of you ' (NWP1)*

This fear or experience of poor-quality health services is potentially a further factor driving the use of herbal medicine or treatment and lack of engagement with western healthcare services.

Healthcare providers in Northern Nigeria also create barriers for patients to access healthcare. The barriers include government's poor response to calls for the necessary provision for healthcare mentioned in chapter six**.** Poor resourcing also poses challenges for staff attempting to provide services as this participant describes:

> *'The hospital too needs to be equipped properly not that thing will be combined in a situation where if they come to the hospital there is no doctor or not enough doctor to manage' (NCP1).*

Poor healthcare, resulting from poor healthcare facilities or logistics was identified in the current provision for the occurrence of VVF in Northern Nigeria, which can also hinder healthcare access as he expatiated that*:*

> *'Poor health care from primary to secondary healthcare most of this [paused] most of the ward the state the standard of maternal healthcare is poor, and there are many factors, but everything still based on government because if the government provide access, ensure that all the hospitals are well equipped and well-staffed,*

and they are providing quality services I believe people will go there' (NWP1).

Similarly, poor reception of pregnant women at antenatal care was identified by Asefa et al. (2019) as one of the reasons for poor attendance at antenatal care in Ethiopia. Adigun and Mngomezulu (2020) and Alanazy and Brown (2020) also identified poor communication, poor attitude of healthcare providers and poor clinic facilities as having negative effects on pregnant womens' antenatal experiences in Southwest Nigeria and Saudi Arabia respectively. Therefore, the possible solution may be the staff training and implementation or reassessment of policy that controls healthcare providers' attitudes to increase service users' positive experience. Moreover, in addition to the availability of appropriate quality facilities, maintenance and adequate supervision should be prioritised. Srivastava et al. (2015) argued that maternal and health care satisfaction encompasses all aspects of care, which involves good and standardised structures, processes of care and outcomes.

5.2.3 Poor Perceptions of Healthcare System and Staff

Lack of confidence or poor perception of health care providers by patients was identified as a barrier to accessing health care and the risk of complicated pregnancy leading to VVF. Such attitudes may cause a delay in seeking medical attention as this participant narrated her predicament:

'We do not always go to hospital because we think they are not perfect, but we only want them to complement the effort of the older women in our family during the delivery' (NW2).

However, the delivery experience of the same participant was unpleasant as she experienced prolonged labour, delayed medical attention, trauma, late referral and VVF. Specifically, she stated that:

Labour started, and when it was getting difficult, we called the community health worker, and he kept telling me that I would deliver now. So, when I did not give birth, I was taken to the district hospital; when they could not do it after two days, I was transferred to another hospital, a local government general

hospital, where I was fragile. Finally, on the third day, a doctor referred me immediately to Federal Medical Centre for a caesarean section, which was done on the fifth day of the labour, and after some days, I discovered that I was leaking urine'(NW2).

The participants' perceptions about the health care system and staff include discrimination against doctors of the opposite sex by pregnant women and their husbands. Two participants rejected hospital care and decided to give birth at home and confirmed by this participant:

'Not, though there are exceptions like some people not allowing a male doctor to attend to them, it is not religion' (NC1).

A VVF practitioner also confirmed this perception stating that:

'If you go to the hospital, there is no privacy and many issues' (NWP1).

Similarly, some men prevented male doctors from attending to their wives:

'Some men bring their wife to the hospital and do not want a man to touch her except a female like her' (NWP3).

This finding is consistent with Doctor *et al.* (2012), who identified discrimination against male doctors by women as one of the reasons for the low utilization of health care services in Northern Nigeria. As there are commonly more male than female doctors, this further limit women's choice and access to healthcare. This cultural preference for female healthcare practitioners may prevent women from accessing medical care, especially in Northern Villages, where the participants reported scarcity of doctors and health workers. Similarly, Hausmann (2008), connected personal healthcare discrimination with their study participants' poor health status. These findings, therefore, confirm that health care personnel, practices and delivery of health care significantly affected the accessibility of the available health services. This confirms previous findings by Narang (2010) that study participants' responses were rather pessimistic about their access to health care services and the competence of doctors, which led to poor ratings of a particular healthcare facility.

This signifies the importance and relevance of the patient's perception of healthcare provision for maximizing health care utilization among women in Northern Nigeria. Haddad *et al*. (1998) identified the patient and provider

relationship, practical competence of health care workers, accessibility, satisfaction and availability of resources and efficiency of care as criteria influencing the perception of and demand on services by users. However, encouraging competence and enhancing the relationship between public establishments and the populace may improve the quality of health care and the positive perception of the service by users. Achieving this, however, would require resolute policies on human resources development and incentives for practitioners.

5.2.4 Poor Transportation and Telecommunication Networks

Generally, the issue of poor transportation and communication network was reported by participants in rural areas across the three geopolitical zones in this study. These factors were identified as increasing the rate of pregnancy complications in rural areas as they led to difficulty in accessing prompt emergency obstetric care during delivery:

> *'Most of the rural communities did not have a road, so if a woman has access to CS, VVF will reduce, but most of the facilities surrounding those communities cannot even provide the CS' (NWP1).*

The gap in the available VVF intervention services is not only limited to poor transportation in the Northeast but also a poor communication network, which prevents both the community and their health workers from accessing information concerning their health**:**

> *'The roads are very, very bad some do not have a network for us to say this is our number if you have a problem to call us, they do not have a communication network, there is no road network, so if you take the patients with a prolong labour from that area which is economically poor how is she coming to a referrer area and the more they delay, the more the danger, that is the challenge' (NEP1).*

A participant also added that there is no motorable road in most of the villages not to talk of the condition of the road as she claimed that the poor road conditions prevent health workers from going to the village:

'Some do not have a road; you cannot even go there' (NWP4).

Lack of means of transportation in the environment often led to an emergency during child labour and hindered easy access to medical care. These findings reflect those of Holme, Breen, and MacArthur (2007) and Wall (2012), who identified transportation problems as a potential factor exposing women to increased risk of VVF. Similarly, Bulndi et al. (2021) identified seven out of nine pieces of literature discussing poor transportation as one of the difficulties experienced by VVF women during pregnancy and delivery in sub-Saharan Africa. Most of the previous literature did not identify the telecommunication problems reported in the present study. This may be because they did not collect information from VVF practitioners or health workers who work with women in rural areas or may be because of a different data collection method which did not allow in-depth explanation of the issue by their participants. It might also be because they did not ask about telecommunication issues. However, both road and telecommunication networks were identified in this study as obstacles to accessing medical healthcare by women and represent gaps which may necessitate political will and strategic intervention to reduce the incidence of VVF and to achieve successful VVF reduction programme implementation in Northern Nigeria.

5.2.5 Location or Geography

The location of some participants hindered access to medical health. Some of the barriers associated with the locations of the participants include no permanent environment, village life, no choice of the living environment, and distance. Other barriers to accessing health care include insecurity, farming and nomadic lifestyle. For example, a VVF patient earlier mentioned being forced out of their villages by herders and this was confirmed by VVF practitioners from Northeast and Northcentral who stated that:

> *'Patients will not come for antenatal because of bandit and insecurity, which hinders most patients from seeking medical care or going to the hospital'* (NCP1).

- *No permanent settlement/nomadism*.

Nomadism, as mentioned in chapter four, is one of the economic and environmental-related factors identified as barriers hindering access to healthcare because it requires changes of location in search of pastures, hindering antenatal attendance or accessing any available care.

- *Village life*

Living in the village was associated with impoverishment, indicating participants' inability to afford medical bills leading to labour and delivery at home. This is tricky as this participant related:

> *'In the village hard labour and poverty is the order of the days if I go to city to work and earn money it will not be like that.' (NE1)*

Most participants resided in villages, with a few livings in a semi-urban setting. The village was considered a deprived environment by participants from the three geopolitical zones due to remoteness. This limits women's chances of attending the antenatal clinic, which invariably led to them being in labour and giving birth at home. While three participants in Northwest noted that they have access to the hospital, they claimed that the available ones could not meet their satisfaction. Despite the deprivation experienced by three participants, one from Northcentral, four out of fourteen in Northwest and three in Northeast prefer their environment:

> *' I was born and brought up and am very much used to the place if I go to another place, I may feel strange there. (NE4).*

Two live in the environment because they believe God determines where they live as this participant illustrates:

> *'I like my village because God put us there, and I am used to where I was born and brought up there' (NW5)*

- *No choice of living environment (location)*

This study identified the deprived nature of the villages where the participant lives as they described that:

> *'In the village, there is no road, no light, life is not very easy because of lack of money (NE3),*

There were differing views about wanting to stay/leave their environment – even if the majority preferred where they were some did not have a choice of relocating to a better place.

> *‘I have no other place to go’ (NW2).*

Some were eager to leave for a better place: *'No, if I see a better place, I will be happy to leave because nobody will see a better thing and will not like' (NE1).*

Another VVF woman was stranded and lonely because of poverty and her husband's absence as she lamented:

> *‘No, if I have my way, I will go and stay with my husband in the city, but I cannot because of lack of enough money (NW1).*

Similarly, the fear of a husband prevented his wife from making a different choice of a place to live as she stated:

> *‘It is good, but even if I say I do not like my place and want to leave, my husband will not accept (NW7).*

Similarly, the choice of a different living area or house creates a barrier to accessing healthcare because the participants are not in control of where they live/ as they could not relocate to other places where they could easily access hospitals and other infrastructural facilities**.** In addition, some participants were confined in a place because of security threats**,** as narrated by this participant:

> *'It is not conducive we were forced to stay here because of herdsmen who chased us out of our village' (NC3).*

Although this participant could choose different professional healthcare providers where she lived, she complained of insecurity and wanted a more secure area to live, stating that*:*

> *'We have three hospitals in our locality, so I went for the biggest one, but I would like to leave if I have the opportunity because of the kidnapers that always come to attack people, kidnap and be asking for ransom that is beyond their capability’ (NC1*)

indicating that challenges peculiar to a particular environment may determine women’s access to health care.

While the above comments highlight the lack of choice of location and its influence on the participant's access to health care as a result of spousal or neighbourhood issues, another participant highlighted the financial control exerted by family or overseeing inheritance as indicators that the woman is happy to stay and would not choose to move.

> *All my husband's brethren are not around. I am the one taking care of everything and the inheritance, so I love to be there (NW3)*

- *Distance from hospital/lack of transport*

most of the participants live far from the hospital,

> *'Far, distance to the hospital also contributed' (NW1).*

A participant in northcentral also highlighted the effects of distance on antenatal care:

> *'Some of them are farmers' wives, and they live far from the town where they can get a hospital, so they usually miss the antenatal clinic' (NCP2).*

Another participant narrated her ordeal when needing emergency obstetric care but was stranded because of insufficient money and means of conveyance. Her statement also revealed that the environment contributed to their vulnerability as no neighbour could assist:

> *'I gave birth at home because we live alone, long-distance, poverty, and our work, sometimes the place we live is about 3-4 hours to the hospital, but the place I was rushed to the hospital was 2 hours' drive by car to the hospital' (NW14).*

While the distance impeded her access to healthcare, lack of money was identified as another complication as this participant stated:

> *'Distance is far from the hospital; it is about 2 hours' drive by car to get to a good hospital and even if I want to go there is no money for me to transport myself' (NW2).*

Additionally, a VVF practitioner highlighted the estimated equivalent increase in distance of some villagers to the hospital as unbearable due to poor road networks

and lack of transportation, which invariably leads to unnecessary delay in accessing healthcare:

> *'You can spend six kilometres from your home to the hospital facility even that is nearby some ten to twelve kilometres to the facility because of bad road poor transportation no car so there will be delay may be in a community is only one person that has a car' (NWP3)*

Although connected with other issues, location/geography were commonly cited by participants from all three geopolitical zones as factors hindering access to healthcare. Roka et al. (2013) asserted that two-hour delay to the hospital during labour was a potential risk for developing VVF. Melah et al. (2007) also confirmed three kilometres and above between the health centre and the pregnant woman's home as a potential risk for VVF occurrence. Therefore, prioritizing easy and quick (probably 30 minutes (Burkey *et al.* 2012) access for pregnant women to efficient health care services may positively influence the delivery outcome of pregnant women and reduce the prevalence of VVF in Northern Nigeria.

5.2.6 Poverty

Poverty was identified as a common phenomenon which prevents many women from across the three geopolitical zones accessing quality healthcare because of the inability to afford the hospital bill. The impact of poverty on access is multifaceted for instance, it relates to distance from the care facility and associated transport costs, as well as preferences for care.

This practitioner from Northcentral emphasised poverty as the primary reason for low attendance in the hospital:

> *'Plenty things are hindering them from coming down; they do not have money, that is the main reason they are afraid, that if they come to the hospital, they cannot afford the surgical bill' (NCP1).*

Out-of-pocket payment for health care was a significant barrier to access and predisposes women to pregnancy complications, including the risk of VVF.

> ‘*When the labour started, I was at home I could not go to the hospital because I did not have money to transport myself to the village where there was a hospital; it got to a time when labour was arduous, I was taking to the hospital, and CS was done after the CS I realise I was leaking urine’ (NE2).*

All the VVF women in this study reported an inability to afford hospital bills as hindering access:

> *'I do not know, I did not go, am unable to pay for it because of lack of money' (NE2).*

At the same time, some of them depended on their family members for financial support, as indicated in chapter four employment section:

However, as illustrated in Figure (4) below most pregnant women were eventually taken to the hospital when it was too late and resorted to sourcing money in a more difficult way because of the emergency situation:

> *'Only when there is difficulty or complication that we go to the hospital, but when I was rushed to the hospital my husband sold his farmland to pay my hospital bill' (NE1).*

This view was validated by a VVF practitioner who also highlighted their experience of the negative impact of providing emergency, life-saving care in this situation on hospital finances:

> *'There are times they come, and you must render immediate emergency care they leave the hospital without paying, and there is nothing we can do, it affects the hospital financially sometimes, but you can save their lives (NCP1).*

As the practitioner above indicates, late presentation with pregnancy complications is associated with high risk and no guarantee that the women who are delayed in seeking medical help will survive.

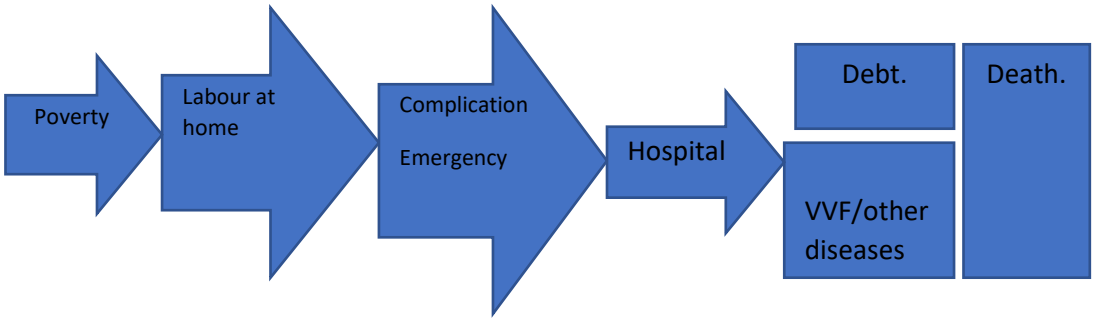

Figure 1: Poverty and Potential Negative Outcomes

Some participants embraced health care providers such as traditional herbal medicine because it was free, a participant patronized the mobile clinic (a temporary emergency aid for internally Displaced people IDP camp) because it was free and came to the women rather than them having to travel:

> *'I attended mobile clinic because it comes to our camp and was free, (NC3).*

Furthermore, some participants mentioned the inability to afford transport money, and others emphasized their inability to afford the hospital bills as summarised by this participant:

> *'Hospital is not in our village, and there is no money for transport, and the hospital is far' (NE1).*

Poverty, identified in this study, also led many women to opt for poor healthcare providers despite the deficiency discovered by healthcare professionals (Van der Kooi and Theobald, (2006). Nyako et al. (2016) also identified poverty in their study as a determining factor for demanding traditional medicines and highlighted the good attitude of providers, which traditional care has over medical care. Onah and Govender (2014) identified hospital bills as creating severe consequences on Nigeria's health care access and consumption. Therefore, stakeholders must remove user fees and provide a scheme that will provide means of transportation and provision for other out-of-pocket expenses to achieve improved access and VVF prevention. Lack of money influenced women's decisions on the place to give birth and led to opting for risky health care, as expressed by this participant:

> *'No money and I have been giving birth at home without any issue until this one, those neighbours who go to hospital also have complication' (NE2).*

The quotation illustrates the influence of previous positive experiences of home birth which links poverty to the cultural norms identified in this study. Despite some participants recognising the essentiality of medical assistance during the delivery, they were denied the opportunity to access appropriate care because of poverty and were forced to patronise alternative care provider because it was free:

> *'Giving birth in the hospital is essential, but I did not have money to transport myself, and for the bills preventing me from going, I went for herbal treatment when I was not feeling okay. They*

attended to us for free but asked for money at the hospital. So I was at home, but I was taken to the hospital when the labour got out of hand' (NW6).

While talking about lack of money, she used traditional medicine, and going to hospital is seen as the last resort/if things go wrong. VVF participants' views were matched by those of practitioners who also reported the negative influence of poverty as they recounted the socioeconomic factors influencing their service delivery to prevent the occurrence of VVF in Northern Nigeria. This quotation reflects such comments from two VVF practitioners from Northcentral and two from the Northwest:

Poverty hinders most patients from seeking medical care or going to the hospital because most farmers' wives and herders live in interior villages (NCP1a).

Therefore, location/inaccessibility of hospitals and lack of money to travel there and pay medical bills are all significant and connected findings from this study. These findings are congruent with Rupley et al (2020) who connected poverty and access to health care to the risk of VVF in Malawi, a developing country. The findings on inability to pay hospital bills are also consistent with Ijaya et al (2010) who described VVF women in their study as ‘poor young’ women. Furthermore, the role of obstetric emergencies due to delaying access to healthcare and a flawed healthcare system are potential contributions to the prevalence of VVF and other complications. Further, Molzan et al (2007) identified many pregnant women did not arrive hospital until it had become an emergency. Additionally, Ghosh et al (2012) identified pregnancy complications and death of pregnant women due to poor healthcare providers in rural Ethiopia.

The findings in this study regarding poverty as a significant barrier to women's access to healthcare in Northeast and Northwest Nigeria supports those of Sambo *et al*. (2013) study in Northern Nigeria and Rupley (2020) in Malawi. Similarly, Ngoma (2011) acknowledged poverty and illiteracy as factors influencing VVF occurrence in Zambia. However, according to Ramphal & Moodley (2006), cited in Ngoma (2011), VVF is not a problem in developed nations because most women have good access to a high level of qualified personnel and well-equipped health care facilities. Therefore, poverty should be prevented to increase access to quality medical health care and education.

5.2.7 Lack of Education and illiteracy

Lack of education/illiteracy, lack of healthcare information and its provision mean that women are less likely to access health care which then predisposes them to experiencing VVF. Illiteracy /Ignorance is common among participants in the three geopolitical zones and may result from the general lack of primary education experienced by women-identified in chapter four lack of information hindered antenatal attendance, with participants associating lack of a hospital with a lack of information:

> *'I did not attend antenatal care because there was no hospital in the community and no information was given' (NW1)*

As this participant recounts, the identified information gap was only addressed because of her experiencing VVF and associated infant death:

> *'Before I did not know, nobody gives me any information, but now that I am having VVF and lost the baby I know it is good to attend antenatal' (NW3).*

While the above quotation indicated ignorance of health information and the importance of education before VVF occurrence, this participant identified the lack of antenatal care attendance as the cause:

> *'I did not go for any antenatal; I do not know, there is no health information given to me during pregnancy' (NW2).*

In addition, the impact of ignorance on respondents may be reflected in their pregnancy care, such as a lack of antenatal information, (language barrier), knowledge about labour signs, awareness, and avoidance of risk, including negligence to labour signs as discussed below.

- Language Barrier

Some pregnant women were ignorant of antenatal information even when they attended antenatal appointments. One participant from a minority culture attended antenatal but did not understand the information she received because her dialect was not among those used to communicate at the clinic. This language barrier deprived her of knowing the labour signs:

I do not understand all they said, but I heard and understood when they said I was pregnant. However, they spoke Hausa and English, and I have limited knowledge of Hausa; I am Fulani. When it started, I did not know it was child delivery. I complained of stomach pain, and they took me to the hospital, telling me it was labour (NW11).

This finding resonates with AlShamsi (2020), who stated that language barriers could lead to poor communication between the medical experts and patients, reducing satisfaction and quality of care delivery and patient safety.

5.2.8 Lack of knowledge about Healthcare Systems and Provision

Other critical barriers that need attention include the gap in information and knowledge about the healthcare system and provision. One such barrier is the women's inability to retain health information. For example, few participants who attended antenatal could remember pregnancy-related information they heard during their visit to the hospital:

I attended but I cannot remember antenatal information' (NE1)

This scenario may contribute to women's ignorance of labour signs and the home childbirth as reported later page 185 of this chapter. Furthermore, a lack of information about the available medical care exists among women and decision-makers or community leaders such as traditional and religious leaders; this study also revealed that community leaders in Northern Nigeria have an important influence on their followers, including women, who tend to believe all their bides. However, the lack of appropriate information led to their followers spreading misleading information. For instance, the traditional or religious teaching about seclusion and early marriage is reinforced by community leaders without knowledge of the health implication for women. One practitioner reported concern related to leaders, noting that:

'The religious leaders should be enlightened to preach the truth, I Am a Muslim too, if Kule were 100% expected in Islam, then I

would not be a doctor today some beliefs are difficult for some people, there is no place that they force anyone to do Kule understanding matters' (NCP1).

The above quotation signified that some leaders who reinforce those practices are less likely to be knowledgeable about their necessity, therefore they need proper education on the implications of the practices they preach. Some participants blatantly rejected seeking medical help despite its availability in their area which might have resulted from ignorance. Two VVF practitioners in Northwest, two from Northeast and one from Northcentral, reported that some of their patients were ignorant of the available health care in their area, as summarised by this participant:

'Most of the patients are ignorant of the care they can access around them' (NEP4).

With another practitioner identifying illiteracy as the reason:

'Most of the patients are illiterates; they do not know if they go to the hospital, they can be treated' (NCP1).

Illiteracy or ignorance of the remedial treatment of VVF, in Northcentral and Northwest limited engagement with the services available as this participant illustrates:

'They think their condition cannot be repaired; that is a permanent one, and no one can repair it for them. So, some accept dying with the condition and sometimes, it is the stigma; they are afraid that if they come, we will laugh at them that woman is passing urine without control. they keep it so that other people in the community will not know, because of rejection and lack of association' (NCP1).

Illiteracy/ignorance was found among the local women and the health workers which led to. some women losing confidence in the quality of providers and preferring self-treatment as reported earlier. In support of this, a VVF practitioner illustrated rural health workers' ignorance about the risk of conducting counterfeit treatment and delaying the referral of vulnerable patients under their care. He reinforced this by suggesting the continuous awareness creation as a remedy for both health workers and the patients, noting that:

'Some of our health workers do not know anything than to remain in the village and to continue to commit delivery, and the ordinary patient does not know that this person did not know anything she only know the person as health worker so you will continue pulling until when they are fully aware of the implications' (NWP2).

While this participant agreed that the illiteracy causes ignorance of available health care, he condemned lack of community outreach stating that:

Lack of knowledge, Illiteracy resulted from lack of community outreach (NEP2).

5.2.9 Lack of Knowledge About the Causes of VVF

Awareness of the cause of any health condition is essential and crucial in its prevention but some participants reported a lack of awareness of the causes of VVF:

'I do not know the cause' (NW5),

Some reported the cause of VVF based on the care provider's instruction:

' I was told that I have contracted pelvic in the hospital and that is what I know as caused it '(NC2).

Others from northwest and Northcentral gave information based on their perception of the condition, and some related the cause to prolonged childbirth, but the source of this viewpoint was unknown:

'If the labour were not prolonged, this issue would not have happened had it been I was brought to a good hospital Immediately I started the labour I would not have got this VVF.' (NC3).

Conversely, two participants from Northwest viewed VVF as the act of God because of the pace and time at which it occurred, as they attributed the cause of every incident in their lives to God's will.

'Is God, I cannot say it is childbirth because it occurs during the sixth pregnancy, not during childbirth…God knows about everything that happens to a man on earth, so I believe God causes it' (NW4).

The information gap due to lack of education/ignorance identified in this study supports previous findings by Nwagwu and Ajama (2011) and Okereke et al. (2013) who identified poor knowledge of safe maternal care among selected rural females in northern Nigeria. Knowledge of safe maternal care among rural communities was linked with attendance antenatal care (Okereke et al., 2013). Thus, bridging the information gap by enhancing the health knowledge of rural women through enlightenment programmes by stakeholders may increase access, prevent complications during child delivery and promote better utilization of available health care programmes. Ezema (2016) also proposed enhancement of rural approaches involving the provision of information telecommunications libraries in rural areas and viable campaigns focusing on maternal health and reproductive.

5.2.10 Culture and Religious Beliefs

Cultural and religious beliefs create obstacles to women accessing and the resulting effectiveness of current programmes designed to reduce the prevalence of VVF. Culture and religious beliefs include cultural practices, causing ignorance about accessing medical care and self-care, norms around food, home birth as a cultural and religious practice, ignorance of the risk of childbirth at home and negligence and ignorance of labour Signs.

The findings of this study identified that cultural practices/religious beliefs, ignorance, and self-care prevent accessing available healthcare.

Cultural and religious practices prevented women from undertaking social activities, which may otherwise give them an awareness of the relevant healthcare services this participant illustrates that:

'Religion plays a role, especially the Islamic religion to some extent, the religion will not say stay at home and do not go out, but in the North, the religion makes the women not to go out not to mingle they want to avoid contact with the opposite sex, so base on that ground they are withdrawn do not want to socialise and do not want to go out to where they are going to meet with people' (NWP1)

VVF practitioners also identified cultural and religious beliefs that negatively influence women they care for. For instance, some cultural practices identified as hampering the current service delivery for VVF included birth at home, lack of female decision-making power, and Female Genital Mutilation (FGM) :

'Cultural practices like the woman should deliver in the house, and a woman cannot go out because she is not a decision-maker and gender issues, so culture is a big one there then gender inequality is also there and as it relates to decision-making and opportunities men have more opportunities more empowerment opportunity than women so gender' (NWP1).

A participant was pessimistic about the available intervention in reducing the occurrence of VVF because of vehement adherence to the existing risky cultural practices and religious beliefs in Northern Nigeria:

'In the north, it will take so many years before you can convince those people to stop doing that traditional issue, so at the short cut time, you cannot see patently resulting improvement in reducing the incidence of VVF occurrence' (NWP2).

He also stressed the impossibility of stopping people from such risky sociocultural driven health behaviours because of the stigma or verdict on women who refused cultural practices like female circumcision:

'You cannot say they should scrap this traditional of a thing. You cannot stop it. I have seen a clan that says a tradition in Nigeria that if a woman is not being circumcised (Female Genital Mutilation), her dowry will be meagre. So, you cannot tell those people to stop circumcision, so what are you doing if you tell them

> *to stop circumcision? You challenge them that they should not have a good dowry' (NWP2).*

Female Genital Mutilation (FGM) is a procedure involving the removal or injury to female external genital organ (Okeke et al., 2012). It is connected to prolonged obstructed childbirth and obstetric complications (Mwanri, and Gatwiri, 2017). While the FGM may be prevalent in certain parts of northern Nigeria and identified during pilot study, the current study realised it was not a common practice in some other parts, therefore there is need for research to explore the specific areas in Northern Nigeria where this is predominantly occurring for specific intervention. However, another dangerous belief among this study's participants identified by VVF practitioners is that pregnancy is not a disease, this invariably hinders women from seeking medical attention during pregnancy and labour. This explains why many VVF women who participated in this study purposely stayed at home to give birth:

> 'They do not see the hospital as a place where you can go to give birth because there is saying that…'pregnancy is not a disease' so why should they go to the hospital; the hospital is for people who are sick with diseases, so they think delivery at home is the right thing, and culturally it is accepted' (NWP1).

This is consistent with Robert et al. (2017), who reported that cultural practices and beliefs are highly influential in preventing women from seeking antenatal care. Moreover, Ngo et al. (2012) and Nisha et al. (2021) highlighted the influence of traditional beliefs and practices in delaying the decision of pregnant women to attend antenatal clinics early and adequately. Consequently, the implication of traditional beliefs about pregnancy care should be considered in antenatal care. Despite the importance of antenatal care and the need to prevent complications, such as VVF, some participants in this study identified ignorance of its importance. This finding aligns with Ndidi and Oseremen (2010), who reported ignorance as a reason for the late booking of antenatal care. However, this ignorance can also be linked to cultural practices and beliefs about pregnancy and childbirth. For instance, traditional views about males being responsible for women's wellbeing and care can hinder engagement with antenatal care. Many women were married and kept indoors, as identified in chapter four of this study (seclusion practices), to depend on their husbands for income and well-being as they believed that it is the

man's responsibility to care for his wife. Furthermore, husbands who take their wives along when doing their business can hinder attendance at antenatal care. A participant explained how she could not attend antenatal care because they always go far away from the hospital and other basic amenities because of the nature of her husband's job:

> 'No, I did not attend antenatal; we do not go to the hospital because we are always in the bush due to my husband's work. If we are sick, we are always there waiting for the time that God will take the sickness away' (NE4).

Similarly, Sesan and Kamoli (2014) stated that cultures in Northern Nigeria promote the belief that women do not have any self-identity except those derived from men. This reflects the status of women in relation to men and how their health is not prioritised because they are considered lesser than men in this culture. Consequently, this can increase risk for pregnant women, especially those who need permission from their husband who is not always at home, particularly in case of sudden labour for childbirth, which may lead to delay in seeking medical care and pregnancy complications.

Moreover, as this participant reported, ignorance of the importance of antenatal care appears to have cultural roots:

> *'I do not know the importance of antenatal since I did not attend. So, I cannot say anything about it, it is not in our culture to go for antenatal because we were giving birth at home, and we are still alive today' (NW4).*

This participant used previous experiences to justify cultural practices. This finding supports Ola and Nwogwugwu, (2011) who highlighted cultural practices as one of the factors influencing ignorance of health information in Southern Nigeria. Cultural practices were also identified by Titaley et al (2010) and Gamberini et al. (2022) as factors influencing antenatal attendance. Ignorance of the importance of antenatal care led to inconsistent attendance as a participant only visited when she realised, she had pregnancy complications:

> *'I did not go for antenatal, but I went to the hospital two times when my pregnancy was seven months because I was not feeling*

fine, and the health worker told me that the baby was bent; the (nurse) put the baby in the proper position' (NE2).

Alam (2004) corroborated these findings and identified ignorance of the importance of antenatal as one of the factors hindering attendance of pregnant women at the antennal clinic. Despite the availability of health care facilities and ability to afford the hospital bills, this current study identified that some women refused to attend because of their cultural practices. Notably, a participant mentioned cultural practice as hindrance to medical care and cited the issue of privacy as the primary concern, even if there is the availability of hospital and it is affordable:

'In our community, if there is money and the hospital is very close, we still prefer staying at home than showing what should be private to an unknown person in the hospital' (NW4).

Similarly, despite accessibility to health services, Panthumas et al. (2012) discovered self-care among their participants due to affordability or the strong influence of cultural practices involving family support against social services. Therefore, there is a need for awareness of the available, affordable, and quality healthcare services. Protecting privacy identified in this study is critical during childbirth. Rados et al (2015) identified it as one of the factors causing social and environmental stress for pregnant women during child delivery especially preventing quick delivery if not well handled. Andren et al (2021) also advised that delivery room should be home-like and private to prevent the mothers from disturbances and for them to be active. given the evidence that privacy is an important factor, it also resonates with this study findings indicating that women would not attend hospital due to lack of privacy, therefore, this is another important factor in terms of strategies to reduce VVF, as it is not just about available but quality of healthcare. Nevertheless, findings in this study identified traditional medicine as the accepted first strategy in the local culture with hospital attendance as a last resort if that doesn't work:

'There are leaves and roots that we use to cure some ailments. If there is no improvement, we can then go to the hospital. We grow up to see it as part of the practices in our community' (NW4).

This study also identified family members in the Northwest and Northeast promoting and supporting pregnant women with traditional medicine. A participant explained:

> *'They (family members) cooked herbs for me to drink because that is how it was cooked for other women, and they gave birth successfully, but whatever will happen will undoubtedly be whether you go to the hospital or not' (NW13).*

The quotation signified the strong influence of family members and individuals' beliefs on health options, which may hinder them from seeking medical attention. Similarly, self-care preference is connected to lack of confidence in providers, availability, and affordability, of healthcare as discussed earlier in this chapter though some participants in this study suggested it is a cultural norm to avoid medical care. These findings support Nyeko et al. (2016) & Banda et al. (2007) as they confirmed the use of traditional medicine to be a common practice among women during pregnancy. Similarly, Van der Kooi and Theobald (2006) confirmed that women consumed herbal medicine despite their shared belief that some herbs cause foetal distress and rise in caesarean sections. Moreover, Mudonhi, and Nunu (2022), identified Nigeria as one of the three sub-Saharan Africans with the highest prevalence of traditional medicine consumption among pregnant women. Nevertheless, Adane et al. (2020) and Mekuria et al. (2017) highlighted some of the common characteristics of the participants in this study, such as illiteracy and practising self-care as predictors of traditional medicine consumption.

Laelago et al. (2016) also identified an increasing number of pregnant women using herbal mixtures to treat pregnancy-related problems, and they cited its cost-effectiveness and easy access as the primary reasons. However, Bayisa (2014) raised concern about pregnant women's extensive use of herbal medicine. He suggested providing a report about those drugs to ensure safety during pregnancy. However, while it is necessary to provide health awareness, easy access and affordable maternal care in every community, the appropriate authority must regulate the consumption of herbal medicine by pregnant women to reduce pregnancy complications in Northern Nigeria.

5.2.10.1 Home birth as a Cultural and Religious Practice

The findings of this study also include effects of cultural practices and religious belief on the prevalence of childbirth at home among the study participants. The findings showed that birth at home occurred among the participants across the three geopolitical zones of Northern Nigeria due to the belief that God makes it easy, peer-influence and

Almost all participants either birthed at home:

> *'I usually give birth at home with the help of some older women (NW14)*

or were rushed to the nearest hospital in an emergency:

> *'I laboured for four days at home; when we saw that I could not give birth at home, we went to the hospital; they said I could not give birth by myself and said it would be through CS' (NC2).*

Reinforcing the above information, this participant identified culture as the reason for this:

> *'Giving birth at home happens in my family; it is the village culture' (NW5).*

Restriction of pregnant women from attending hospital for antenatal care or delivery by decision-makers in the family was identified by a participant as the primary reason:

> *'Yes, even if you want to go to the hospital to deliver, they (elders' men/women in the family) will ask you to wait until it is difficult for them to handle before you are told to go' (NE3).*

The participants confirmed that it is a norm to give birth at home in some cultures; they consider such practice as preserving women's privacy, as noted earlier. This is similar to Cofie (2015), who stated that some participants based their preference for childbirth at home on the existing cultural practices in their families. Moreover, this situation is not unique to Northern Nigeria, as Ahamad *et al*., (2020) described the practice of unassisted home delivery as increasing steadily in Malaysia despite the affordability and accessibility of maternal health care facilities.

- **God makes birth at home easy.**

The belief or assumption that God could make giving birth at home easy was identified by participants as why they preferred to stay at home during labour, expecting to give birth there:

> *'We stay at home during labour because God can make it easy for us to give birth at home' (NE5).*

Two participants from Northeast and Northcentral specifically delayed for two days before seeking medical assistance because of these risky beliefs:

> *'I stayed at home for two days for labour Because we believed that God could make it easy for me to give birth at home' (NC1).*

Ahamed *et al*., (2020) reported participant's belief in the easiness of childbirth propelled their preference for an unassisted birth but did not relate it to their trust in God and. This current study indicates the same perception of the easiness of childbirth, probably because they are both Muslim dominated environments. Belief about God making it easy driving a preference for unassisted child delivery could also result from poverty as Hadwiger and Hadwiger (2012) indicated in their study that women believed that God could help them at home as they did not have the financial capability to go to the hospital for child delivery. Another dangerous conclusion from their faith in God reported by a VVF practitioner was that if it was not their time, no matter how difficult the situation was, they would not die. This prevents women from taking proactive action towards the prevention of any health risk:

> *'There is this common saying that if I die is because my time has reached, so they conclude and go with the belief that if is not her time she is not going to die so that she will stay develop fistula, so those are the main challenges'. (NWP1)*

This finding could signify one of the primary reasons many participants in this study chose poor health care options, believing they would get the same health outcome that they would with qualified medical practitioners. This finding is congruent with Robert *et al*. (2017), who reported cultural beliefs influence decision-making regarding antenatal care; particularly, the belief about disclosure of pregnancy forbids women from seeking antenatal care during the first trimester. Similarly, Nisha et al. (2021) revealed that there were superstitions about

pregnancy, especially in rural areas, preventing women from accessing adequate formal antenatal care but seeking care from traditional care providers instead. Such beliefs could also lead to health risks and delay in deciding to seek medical help until there are complications. These findings support Basheer, and Pumpaibool (2015), who discovered that 72.2% of their participants who had hospital deliveries were because of labour complications.

- **Peer-influenced home birth**

Peer group influence played a key role in participants' delivering at home. As this example illustrates, this was often based on previously successful outcomes for other women, which is also the yardstick for women not even considering hospital care because of an expectation of spousal refusal to pay hospital bills:

> *'I gave birth at home, since some women are giving birth at home successfully without attending antenatal, he will say I am wasting money going for the antenatal, so I did not ask him' (NW2).*

Iyengar et al. (2008) and Bedford (2013) also discovered that most participants preferred home delivery, though preferred health-facility delivery for their first birth. However, Cofie et al. (2015) compared the birth outcome of women who had home versus facility child deliveries and discovered that most of the women who had their baby delivered at home suffered complications and stillbirth due to delay in seeking assistance, while those who gave birth in the facility received early medical assistance which prevented them experiencing complications during and after delivery. Thus, giving birth at home, especially without medical assistance, is associated with the high risk of complications, yet this study identifies vehement adherence of participants to it due to cultural practices. While availability and accessibility of standardised health care must be prioritised, the government should provide individual free healthcare provider such as free family doctor and necessary awareness creation.

5. 2.10.2 Ignorance of the Risks of Childbirth at Home

Cultural preference for a home birth resulted in complications, and eventual presentation at the hospital resulting in poor outcomes were common in this study due to lack of awareness of the risk of giving *birth at home.* Corroborating this, a participant stated that: *'I was in our hut, we usually give birth at home with the help*

of some older women' (NW14). Delay in seeking medical attention can however worsen the complications, as in the case of this participant:

> *'I did not know that I would find it difficult to give birth. Some women in our compound gave birth, and they did not have any problems. I was at home when the labour started, and we called the community-based health worker when it was getting difficult. He kept telling me that I would deliver now, but I was taken to the district hospital when I did not deliver. After two days, I was transferred to a local government general hospital when they could not do it. When I was fragile on the third day, a doctor immediately referred me to the Federal Medical Centre for a caesarean section, which was carried out on the fifth day of the labour. After some days, I discovered I was leaking urine' (NW2).*

While this woman was ignorant of the risk of giving birth at home, the situation was further complicated by a community health worker who delayed her referral. Several participants indicated a common, though risky attitude of delaying seeking medical assistance until the labour becomes complicated, as this participant summarises:

> *'I was at home thinking I would give birth by myself, but it could not happen as I thought. At first, I did not know it was labour for child delivery. Nevertheless, my mother told me it was the labour to stay indoors. It was beyond our control. If the delivery does not get to the complication stage in our village, we will still think we can deliver at home' (NE3).*

The participants' ignorance of the risk of childbirth at home might have been prevented by attending antenatal but engaging with antenatal care was likely to be hindered by their lack of general education, further complicating the issue. While Tuladhar and Dhakal (2011) confirmed high attendance of educated pregnant women at antenatal care, they also identified ignorance as a primary reason for poor attendance among low-educated women. In addition, Adamu, and Salihu (2002) discovered in Northern Nigeria that 88% of women did not attend antenatal care, and 96·3% delivered or planned to deliver at home without an expert attendant.

5.2.10.3 Ignorance of Labour Signs

Remarkably, participants from all the three geopolitical zones, five in the Northwest, two in the Northeast and three in Northcentral were ignorant of labour signs, some of them opined that this ignorance resulted in their delay in seeking necessary and immediate help:

> *'Initially, I did not know when it started. I was rolling on the floor, and some older women told me it was labour for child delivery' (NC1).*

The above quote indicates the tendency to take wrong decisions during labour due to the ignorance of labour signs and the following identified complications attached to it:

> *'When I was in labour, I did not know when the water started leaking. I went to the mobile clinic that usually visited the IDP camp where we lived when the Fulani herders invaded our village and killed our people. So, I was there for two days, but I was transferred to a hospital in a bigger town for CS when it became difficult for them. After the CS, the child died; after a week, I discovered I was leaking urine. Although the repair has been done, I still have tiny drops of urine flowing' (NC3).*

While participants were mostly ignorant of labour signs, some of those who were aware reported ignoring them. As this study has established, ignorance and ignoring labour signs can pose a severe risk, contributing to complications during child delivery:

> *'It was not very serious; the pain would come and go. So, I did not consider it a severe issue initially. When the pain comes, I will sit down, and if it stops, I will continue house chores. At first, I did not know that it was labour. However, I realised it was labour when it was continuous. I laboured for four days at home, but we went to the hospital when we saw that I could not give birth at home. However, they said I could not give birth by myself and said it would be through CS' (NC 2).*

Another participant expressed how it just felt strange initially until her condition became distressing. Prajapati et al. (2012) identified ignoring labour signs and

poor preparation for accessing skilled assistance during delivery (Iliyasu et al 2010), as risks of pregnancy complication such as uterine rupture.

Education regarding the signs of labour as part of antenatal care provides essential information for pregnant women to prevent danger. Ajabmoh et al., 2021 pg.1) stated that:

> *"Danger signs of pregnancy are alerts of obstetric complications which commonly occur from mid to late pregnancy and can lead to maternal and foetal morbidity/mortality if appropriate care is not sorted promptly. Delay in seeking care is one of the key factors leading to maternal death, which can be associated with poor knowledge of obstetric danger signs"*.

However, a lack of awareness of the importance of antenatal care equally leads to a lack of awareness of the information necessary for the safe delivery process in this study.

The findings from this study associated poor antenatal care, language barrier, ignorance of labour signs, and risk of childbirth at home, to poor level of education; similarly, negligence of labour signs. These findings further corroborated Dewer (1998), Waters et al. (2005), Ikeako et al. (2006), Semba et al. (2008), and Baker et al. (2011), who linked poor health and health care to low levels of formal education. Therefore, providing and strengthening the quality of female education may reduce ignorance and positively influence the reduction of VVF incidents in Northern Nigeria. Additionally, Mwilike (2013) stated that women's knowledge of danger signs during pregnancy facilitates timely emergency obstetric care. Moreover, Zhianian et al. (2015) condemned women's ignorance of health care during pregnancy as it can lead to irreversible consequences for the mother and foetus. Therefore, educational intervention should be considered because of its positive effects on the knowledge of self-care behaviours in the study. women need to be educated and knowledgeable about danger signs and good self-care for self-care interventions to be effective. The issue of self-care might be why many of them did not know the signs of labour for childbirth, which led to complications, and the idea of waiting until it is difficult for them to handle is a hazardous risk of VVF, especially during childbirth. Hassan and Hassan (2015) also reinforced the importance of health education for pregnant women as it enhances their self-care.

Though some socioeconomics, such as poverty, lack of education and unemployment and some cultural factors such as early marriage, wife seclusion and giving birth at home are risk factors of VVF which were congruent with the literature, the unique contribution of this study include the findings associated with the influence of nomadism, polygamy, paternalism, Ignorance of labour signs.

Another unique contribution of this study is that it identified how socioeconomics and cultural factors link to influence VVF occurrence. While the previous literature identified some factors influencing the occurrence of VVF such as education, this study explored the reasons behind such factors which involved perception that women education is not necessary and their influences on the VVF victims which include ignorance of labour signs.

Furthermore, exploring the views of both VVF patients and practitioners across the three Geopolitical zones of Northern Nigeria on the factors influencing VVF occurrence and exploring the experiences of the VVF practitioners on the available interventions for VVF prevention, the challenges encountered, and the potential solutions to reduce VVF are unique contribution of this study to the research field.

The interconnected impact of male control, locally, politically, regionally, and within the household.

Many of the issues concerning women's vulnerability to VVF emanated from **paternalism**. This study clearly identified the control of men and its impact. This was evidenced within the household locally, politically, and regionally as a key factor which denies women's autonomy by hindering their involvement in economic, political activities and decision-making on the issues affecting their health. The control of women by men locally identified in this study include wife seclusion, husband determining women's fate in employment, income, and access to healthcare. Politically women are limited in aspiring for political positions because of pressure from men. One example is the restriction by the formal Nigerian president (Buhari) on his wife regarding her interference in political issues. Societal gender norms, that are driven by cultural and religious practices supporting male-control, and stereotyping women as second-class individuals especially in marriage, is very strong in all three geopolitical zones of Northern Nigeria. This disempowers women, exposing them to lack of access to available healthcare and VVF vulnerability.

Nomadism and women's control by men as an outcome of this sociocultural practice was another strong factor identified in this study. This practice links socioeconomic and cultural factors to expose women to increased VVF occurrence by depriving them of education, an autonomous income and access to healthcare. For example, the pregnant woman whose husband orders her to follow him for months to prepare food for him in the bush(animal grazing field) far from social amenities such as education, electricity, and healthcare centre, is at high risk of health complications, for example, in the case of emergency during labour.

5.3 Conclusion

This chapter explored the challenges hindering women's access to healthcare in the context of increased prevalence of VVF. While the findings identified increasing VVF occurrence in the study areas, it also highlighted various challenges preventing women from accessing medical care and exposing them to the risk of VVF. These challenges include limited availability and poor-quality healthcare services in addition to lack of confidence in healthcare workers. The barriers to women accessing quality healthcare also included logistic issues, such as poor transportation and telecommunication networks. In the case of availability of healthcare facilities and services, some participants reported problems with accessibility and affordability which also require financial support for healthcare if improvements are to be achieved. Moreover, this study identified the unfavourable impacts of the participants' location/geography, poverty and lack of education on their ability to access healthcare services. The impact of lack of education includes language barriers, ignorance of healthcare systems/information, and the causes of VVF.

Cultural practices and religious beliefs were also found to be critical factors contributing to women's ignorance regarding the benefits of accessing medical care, the dangers of prolonged self-care, cultural norms around food and preferences for home birth. Some of the risks associated with cultural and religious beliefs acknowledged in this study involved God making birth at home easy, peers influencing the preference for home birth, ignorance of the risk of childbirth at home and ignorance or negligence of labour signs. Thus, having discussed the

issues identified as contributing to the occurrence of VVF here, the next chapter (six) will explore the potential solutions identified by participants.

Chapter 6: Potential solutions to reduce the prevalence of VVF.

This chapter presents the potential solutions and interventions to address the socio-economic and cultural factors predisposing women to VVF and other challenges they encounter in accessing healthcare - identified in the previous chapters - to help reduce the prevalence of VVF.

This study explored the definition of VVF and re-defined it as part of potential solution to reducing the occurrence of VVF in Northern Nigeria. For instance, the definition of vesicovaginal fistula (VVF) that is widely accepted and used in the literature was used in this study as the basis for its in-depth exploration. While Hillary and Chapple (2018) defined vesicovaginal fistula as a worldwide healthcare issue highly prevalent in sub-Saharan Africa, where obstetric complications lead to the development of the condition. Mohamed et al. (2009) defined it as an abnormal interactive tract spreading between the bladder and the vagina ensuing in the unceasing involuntary release of urine into the vaginal vault. It was also described as urinary fistulas resulting from obstetric trauma, and a significant, enduring problem in developing countries by Ahmad et al. (2005) and Wall (2007). Moreover, VVF was identified as a debilitating condition that leads to persistent foul odour with urinary discharge leading to excoriation of the vulva and vagina Kumar et al. (2019). However, the available definitions focus entirely on the anatomical changes and physiological implications of these that VVF involves. Whilst this is important, the current study's findings indicate that this limited, physical medicine-based approach to defining VVF is not broad enough to provide a comprehensive definition. This may partly explain the gaps in the literature identified in Chapter Two that led to the present study and limits the identification and development of the full range of interventions necessary to prevent VVF occurrence among all population groups.

The present study evidences the impact of the low value attached to women, fuelled by gender-based socioeconomic factors and cultural practices, leading to their lack of access to healthcare within the population studied, as critical factors increasing the vulnerability of women to the complications of obstructed labour and VVF. Therefore, developing a broader definition of VVF that includes or can accommodate such factors is necessary. Based on the findings of this study, I therefore propose the following definition of VVF: 'A debilitating condition resulting from obstructed labour or obstetric trauma, for which women experiencing gender-based socioeconomic and cultural factors associated with limited access to or use of health services are at increased risk.' Further research is needed to test this suggested definition of VVF in terms of relevance in practice and potential impact on the development of more effective interventions to reduce the prevalence of VVF.

Other potential solutions discussed in this chapter are based on the perspectives of VVF women and practitioners who participated in this study. The potential solutions are grouped into six major themes which are importance of strategic leadership, the need for sufficient resources, engendering female empowerment, promoting the value of education, poverty eradication programmes, and improving access to healthcare services to reduce VVF.

6.1 The Importance of Strategic Leadership

This theme comprises political will and government commitment, government and NGO support and collaboration, and community leader involvement and mobilization. It also concerns the community leader's involvement, reassessment of available and future intervention, management of healthcare and staff attitudes. This study identified the need for strategic leadership at all levels, for example at government/NGO and local levels. providers were identified as crucial as they may influence the commitment of government and NGOs to yield more effective interventions to reduce the prevalence of VVF in Northern Nigeria. Moreover, the need for good leadership was one of the significant gaps reported by the participants regarding existing intervention programmes seeking to reduce the

prevalence of VVF. The participants in this study reported that this arises from a lack of political will, government and commitment to community leaders' roles, and poor healthcare management; therefore, unsurprisingly, they suggested that addressing these factors was a necessity, as discussed in the following sections.

6.1.1 Political Will and Government Commitment

The VVF practitioners reinforced the importance of governmental commitment to addressing any aspect of VVF prevalence in northern Nigeria. They emphasised their difficulty and inability to effectively design and deliver any intervention without government support, as this participant states:

> '*Government commitment and political will are required because if you cannot get the political will and the buying in of government, it is going to be difficult for the state to have an effective program (NWP1)*

In support of the above statement, another participant related the challenges associated with lack of government willpower in designing any program as major hurdle, and the main problem because it influences everything else, using education as an example:

> *'If the government is committed to this, there will not be any problem but if the government is not committed is a big issue'. (NWP2).*

Similar to VVF practitioners' comments about the importance of governmental commitment to VVF initiatives in this study, Baba-Ari et al. (2018) raised concerns about poor programme management, distrust for government initiatives and poor value of services as the reason for the potential ineffectiveness of conditional cash transfers made to increase maternal health care uptake in Northcentral Nigeria. Thus, these factors should be considered as potential targets for interventions to help reduce the prevalence of VVF in Northern Nigeria as recommended by the VVF practitioners. Similarly, Nambala (2012) requested the need for government support through the ministry of health to influence the attitude of women towards the prevention of VVF in Namibia. Moreover, effective engagement with the community, societies, organisation, and one's environment was identified as good leadership (Newstead et al., 2021). Though, VVF practitioners in this study

identified that government did previously support VVF eradication but realised inequality, for instance, Northwest and Northeast identified antenatal, VVF repair service, community advocacy and awareness programs as being currently available while Northcentral is limited to only antenatal and VVF repairs. Moreover, lack of effectiveness and government over reliance on the NGOs were some of the reasons participants offered for the laxity in government's commitment.

> *Some of the problem is that programs were limited to certain places in the North, most of them are not effective and government rely too much on the NGO for programs* (NWP1)

Confirming the above statement another participant specifically stated that:

> *'Mostly we depend on NGOs (UNPA) primary goals for advocacy, globalisation, and special intervention within the clinical services they teach the hospital staff, advocacy in school and transport vulnerable patients' (NEP1).*

Therefore, the re-establishment of adequate government support, equitable distribution of resources, commitment, and engagement may lead to massive achievement in eradicating VVF among women in Northern Nigeria. However, given the lack of trust of government initiatives identified by Baba-Ari et al, (2018) it is interesting that practitioners talked about the need for government's commitment. No VVF patients in the current study focused on government involvement as a solution. This is not surprising given the Baba-Ari (2018) findings and could potentially indicate similar suspicion of government interventions by participants in this current study.

6.1.2 Government/NGO support, Collaboration

Encouraging working together, training local community members to influence their peers, and collaboration between NGOs/Government was emphasised by the practitioner participants across the three geopolitical zones as the following excerpt illustrates:

'*Stakeholder's collaboration is key. Let everybody come together; if other organisations want to support, they should avoid parallel programming' (NEP1*).

Another participant also indicated the need for collaboration within the Non-Governmental Organisations '*We need Collaboration within the NGOs' (NEP1).* This could change the government agency's commitment to balance the negative impact identified in an earlier chapter. For instance, a government agency's support was described as a boost to the achievement of a programme designed by an NGOs to address the prevalence of VVF in a local government of North-western Nigeria as related by this practitioner:

'*In the program I participated, the NGO, Medicine San Frontier (MSF) seek and worked with some government staff' (NWP1).*

Moreover, establishing joint working arrangements between providers/partnerships was reported as key to improving access to healthcare services and reducing VVF:

'The government and everybody have to put their hand there, not just one NGO; other NGO should put their hand together to come forward to help reach out in this kind of thing' (NCP1).

Similarly, Hamma (2021) recognised the significance of government involvement in providing accessible maternal healthcare services. An example of collaboration/partnership is Zafar et al. (2006), who reported high effectiveness in improving TB patients' access to quality health care services through NGO and government collaboration. Panday (2018) also established recorded efficient service delivery, reduced corruption, and increased transparency and accountability due to the partnership and collaboration between a local government and NGO in Bangladesh. However, Coston (1998) supported government mobilisation and collaboration with NGOs, he identified the importance of mutual benefits and avoidance of opposition and competition as the instrument of growth for such relationships. Therefore, prioritising government mobilisation and collaboration with NGOs based on mutual benefit and avoidance of competition and opposition in VVF preventive programmes may lead to greater effectiveness in service delivery. Although government and NGO support, collaboration and mobilisation are important in VVF prevention, the involvement of

community leaders cannot be overemphasized, as the participants identified and discussed below.

6.1.3 Community Leaders' Involvement and Mobilisation

The importance of local leadership and involvement identified in this study cannot be over-emphasised. The community leaders were reported by participants as having significant influence and vital roles in increasing or preventing VVF occurrence in Northern Nigerian communities. Therefore, the practitioner participants particularly, suggested their involvement in all interventions for an effective and lasting result. In promoting women's education, the participants suggested that collaboration with and enlightenment of both the religious and traditional leaders on the importance of education was crucial, as this participant illustrates:

> '*Much work with the traditional and the religious leaders. Let them understand the importance of education (NWP1)*

Additionally, this study identified the family leader's education level as vital in promoting acceptance of education by his family members and neighbors. For instance, a participant shared his experience as he recommended formal education for household and religious and traditional leaders, suggesting a high level of education should be a primary criterion for choosing a leader in any community:

> *'Education if the head of the family is well educated, there is a grand patron of a PTA (Parent-Teacher Association) who enroll all children and neighbor's children yes and even the religious leaders you see most be well educated. The traditional rulers must educate those given the mandate of traditional leadership' (NEP1).*

Community leaders also have a role in intelligence gathering regarding nomadic children, especially girls. As discussed earlier in this study, Nomadism is one of the factors favoring VVF occurrence because it prevents women from accessing quality medical care, especially during pregnancy, and hinders nomad women and

daughters from schooling, which in turn prevents health education. Therefore, participants identified that any potential solution must include a proactive intervention targeting the nomad route for school building and intelligence gathering, as well as making laws that favour nomadic women and children's education:

> *'Activate nomad education system when they travel; they have a road, and in that area, we have to build a school. There should be a law involving traditional leaders that no Fulani man should pass through your land without him telling you the number of children he has, or else he will not be allowed to move. As Fulani man, if you give us six months, we will understand what you thought us if they finish then they go to secondary school let there be a bond that if they finish from that nomadic training that they will teach before they proceed' (NEP1).*

As the findings of this study indicate, culturally, in Northern Nigeria, the husband is referred to as the head of the wife and a patriarchal culture prevails, which tends to subjugate women's autonomy (see chapter 5). The impact of women's subjugation includes a lack of decision-making power, which was found in this study to cause delay in seeking medical attention and lack of money for hospital bills. It is, therefore, not surprising that participants' suggestions for resolving this problem involved the religious and community leaders to help reach out to men groups:

> *'We must involve our religious and community leaders to encourage the men to allow their women'(NEP2).*

Interestingly, the men's positional power is not challenged by participants in their responses, rather ways of influencing within this are suggested.

Similarly, though a participant described religious leaders' skepticism in advocating against early marriage because it is a strong cultural practice in Northern Nigeria, he also emphasised their involvement and community structure in advocacy through community mobilization and sensitisation:

> *'The issue of early marriage yes is difficult but still with community mobilisation, advocacy with community structures, advocacy to the religious leaders so they should add to their sermon like ok early marriage is not*

good, but they are still conscious in saying it, but the best thing is we continue to say it' (NWP1).

While others agreed with the above suggestions, they also emphasized the need to continue with education programmes targeting community-based leaders, for example:

'Continue to do community sensitisation awareness, to leaders like the Imams the pastors in the rural area in mosque and church' (NWP5).

Similarly, Caperon et al. (2021) stated that the involvement of community leaders was vital in social mobilisation. Additionally, Ledogar et al. (2017) identified community participation as one of the factors in successful intervention programmes for an effective household visit and gathering of evidence. Thus, though the government's commitment or involvement is crucial for NGOs and the successful implementation and impact of any program addressing VVF occurrence, it was identified that without the cooperation and support of the communities' leaders, this is likely to be wasted effort and have limited success at best.

6.1.4 Reassessment of the Effectiveness of Interventions

Although participants commended the NGO's commitment to reducing VVF's prevalence in Northern Nigeria, a significant loophole they identified was the lack of supervision or evaluation of the progress or effectiveness of VVF reduction programmes. This gives rise to shortcomings; therefore, they emphasised the need for re-evaluation to ensure programmes could achieve the best outcomes:

'*They should not just train and vanish to return to Abuja after training. They should go to that nook and corner go and see where the shortcoming is, and put it back to their next budget' (NEP1)*

Most studies identified reassessment of VVF repair services as essential for proper treatment (Ockrim, 2009; Singh et al., 2012; Smith and Yeguez, 2022). Gordon et al. (2008) stated how intervention reassessment has ultimately expatiated the safety and efficacy of ache management. Ataguba (2018) also

attested to how reassessment of VVF programme provision and effectiveness could help to identify quality and service coverage. Therefore, evaluation of the quality and outcomes of a service or reassessing the relevance of a particular service may assist in identifying shortcomings in terms of the quality, coverage, and effectiveness of the available VVF intervention; it may also help to identify a potential area for further intervention.

6.1.5 The Management of Healthcare/Attitudes of the Staff

Better leadership and management of healthcare and improving the attitude of the staff responsible for making health care available and accessible were identified as potential solutions to reduce VVF prevalence among women in Northern Nigeria. Good managerial skills and professionalism among staff are highly important and crucial factors in promoting the attendance of women at the hospital. Participants reported the negative influence of poor hospital staff attitudes toward pregnant women as barriers to hospital attendance. Participants from the Northeast and Northwest reported similar issues summarised here:

> '*Some of them are tired because of the attitude of nurses. If they come to the hospital, they start abusing them, giving them extreme abuse instead of welcoming, calming them down and giving them support and help attend to them. They will be happy to be in the hospital, but when they know they are going to be harassed and if they start the labour and come to the hospital, they ask why they start the labour at home that they will not accept them they tell them to go back to where they are coming from, they will not even come yes that is what is happening in Northern Nigeria' (NEP1).*

Reinforcing the criticality of health workers' negative attitudes in reducing the attendance of pregnant women at hospital, this practitioner participant noted that it had even more impact than the women's level of autonomy and ability to afford hospital bills:

> *'Interpersonal relationship, because some have money and permission to go but because of the attitude of health personnel that is what makes them not to go to hospital' (NWP4).*

While Kumari and Patyal (2017) identified the behaviour and attitude of service providers as very important, the management and positive attitude of healthcare staff was described as one of the factors increasing women's access to health care and reducing neonatal death by Obio (2020). Therefore, evaluation and resolution of the health care management issues identified by participants in this study, especially the cause of staff's hostility, provision of staff training, reasonable remuneration, and employing enough qualified personnel, may improve service user access.

6.2 The Need for Sufficient Resources

Resource implications were identified in respect of various aspects of current VVF intervention programmes and suggested future interventions aimed at reducing the prevalence of VVF in the three geopolitical zones of Northern Nigeria. These included the availability of the necessary equipment or materials for treatment in the hospital is a vital requirement for providing quality healthcare:

> *'Management matters and making the materials we use in the hospital available with good strategies' (NEP1).*

This study identified critical economic gaps that hindered critical intervention provision to reduce VVF prevalence. These included: lack of project funding, security, human resources, infrastructure, and poor communication networks, each of which will be discussed in turn.

6.2.1 Funding and Security

As mentioned earlier, funding programmes designed to reduce the increase in the prevalence was not adequately managed by the government but mainly by non-governmental organisations. Participants highlighted this shortcoming as a critical factor in the availability of the necessary equipment and logistics required to implement the current programmes as this statement illustrates:

> '*Funding is very key because like I say for that government to be successful the main driver is a fund, so we need access to drug, equipment, and*

adequate human resource we need power supply everything should be supplied, so funding is very key to put adequate measure' (NWP1)

Moreover, one participant lamented the drastic reduction in the funding for VVF intervention programmes in Northcentral and requested its reversal:

The government reduced the VVF funding we are handicapped now, and we need help to be able to do our job effectively (NCP2).

While some identified financial instability, both VVF patients and practitioners identified a lack of community security as problems encountered by the VVF women with this practitioner recommending critical attention be paid to this factor**:**

'Because of insecurity, some of them ran away from their villages they are scattered, so they do not even have that comfortability of life that will make them send their children to school and attend hospital, so it needs serious attention '(NWP4).

Insecurity may render the program designed in a particular area useless as women fear leaving their residence anytime,

Although literature investigating the implication of funding on VVF interventions is scarce, AnkaNasiru and Dahlan (2020) mentioned funding as one of the challenges facing VVF patient rehabilitation programmes. However, Uzochukwu et al. (2015) raised concern about achieving universal health coverage in Nigeria due to poor financing in the health sector. Furthermore, Adinma and Adinma (2010) appraised funding of community-based health care and its effectiveness if it involves collaboration, this implies that collaboration is likely to result in securing better funding. Therefore, proper evaluation and management of funding VVF programmes may impact their effectiveness. It may also lead to the improvement of human resources (staffing), infrastructure and communication networks identified below as some of the challenges for available resources outcome.

6.2.2 Human Resources (staffing), Infrastructure and Communication Networks

All the VVF practitioners from the three geopolitical zones expressed worries and frustration about lack of adequate workforce, the poor quality of the roads, limited means of Transportation, and poor facilities in rural areas of Northern Nigeria to

enable an adequate response to the prevention and treatment of VVF. This participant focuses on the lack of skilled personnel and related issues:

> '*We need more hands to help us, more manpower before we send our patients to Jos (*Plateau state), *but I am the only one here now and some junior workers, if there is no equipment, logistic issue to manage and things like that, no light, no water nothing to do you still cannot help patient' (NCP1)*.

Addressing the lack of basic amenities in rural areas, was reported as a crucial priority for interventions aimed at reducing the prevalence of VVF because this makes healthcare staff recruitment difficult:

> *'When they provide a good facility and employ midwives' nurses' doctors, and they get the house to live there, a qualified doctor would not like to stay in the village without social amenities, but when you provide such things and everything even a standby generator, he can stay there (NWP3).*

Another VVF practitioner identified the link between a lack of community security and corrupt practices in the process of health worker distribution to the rural areas:

> *' If they send them, they use to do some corruption and come back to the city because of insecurity, lack of manpower development' (NWP4)*

Nevertheless, the problem of human resources is not just limited to the number of staff but also the quality of service they deliver. To bridge the gap, participants recommended system level changes that if achieved would enable success:

> '*If the civil service can sit up and strengthen the structure and the system, I believe we can have sustainable growth in developing our health system' (NWPP1).*

Abimbola et al. (2015) reported that the worst shortage of health care workers, especially in primary health care, was in rural areas in Nigeria. Further, the workforce scarcity, disproportionate ratio of skilled to semi-skilled staff, incompetence and lack of a framework for staff recruitment may endanger the service users (Aluko, Anthea and Marie 2019). Ndugbu, Madukwe, and Ezennia (2019), also itemised providing healthcare workers' training and, provision of

health facilities as potential means of promoting health-seeking behaviour among VVF women.

The prolonged time it takes pregnant women to access primary healthcare even in an emergency as a result of poor access to effective transportation was also a concern of VVF practitioner participants as this one illustrates:

> *'Is more than three hours journey to get to health centre during labour' roads are bad, they cannot come, and this contributes. Some cannot get the vehicle they have to trek; some go on donkeys, which wastes time (NWP5).*

Moreover, linking transport problems to financial issues a participant included financial consideration and means of transportation as VVF intervention:

> *'Good transportation network and means of transportation, solving financial issues, providing access to the medical centre*' (NCP2).

Additionally, one participant emphasised the role of government intervention and its importance in providing good road and healthcare facilities but insinuated and rejected the tendency to use empty buildings as healthcare centres in rural areas. He also highlighted the impact of the poor-quality road networks on the referral system for women requiring the emergency attention of specialist personnel:

> *'Government should help because there is no road, they complain of trekking a far distance, there should be an excellent primary health centre, not just a building. If beyond their power they refer but if a good health care centre will take hours with the car, with no car or good road, what do you expect? That is why I said that government have a significant role to play. Even if it is Keke (tricycle) machine (motorcycle), if the road is good, Transportation will be better (NCP1).*

While the above statement prioritised good roads, the following participants reinforced the importance of communication networks. Poor communication networks hindered some women and care providers in rural areas from accessing health information, as this participant suggested:

> *'The communication network should be made to cover every rural area where communication is unavailable for them to be reachable' (NEP1).*

Therefore, there is a need for adequate intervention to bridge the current communication gaps.

In summary, these findings support those of Okoroafor et al. (2021), who highlighted the lack of basic amenities in rural areas and the implication of this for employing rural health workers. Basic amenities are essential, as other studies also linked these to the quality of life of people in general, staff and patients. Gage et al. (2016) reported a positive association between basic amenities and poor health. Sunni (2010) emphasised the necessity of providing appropriate basic amenities for health and education to eradicate unbalanced access. Therefore, the provision of basic amenities, alongside healthcare facilities and qualified personnel in Northern Nigeria, especially in rural areas, is crucial if the occurrence of VVF is to be reduced.

6.3 Engendering Female Empowerment

Empowerment of women is another important theme identified in this study and comprises four sub-themes: including using female influencers to create awareness about VVF, education-based interventions, improving access to healthcare services and poverty eradication programmes.

6.3.1 The Role of Female Influencers

Increasing awareness of the factors predisposing women to VVF, how to prevent it, restorative treatment etc by using successful female individuals in the society as women influencers and role models was cited as an ideal strategy to spread information on the importance of education and female health issues, as this participant suggested:

> *'Aminat Mohamed finance minister, those from the North that are doing well, when they see examples like that talking to them then it will encourage them (NWP1)*

Reinforcing the power of using influencers, another participant cited its effectiveness based on the example of how educated women were used to teach their female counterparts about the voting system. While the application of this strategy was considered for VVF prevention, he placed responsibility on the government agencies to act:

> *'Women will enter your house give them omo (soap), tell them how to vote; then it is the government's responsibility to use the ministry of education select some individuals who is educated should organise some local seminar within and giving them allowances and then asking them to bring their wives and give information to these women then ask them to enrol them in formal education give structures for them make them comfortable' (NEP1)*

Though literature is scarce on the impact of using influencers as a VVF prevention intervention, Goldberg (2014) reinforced the negative implications of social networks on the uptake of childhood immunization among mothers or caregivers in Northern Nigeria. Therefore, using the social networks of influential individuals in society may be a helpful tool for encouraging women to adhere to preventive measures of VVF in this study area. Especially, where a male stranger (such as male health provider or researcher) is not allowed to enter or address women in their houses (ba-shiga) though there is no direct evidence of effectiveness.

6.3.2 Education-based Interventions

The findings of this study concerning the role of education refer to health education and, more importantly, female attendance at formal schooling. Educational gaps were discovered. While all the VVF patients had a negative attitude and poor level of educational attainment, the VVF practitioners held a contrasting positive view and stressed the importance of education as a determinant of national development and an essential priority for interventions:

'Fundamental for development, and fundamental intervention you need not matter what you do if they say you are the world global power or world most rich country if most of your population are illiterate be sure that is only for a while (NWP1).

Education is one of the ways individuals can be empowered however, this has been jeopadised due to low levels or lack of education among women in this study. As a result, all ten VVF practitioners emphasised the importance of education in preventing VVF and noted the need for drastic intervention, highlighting some of the facilitators of women's education that could be built upon

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6.3.3 Facilitators of Women's Education (Current)

The potential facilitators of women's education include parents' education, family's willingness, and awareness of the importance of education for women/girls, as many VVF practitioners discussed and cited their motivational factors and hindrances in sponsoring a girl child's schooling based on their own experiences.

As parents, many VVF practitioners encouraged and funded their own daughter's education having been educated themselves and therefore recognising its value. For example*:*

> *'You can only understand that if you are educated, I am educated. So, I will want my children to be educated no matter what you keep, no matter the asset you keep for your children, and they are not educated is valueless because one day someone can come and trick them because they are not intelligent, they are not educated just one little trick the asset will be gone. So why do you want them educated because you want them to be empowered, and I know the value of education, I want my children educated, and I want them to be leaders in society' (NWP1).*

The findings of the current study are consistent in this respect with Ermisch and Pronzato (2010); and Eccles (2005), that various credible links exist between parents' education attainment and those of their children. Orochi *et al*. (2013) reinforced the importance of the head of the family's education in successfully implementing education equality in some of Kenya's communities, especially among the Nomads. This means there is a high tendency for the generation of educated parents to have a generation of educated children, which could happen in Northern Nigeria if proactive measures are put in place that take account of the cultural or socio-economic and religious factors reflected in the discussion below.

Another facilitator of education is the family's willingness, as parents disrupted their girl's education for early marriage and thwarted the effort of the sponsors:

> *I have a neighbour have a girl we enrolled in school and sponsor her because the girl is very intelligent but today, they are giving her out for marriage by 2 o clock, all I and my husband tried was in vain (NWP4)*.

This participant further argued that the financial stability of parents does not determine a girl child's education if there is no willingness:

> *'The thing depends on whether the family want her or does not want her educated if they want her, they will send her to school because it is not about the financial issue. However, even if they have financial stability, they may decide not to if they are unwilling' (NWP4).*

Therefore, promoting a family's willingness to educate girls may be an effective intervention to promote girls' education in Northern Nigeria. Addressing the challenges of female education however is a complex issue with powerful cultural tradition or religious factors at play. However, this participant identified house-to-house campaigns aimed at encouraging people to vote as a feasible strategy which could be incorporated for promotion of female education**:**

> *'Organise some lectures and seminars with these adults and simply done with some few of the importance of women's education as you call them for the importance of voting for APC or PDP yes during the campaign' (NEP1).*

Moreover, practitioners proposed that even educated folks, though in the minority, should be included in education regarding VVF as many of them are still ignorant of this despite their good level of general education**:**

'Enlighten the family about the importance of western education; most of them are illiterate, even some educated ones are ignorant, but if they are enlightened, they will know' (NWP5). Alam (2017) stated that female education is driven by various factors, including societal norms, parents' views and teachers' attitudes. Similarly, Ghazi et al. (2010) confirmed that lack of awareness about children's education prevented parents' interest and involvement in this. Hence, increasing parental awareness about the importance of education may be an essential intervention to facilitate the education of girls in Northern Nigeria.

Other facilitators of education identified in the current study include promoting positive perceptions of the value of education, particularly through religion and cultural practices which are discussed in more depth in the following sections.

6.4 Promoting the Value of Education

Due to low value placed on education by some women identified in chapter four, participants suggested restoring value to women's education through capturing their attention by integrating it with other concepts that they already value to be embedded in the school curriculum. The suggestions include promoting using religion, culturally tolerated education and awareness. This involves enlightenment, mobilisation, and motivating parents to enroll girls in school. Moreover, building schools in rural areas, online/individualised education for women and well-functioning business enterprises were identified as means of promoting the value of female education.

6.4.1 Promoting Education through Religious and Cultural Practices

The strategy of promoting education through religious and cultural practices requires associating female education with religious/cultural practices from different perspectives, including promoting culturally sensitive awareness/education, entrepreneurship in schools. It also requires easy access to employment opportunities by women and right match in marriage (Both husband and wife should be educated) as ways of increasing women education in Northern Nigeria as discussed in turn below.

The VVF practitioner suggested inclusion of religious education to the circular education stating that:

> '*The religious program should be attached to it, for example, Islamic and Quranic learning then they will come when they come into school their behavior will start changing towards western education (NWP3)*

The Northeast and Northcentral participants specifically cited incorporation of western education in the religious education designed for women as summarised by this participant:

> *'Some of the women do go for Islamiyah, this Islamiyah they teach them only Arabic may be the country can try to incorporate some of the western education as they are learning Arabic the background is to give more access to women's education (NEP2).*

Additionally, participants supported and appreciated the establishment of single-sex schools because this overcomes the cultural barriers associated with traditional sitting arrangements in mixed schools. This was particularly so for people in the North and was identified as the reason why men refused to allow their wives to be educated:

> *'If they have a female school only or divide male and female separate in a class, those men will allow them, but the situation we have in this country that man will sit with a woman and those are aware of it' (NWP4).*

Expanded on the solution to the issues hindering schooling among women and girls in Northern Nigeria, the participants from the Northeast and Northwest highlighted the importance of promoting culturally tolerated education. For instance, being westernised, nudity and drunkenness was attached to formal education:

> *'There are some people who are unwilling and not interested because if their child starts speaking English, she will be spoilt (westernised), which is why they condemn the English language in the North. They say Western education is bad because of how they behave; they say those who brought western education through Lagos were naked. However, they were not naked, so do not attract half-naked dress to western education do not attract drinking bear to western education is an option for some people are getting an education so whatever education is the first weapon for life and only education can make us focus on life' (NEP1).*

These myths/misperceptions about western education maybe because women dressing in Northern Nigeria generally involves covering from head to toes which is different in the southern part where people are more educated. Therefore,

culturally sensitive, and religious education may help promote awareness and correct misperceptions about Western education.

As identified in this study, engaging women in adult education was challenging in Northern Nigeria due to cultural practices. However, targeting the husband's awareness of the value of female education may be a facilitator of change or acceptance:

> *'Culturally they hardly go out, especially those that have married, ones the husband know the importance of having his wife getting an education and there is an opportunity for her to better the economic situation of their family I think the husband too whom an educated person can assist but to go to general space may be difficult' (NEP2).*

However, a VVF practitioner identified the marital roles of women as a challenge preventing them participating in educational programs and therefore suggested engaging them in programmes that suit their situation:

> *'By pleading that the women should be enrolled in a part-time school program to help them cope with their marital duties' (NEP3).*

Moreover, participants reported that secondary school education for girls should include entrepreneurship subjects which is about the role of education in supporting women's economic contribution/independence:

> *'It is essential to everybody because government jobs are not coming. So, by empowering the women, you are empowering the whole community. So, include entrepreneurship in their subject' (NCP1).*

Similarly, participants from Northeast and Northcentral identified easy access to employment opportunities as possible determining factors in promoting the value of women's education, as this practitioner illustrates**:**

> **'***Some percentage of the position of employment should be reserved for women they will realise that if they finish education, there is a job (Automatic employment) waiting for them, I think most of the women are tired with western education, but if there is a job, it will encourage them (NEP2).*

This is suggesting a specific employment policy that reserves a quota of jobs for women only which therefore links to the earlier section about governmental strategic leadership action.

The above suggestions are in line with Lakshmi and Paul (2018), who ascertained that valued education can be provided and accessed from different sources including religion, cultural practices and learning professions. Additionally, Paramallam (2010) described the strong influence of cultural and religious practices on access to education. Bako and Syed (2018) also identified the weakness of Nigerian law on some cultural and religious issues such as seclusion and segregation due to its influence, therefore, including discussion around such practices in school curriculum may build more participation. Regarding entrepreneurship education Li, and Liu, (2011) confirmed that entrepreneurship positively affects female women employment. Similarly, Sperling, and Winthrop, (2015) identified that job prospects and earnings are likely to have equal impact on education, however, parents who do not have such understanding may prevent their children's schooling.

Mismatch in marriage was identified as one of the determining factors of poor value for women's education in this study. This influences the husband's supporting his wife and daughter's education, the more the woman may value herself being educated.

> *'Force your educated daughter to an uneducated man. I give you one year divorce may come in that is where you see incompatibility when they are not compatible but when educated marry each other, they understand each other the complete lifestyle change yes. Religious leaders who are educated will encourage their children to be educated' (NEP1)*.

It means that educated people are more likely to support the education of others – whether this is as a spouse, religious leader, parent and a marriage is unlikely to succeed if an educated woman is forced to marry an uneducated man, it is also similar to Ermisch and Pronzato (2010) who linked educated parent to improved education of the children. Specifically, Smith and Lammers (1996) associated a husband's education to the improved educational career of the wife. Therefore, awareness of this should be included in any VVF intervention.

6.4.2 Motivating Parents to Enrol Girls in School

Motivating parents to enrol their female children in formal schooling is very important means of promoting the value of education. The usefulness of female as opposed to male children to their parents in terms of their caring role was cited by this participant along with the personal implications of hindering them from being educated*:*

> *'For the past 32 years have been going to the hospital if a child is sick is the mother you will see there; if the mother is sick is the daughter you will see. We know that women have more empathy than men, so if you cannot empower your daughter, then you have already cut off your generation who will look after your life, so that is why I like to educate my daughter, who is currently at university' (NEP1)*

A further participant added that educating female children is essential, to prevent them from victimisation.

> *'If they are educated, they will know the right thing to do, and they will not fall victim to all the problems, so my female children are going to school' (NWP5)*

The participants reinforced the importance of embarking on sustainable education programs as an impactful intervention: *sustainable educational programmes will go a long way* (NWP1). Gimbo t al. (2015) itemised family's economic prospects, government enforcement policies for parents to enroll their children in primary school, partnership, and increased accessibility to education, as motivation for parent to enrol their child in education. However, Drèze, and Kingdon, (2001) identified parents' education as factors influencing high chance of female education in rural India. Nevertheless, the educational programmes mentioned by this current study's participants include funding or support, building schools, and online and individual-based education.

6.4.3 Build Quality Schools in Rural Areas and Educational Methods that Align with Women's Lifestyles

To address the lack of schools in the rural areas and the impact of this which was identified in chapter four in terms of limiting girls' education and the indirect contribution of this to VVF prevalence, participants highlighted the lack of school as a significant problem hindering some rural dwellers from being educated and suggested building schools and employment of teachers as solution: *By building more schools in rural areas and send teachers that will encouraging them to come (NW3).*They also emphasised on the importance of quality in establishing any intervention as a key factor in gaining maximum acceptance by people, for example, one participant compared the previous standard of schools in Nigeria to the present situation:

> *'Let them first see quality education. Let people see beautiful schools; when the missionaries came to Nigeria, there was high enrolment because they brought quality education and good schools but now where are they' (NWP1)*.

The solution is to provide more and better education services and using the example of missionary success, these need to be good quality. Substantiating the importance of schools in rural areas Wright, (2007) described it as a means of empowering and transforming a community toward becoming industrialised society. Therefore, neglecting rural dweller's education prevents their education and economic development.

Nevertheless, the provision of mobile education, was proposed by this participant as a means of overcoming the lack of schools by using a communication method that the target group already used regularly to enable them to access education that did not interfere with their lifestyle:

> '*Most nomadic do go around with their radio, if the government sponsors some form of the program on radio, they may have western education' (NEP2).*

Participants from Northeast and Northcentral suggested online or individualised tutelage to promote education among secluded women as it is difficult for them to

access regular education institutions because of their cultural practices. While one participant identified the importance of online education: '…*they can do online education in their house*.'(NCP2), mobile and or online education were strategies suggested to assist secluded or other educationally disadvantaged women to access education in their neighbourhood. While Sun and Chen (2016) highlighted improvement of education, student enrolment and retention as importance of online education, however they raised concern about fast technological advancement, designing course content, motivating interaction between the learners and teacher, and creation of appropriate online studying community need proper consideration in embarking online education. Cheris and Kramarae (2001) identified online education as a means of removing barriers which impeded traditional schooling among women. It is also relevant in this study as many women are not allowed to go out to access classroom teaching or health education.

Grouping secluded women for tutelage was also reported as an option but would require maintaining a high level of privacy. Despite these suggestions however, participants voiced an over-riding concern about their viability because of the impact of poverty and lack of resourcing:

> *'I think to achieve this particular aspect though it may be more capital intensive because this type of education maybe has to be one to one, if possible, to get the tutor for them or better still maybe within the neighbourhood if you can get many people without education within the neighbourhood you can just organise a class for them can help' (NEP2).*

One to one of small group tutelage is another strategy suggested to assist secluded or other educational disadvantaged women to access education in their neighbourhood. This finding is similar to Ollis, et al (2017), who studied adult learners and their transformation from their self-negative perceptions of unsuccessful learners to successful reconstruction of identity. However, Ollis, et al (2017) recognised the importance of special neighbourhood space, special guidance, support, and unique teaching in small group learning, in promoting second chance learner's reconstruction of their new identity. Which could be applied to improve women education in Northern Nigeria.

6.4.4 Enlightenment and mobilisation

Terminologies such as enlightenment programmes, awareness raising, advocacy, and education, were used interchangeably by participants in this study. Participants identified raising awareness and increasing understanding of the benefits of education and healthcare for women and mobilising people to do this as key priorities: '*By enlightening women about education through community awareness programs' (NE3).*

Early marriage identified in chapter four is another religious/cultural effect on female education and health. The support by some VVF practitioners and the disapproval of the others shown in this study indicates mixed awareness of the risk and implications of child marriage among health workers. This could be what underpins the views of the VVF practitioners who suggested awareness programmes among the educated elite, who may still be ignorant of the causes of VVF. While awareness of the negative implications of early marriage on education and health is critical, the regulations involving punishment of the leading actor (such as parents or family and community leaders) conducting early marriage should be put in place.

While supporting awareness about the importance of education, a participant suggested using it to correct men who hinder their daughters 'schooling. This strategy might also apply to those who prevented their wives 'schooling even though they married early. This was specifically identified as a strategy that might help resolve the scarcity of female doctors and health workers, which could help address the issue of men who prevent women accessing healthcare by not allowing a male doctor to attend to their wife during hospital visits:

> '*If there is enlightenment like, you bring your wife to the hospital, if you do not want a man to touch her when you let your daughter go to school instead of a man to touch her female will touch her' (NWP3).*

Suggestions included the NGOs mobilising VVF practitioners to create awareness about the availability of surgery and services, particularly in NC and increasing awareness of the risk of VVF in NW. While recognising the relevance of community awareness programs, another participant suggested enlightenment

about the importance of women's education at the grass-roots level. This approach requires that, contrary to the above suggestion, the enlightenment program be extended beyond the scope of the family member. This participant also recognised the need for improvement in the awareness program that was currently available, citing the importance of using social media to spread the information:

> *'By enlightenment about women education at the grass-root. 'Improvement of health awareness program among the women at the grass-root on VVF through community awareness programs. Public enlightenment, pregnant women should be encouraged to go to the hospital when labor starts, also through social media' (NEP3).*

Participants reported that increasing women's autonomy was crucial as some women were denied access to healthcare. This emphasis the need to instill the importance of women accessing healthcare in those with the power over them as this practitioner outlines:

> *'Sensitisation of the family's decision-maker and accessibility of health care in the community if there is a health facility and decision-maker give the pass because most of the women were ready to go, but they were not allowed' (NWP4).*

Swainson et al (1998) emphasised the critical role of raising awareness about the women or girls' education for actionable outcome. Similarly, Diop, and Askew, (2009) reported a community awareness in Senega which yielded positive changes in family behaviours and attitudes to a health education program. Moreover, creating awareness was identified as an integral part of a disease prevention by Zühlke, and Engel, (2013). Therefore, strategic awareness programmes may promote actionable outcome for women's education and yield positive change in people's health behaviours to prevent diseases VVF in this study area.

In addition to restoring the value of education through, religious, cultural leaders' enlightenment, mobilisation and parent motivation identified earlier, sustainable education programmes involving building schools in rural areas with evidence of success stories were mentioned as crucial elements of promoting women's education in the study area. Corroborating the findings, Ojobo (2008) described women's education as a catalyst for their emancipation in Nigeria. However,

Railback (2004) highlighted the efficacy of questioning the existing practices and reasons for absenteeism as strategies for increasing school attendance. Similar to these finding, Olaniyi (2011), Nkechinyere (2011) and Omirikpa (2010) recommended economic, cultural factors and parental education as areas of consideration in any efforts to increase girls' education. Moreover, added to the literature by recommending solutions based on peculiar factors limiting girls 'education level as it was argued by Fentiman et al. (1999) that it is difficult to generalise the educational situation in Sub-Saharan Africa due to their various dispositions, country conditions or population traits or determining factors

6.5 Improving access to healthcare services to reduce VVF.

The findings presented in chapter five of this study indicate that access to health care services by women was challenging therefore, ensuring the availability of quality healthcare services.

To ensure availability, the participants suggested quality health care centre and services at every community ward as means of increasing patients' attendance as illustrated by this participant:

> *'Ensure that every ward, if they see the benefit of the antenatal care and is not where they gather, and somebody is wasting their time, and at the end of the day, the person will only test BP and say come next month like I say if we are offering quality antenatal care services and they see that this service is good that health worker addresses them with respect and dignity they will go' (NWP1)*

6.5.1 Raising Awareness about the Risk of VVF and Available Services

As the findings in chapter five indicate, many women, especially the rural dwellers, were ignorant of the available health care services and health information and reported a need for interventions to resolve this problem. They identified a need to

focus on raising awareness about the available health services and emphasizing the preventive measures women themselves could use as illustrated by this practitioner:

> *'Preventive measure, it is health awareness and health education on the preventive measure against VVF if they can tell them what causes VVF, for example, prolong labour, do not allow your girl to fall in to prolong labour if not she will have VVF and be leaking urine and stool, tell them this is the cause they will find a way to prevent it themselves (NWP4).*

In addition to the introduction of jingles about the importance of antenatal care, the participants from the three geopolitical zones reiterated the usefulness of radio, social media, and community structure as they are familiar and cheapest means of transmitting information about available health care services such as antennal care to people in the local area. Additionally, outreaches and the use of local languages were suggested as a way of improving the understanding of people about the subject matter, as in this example:

> *'The easiest is the mass media radio in their local language, majority have access to radio and mass media, if difficult use the community structure with town crier to pass the information to people (NWP1).*

Similarly, Ijadi-Maghsoodi et al. (2018) recommended the need for awareness creation by the community and healthcare providers about sexually exploited youth. Moreover, Sabates and Feinstein (2006) reinforced the importance of raising awareness in promoting consistent health checks among cancer patients. However, Zamawe, Banda and Dube (2016) appraised the role of community mass media, finding it significantly influenced healthcare services and reduced the risk of maternal mortality and morbidity. Consequently, using such means to increase awareness of the available healthcare services may help to reduce the current ignorance of health information among women in Northern Nigeria.

6.5.2 Enforcement, Reward, and Punishment

Enforcement was acknowledged as a possible means of reducing VVF prevalence in Northern Nigeria. Specifically, participants identified enforcement of education accompany with economic intervention:

> *'The government have to intervene… enforce the community member to send their children to school the government must enforce especially in this Northern Nigeria enforce education, not an introduction but enforce that is using enforcement accompany the economic' (NEP1)*

These findings support those of Ehiemua (2014) who suggested enforcement of the law for parents to allow their girls 'education and enforcing an equal allocation system for the admission of males and females in Nigeria's educational system.

On the other hand, Ekundayo (2019) raised concern about the difficulty of influencing in leaders to enforce such practices when the perpetrator has reached a strong political influence or 'high political office. For instance, it is a great concern and difficult to enforce in a situation where the perpetrator of early marriage has strong political influence, example in this study is the VVF practitioners supporting the practice. Therefore, Ekundayo (2019) suggested the stakeholders' joint effort to stop the cultural influence on girl child education.

As reported in chapter five, most VVF women in the current study, experienced emergency obstructed labour requiring urgent attention of qualified medical care, which VVF practitioners also confirmed. However, these delays were due to varied circumstances, including those resulting from care provided by unqualified health workers in rural areas. As a result, some participants suggested punishing the culprits to address this issue, based on measures like suspension, salary reduction, transfer, or total dismissal as appropriate punishment:

> '*Go back to those who are giving them the care the nurses and community health workers you give them appropriate discipline you discipline anybody that has not to refer the pregnant woman to the proper area you either suspend him or sack or reduce the salary or transfer her some of their attitude at times make the women run away from the hospital' (NEP1).*

Participants felt that chastisement should not be limited to counterfeit health workers but should be extended to many people who encourage and practice the

indiscriminate use of home delivery in Northern Nigeria, regardless of a successful birth outcome:

> *'Punishing anyone who allows her daughter or wife to deliver at home, the community leader should do that even if she delivers safely' (NEP1).*

However, another participant expressed grievance about the poor state of the rule of law in Nigeria which resulted in ineffectiveness, despite recommending the use of punishment to reduce the offenders, encouraging diligent practitioners through rewards:

> *If there is law and punishment in my country, laws are being made but not promoted; they squander money and escape should be punished, but they do not give punishment for a crime committed. Even if you mention nothing will be done, they will get away with it; they talk about genital mutilation till now, but nothing is being done about it. So many things happen if nobody talks; it will continue to happen. Therefore, people should be rewarded for good things and punished for their bad (NCP1).*

Similarly, Stark (2018) challenged the supposition that legislation would effectively address the issue of early marriage for the poor. Therefore, the current study participants recommended adequate poverty alleviation, including an employment gender equality campaign.

6.6 Poverty Eradication Programmes

Participants identified poverty eradication programmes as significant interventions with direct and indirect implications for reducing VVF occurrence in Northern Nigeria. In addition, participants from the Northwest linked poverty eradication programmes to increasing the economic capacity of men, which should encourage them to promote their wife's education, noting that:

> *'The men can have another source of livelihood so they should have life support program may be in the community ' (NWP1).*

Participants from Northcentral reinforced the importance of poverty eradication programmes in empowering the women, as illustrated here:

> *'Poverty eradication through women employment, empowerment, and skill acquisition programmes' (NCP2).*

Similarly, another participant suggested the provision of access to training for job opportunities in their community as a very practical or effective intervention for unemployed women:

> *'The availability of all kinds of training for a different type of job is essential (NWP4).*

Support for small businesses can be referred to as part of a poverty eradication programme. As such it represents a further potential solution to reducing the prevalence of VVF because it relates to the ability of pregnant women to afford hospital bills. For instance, few VVF patients in this study who were engaged in business activities as identified in chapter four complained of the low scale of their business, low patronage because of location and associated low income. This led to dependency and inability to afford hospital bills and daily expenses, as was confirmed by a participant who also highlighted the impact of cultural practices on women's business activities:

> *'As the culture in this part of the country, the women do not usually go out, and when you do not advertise what you have, it will be tough for people to know what you are doing. So, for example, if you are a tailor, you must go out and let people know what you are doing; you do not need to stay at home and wait till the festive period' (NEP2).*

However, participant suggestions for enhancing support for small businesses included providing a loan, review, assessment, supervision, and evaluation of progress to help increase effectiveness and assess the impact of such interventions on the business. Job training and supervision were also highlighted as crucial areas for consideration regarding potential interventions:

> *Provision of loan program, if they have smaller trading business equipment, they can give them N10,000 naira (£20) as a loan and come back after three weeks and see how the trading is going (NWP4).*

Apart from her reference to the provision of loan support from banks, this participant cited empowerment opportunities through NGOs:

> *Some of the NGOs can empower women; some of them give them small-scale business, and some can go to microfinance banks, agricultural banks, and word banks (NCP1)*

Women doing business might not be the main problem, circumstances surrounding the business, some of which were revealed by VVF practitioners as they recommended the possible solutions. One such example was women not having the appropriate business for their locality which prevented income stability. This type of issue can be addressed by providing education on what is the right business for a particular location as part of a skills acquisition programme:

> '*Do assessment a survey, talk to the women go into what is available in your community so get involved in what your community do. That is women empowerment when they are going for vocational skill somebody is learning hairdressing…you are going to live in the bush how will you have stable income' (NWP1).*

The support and financial contribution of the husband to their wife's business were recognised as a boost to the progress and prospect of the business, suggesting the including content to increase awareness of the importance of the husband's support for successful income generation in skills acquisition programmes and among men groups:

> *'If their husband is helping them, they will increase, each month they collect their salary and add to the business with time the business will be fine even if they do not want their wife to work the business will help them' (NWP2).*

While expressing frustration about graduate unemployment, this participant proposed providing different options for people with different levels of educational attainment. This illustrates the importance of providing a range of solutions whilst providing equity in support programmes delivered to women in different circumstances:

> *'Those that are educated let them be employed because it is not the problem of going to school now is the problem of coming back and keeping*

your certificate looking at it every day no job and those that are not educated let them have a loan to start trading with supervision' (NWP4).

The poverty alleviation programs identified by participants in this study range from skill acquisition training, loan, empowering women and their husbands to providing free school fees and support for business. A poverty alleviation program in south-south Nigeria, linked to poverty reduction among the beneficiaries was reported to increase school enrolment, improve healthcare services utilisation, and change their living status (Obeten and Isokon (2018). Obeten and Isokon (2018) and Omemma and Okafor (2014) reported the positive impacts of poverty alleviation programs, the issue of coverage and mismanagement was also identified by them. A study in Northern Nigeria by Lawal et al. (2017) also recorded an unsuccessful poverty alleviation program and suggested an additional revenue generation stream through Zakat (begging for (money) alms). Therefore, appropriate poverty alleviation programs, coverage, proper evaluation of any scheme, and its management in Northern Nigeria would need to be ensured to achieve effective and successful VVF intervention.

Furthermore, VVF practitioners identified some employment facilitators, to be considered as part of poverty eradication programmes. These included, husband's education, sensitisation/enlightenment, preference for work, nature of the job and good marital conduct.

Husband's education and (sense of) responsibility to support the wife to work:

'Educated man will understand the value of education and know why his educated wife should work' (NWP1).

Smith and Lammers (1996) argued that a wife's participation is highest when her possible job-related status equals her husband's occupational status; this may be resonated with equal educational status. Another factor is sensitisation/enlightenment (recognition) of the importance of women's employment; as identified by participants earlier in this chapter, enlightenment programmes especially in alleviating family's emergencies. The involvement of religious and traditional or community leaders in spreading the information was reported to be very important, especially by Northeast participants. Moreover, preference for work was a significant facilitator of employment in this study as some participants refused schooling to embrace business enterprises in chapter

four. Nevertheless, the nature of the job such as energy required, and time-consuming jobs are some criteria facilitating women's employment in Northern Nigeria as this participant narrated:

> *The woman can do any job if it is not physically demanding and should not be the one that will take their entire time (NWP1)*

Kissman (1990) highlighted the importance of job and marital roles being congruence to achieve job satisfaction among women. Similarly, if the quality of women's jobs is not attractive most especially to the husbands, it may continue to promote joblessness among women as a participant opined:

> *If the job is convenient and well paid, it will increase the men's rate of wives going for jobs, but most jobs available for women are not helping (NWP4).*

Hallgren et al. (2022) also identified flexible work arrangements as one of the facilitators of jobs among cancer patients. Moreover, well-paid job as a facilitator of women employment in this study is similar to financial security identified as one of the facilitators to extend years of working among women in Europe (Edge, Cooper, and Coffey, 2017). Therefore, to encourage women employment and extend their year at work it is necessary to restructure their income, job flexibility and consider their marital roles.

Nevertheless, good marital conduct especially, attitude of married women at work such as extramarital affairs, and handling income, reportedly has negative implications on the tendency of the spouse allowing his wife to work in Northern Nigeria:

> *'They do horrible things, having an affair with other men outside. If one woman does that in your place of work, you will not like your woman to continue working; they demoralise other women from getting work. Some men say if you allow your woman to work by the time she gets money, she will not listen to you anything you ask her. She will say no that she too has her own opinion' (NWP2).*

While the above participant cited infidelity and pride as harmful attitudes, others referred to the good marital relationship as vital in facilitating the wife's employment, stating that:

' It still comes to the relationship between the man and the woman if the relationship is good, there is love in the family, yes, you will get the husband to support you' (NWP1).

So, while the awareness of the right attitude in marriage is good, compatibility may be the top priority in marriage and awareness of it may be a preventive measure for crises in marriage. Reinforcing awareness on the importance of good marital relationship among married couple on women employment and prevention of VVF is necessary. However, despite the influence of the above facilitators of employment among this study's participants, they have not been explored in-depth by existing literature.

6.7 Impacts of this study on the work of VVF and Resolving the control of men.

This study impacts on the work of VVF by exploring and identifying the issues influencing its occurrence, this includes the control of men locally, politically, regionally, and within the household. Identifying these issues provides an opportunity to reduce VVF prevalence that can be addressed through training and advocacy using men's and women's groups, and community health teams.

This study can be used to improve men's understanding about the lives of women based on the lived experience of VVF. For instance, the control of men within the household, locally, politically, and regionally, can be harnessed in a positive way to prevent VVF occurrence in Northern Nigeria through advocating for them to realise the negative implications of patriarchal control on women's education, income, and health and to make amends.

This requires male leaders or other men groups in society to advocate for women among men within the household. Men's groups can be organised locally, politically, and regionally to advocate for women's liberation from poor socioeconomic status, cultural and religious practices which hinders their access to appropriate health care and exposes them to VVF vulnerability. This may require beginning with local faith leaders in this highly religious society because they are a trusted group and men in society more generally are therefore more likely to listen to and be influenced by them than others such as healthcare professionals for example.

Community health teams can also be utilised as connectors to educate leaders in society such as nomadic/tribal leaders and leaders of Arabic schools about the factors exposing women to increased risk of VVF. In addition, emphasising the

benefits of empowering women to take care of their health and be economically active for the family as a whole can be emphasised.

6.8: potential solutions to reduce the prevalence of VVF that unique to this study.

Though all the potential solutions for preventing VVF prevalence identified in this study are essential areas of need, some have been suggested by previous literature. However, they were not comprehensively explained in terms of how they can enhance VVF prevention, nor were they based on evidence regarding women's experiences of VVF as this study. The depth of understanding and insight from the perspective of women experiencing VVF and staff engaged in VVF prevention and treatment services, that this study offers provides the basis for the identification and development of more effective solutions. For instance, the participants in this study identified new ways by which VVF could be prevented and how their health can be promoted which were not prevalent with the previous literature. Examples of unique potential solutions which were identified as a result of this study include:

6.8.1 Reassessment of the Effectiveness of Interventions –Evaluation and reassessment of available intervention was evidenced in this study as a necessity in order to identify the impact/ effectiveness and reasons for the limited success of current interventions and the way forward.

6.8.2 Improving female security – this centred on ensuring women's safety within Nigerian society and communities to enable them to safely access healthcare without fear of attack.

6.8.3 Enhancing communication Networks – the availability of functional Communication Networks is very important; it serve as a preventive measure in terms of communication between the community member and healthcare provider, especially in case of poor road networks and lack of primary healthcare near the villages. It can also help in expanding access to distance learning for nomadic and secluded women.

6.8.4 Increasing the Role of Male and Female Influencers –involving female role models as a way of raising the aspirations of women for education and health literacy and also possibly in helping men to understand how supporting their wives can be of benefit to them and the family unit are key essential contributions of this

study. Similarly, engaging male influencers such as community faith leaders in advocating for changes to the way women are valued and treated is crucial if VVF prevalence is to be reduced.

6.8.5 Facilitators of Women's Education – parents' education, family's willingness, and awareness of the importance of education are essential and unique facilitators of women education identified in this study. Interventions addressing this will be dependent on other factors such as societal and community leader advocacy.

6.8.6 Enforcement , Reward , and Punishment – enforcement of law and order, reward for good job, and punishment for poor services by healthcare workers, people responsible for childbirth at home, and those hindering their female children education are essential tools this study identified for strengthening the effectiveness of services rendered by health care staff to the service users.

6.9 Conclusion

This chapter discussed the findings regarding potential solutions that may reduce VVF prevalence by addressing challenges hindering women's access to quality healthcare and making recommendations for improvement. The potential solutions focus on three major themes, each comprising sub-themes. The themes include the importance of strategic leadership, having sub-themes including political and government commitment. It identified gaps and the importance of ensuring government engagement to achieve an effective outcome. Therefore, it recommended the establishment of adequate government support, equitable distribution of resources, commitment, and engagement which may lead to massive achievement in eradicating VVF among women in Northern Nigeria.

This study identified the importance of government/NGO support and collaboration, including the need for collaboration within Non-Governmental Organisations. Suggesting prioritising government mobilisation and collaboration with NGOs based on mutual benefit and avoidance of competition and opposition in VVF preventive programmes may lead to greater effectiveness in service delivery. The community leaders' involvement should be emphasised as it was recognised in this study as crucial for NGOs and the successful implementation

and impact of any program addressing VVF occurrence. It was identified that with the cooperation and support of the community leaders, it is likely to be well-spent and have more success at best.

Potential solution under strategic leadership includes programmes re-assessment through evaluation of the quality and outcomes of a service or reassessing the relevance of a particular service. It may assist in identifying the quality of service, coverage, and effectiveness of the available VVF intervention; it may also help to identify a potential area for further intervention. Nevertheless, better leadership and management of healthcare and improving the attitude of the staff responsible for making healthcare available and accessible were identified as potential solutions to reduce VVF prevalence among women in Northern Nigeria. This can be achieved through evaluating and resolving the healthcare management issues identified by participants in this study, especially the cause of staff hostility; provision of staff training, reasonable remuneration, and employment of enough qualified personnel may improve service user access.

The second theme is the need for sufficient resources with sub-themes, including funding and security, and the need for human and basic infrastructural facilities. Resource implications were identified regarding various aspects of current VVF intervention programmes. They suggested future interventions aimed at reducing the prevalence of VVF in the three geopolitical zones of Northern Nigeria. These included the availability of the necessary equipment or materials for treatment in the hospital as vital in providing quality healthcare. Funding programmes designed to reduce the increase in prevalence were not adequately managed by the government but mainly by non-governmental organisations. Participants highlighted this shortcoming as a critical factor in the availability of necessary equipment and logistics required to implement the current programmes. Therefore, this study suggested proper evaluation and management of funding VVF programmes as it may impact their effectiveness. It may also improve human resources (staffing), infrastructure and communication networks identified in this study. Additionally, providing basic amenities, alongside healthcare facilities and qualified personnel in Northern Nigeria, especially in rural areas, is crucial if VVF is to be reduced.

The third theme is engendering empowerment which may be achieved through social influencers. Though literature is scarce on the impact of using social

networks of men and women influencers individuals in society as a VVF prevention intervention, it was raised in this study as a helpful tool for encouraging women to adhere to preventive measures of VVF. Women's empowerment includes education-based interventions centred on the importance of education, what encourages it and how it can be built upon. However, this study identified the low value of women's education, and restoring the value is essential. Therefore, religious, and cultural leaders should be fully involved. Also, enlightenment, mobilisation and parent motivation were cited as very crucial. Moreover, facilitators of education and sustainable education programmes involving building schools in rural areas were mentioned as crucial elements of promoting women's education in the study area.

Additionally, online, small group or individualised tutelage were suggested to promote education among secluded women as it is difficult for them to access regular education institutions because of their cultural practices. Women's empowerment includes improving access to healthcare, poverty eradication programs and business support. This study's findings indicate that access to healthcare services by women was challenging. Therefore, ensuring the availability of quality healthcare services and promoting women's autonomy to enable them to benefit from the services available are crucial. Therefore, raising awareness of the available services, enforcement of the law, the reward for abiding and punishment for deviance from the rules and poverty eradication programmes were identified as potential solutions to improve access to healthcare.

Supporting businesses can help women to be part of a poverty eradication programme. As such, it represents a different potential solution to reducing the prevalence of VVF because it relates to the ability of pregnant women to afford hospital bills. Findings identified that few VVF women engaging in business activities complained of their business's low scale and patronage because of location and associated low income. This led to dependency and the inability to afford hospital bills and daily expenses. The poverty alleviation programs identified in this study range from skill acquisition training, loaning, empowering women and their husbands, and providing free school fees and business support. However, appropriate poverty alleviation programs, coverage, proper evaluation of any

scheme, and its management in Northern Nigeria must be ensured to achieve effective and successful VVF intervention.

Chapter 7: Conclusion

This chapter will conclude the study by summarising the key research findings in relation to the study aim and objectives and the contribution to knowledge. It will also review the limitation, propose opportunity for further research, policy makers and healthcare practise. As I have established throughout this thesis, vesicovaginal fistula (VVF) remains a significant threat to women in low- and middle-income countries especially in the northern part of Nigeria (Ijaya et al., 2010).

The aims of the study were based on the existing gaps identified in the literature to explore the socioeconomics and cultural factors influencing VVF occurrence among women and to identify potential interventions for addressing the increasing prevalence of VVF in Northern Nigeria. The research objectives were to explore the socioeconomics and cultural context in Northern Nigeria as experienced by VVF women; how socioeconomic and cultural factors drive the prevalence of VVF among women from the patient and VVF practitioner perspectives and their experiences of the effectiveness of the available programmes designed to address the increasing prevalence of VVF in Northern Nigeria.

The study achieved these aims and objectives, providing new knowledge to help address the gaps identified in the existing literature regarding the missing perspectives of VVF women and the healthcare practitioners working with them by exploring their views and experiences of the role of socioeconomic and cultural factors influencing VVF occurrence among women. It also addressed a further limitation, namely the extent of previous knowledge on this topic based on the location of women previously studied, by involving women and practitioners from all three geopolitical zones of Northern Nigeria. In addition, it addressed the previous lack of understanding of the specific individual socioeconomic and cultural factors and the reasons behind such factors which contribute to VVF occurrence. This is important as this study provides an in-depth exploration and explanation of the increased risks of VVF that are linked to the cultural and socioeconomic status of women.

Link and Phelan (1995) concluded that achieving improved population health and maximising the effectiveness of the nation's health intervention programmes requires exploration of the individual's risk of being at risk. Moreover, this study filled the existing gap in the literature regarding VVF practitioners' perspectives on the effect of socioeconomics/cultural factors on the quality and effectiveness of programmes designed to reduce VVF and the challenges associated with them. Furthermore, this study identified the challenges faced by women and VVF practitioners along with potential interventions to enhance VVF services and more effectively reduce the prevalence of VVF in Northern Nigeria. Exploring practitioner perspectives was also essential as Crawford et al. (2002) stated that though involving patients in diverse aspects of healthcare services influences positive change in healthcare services; healthcare practitioners remain the ultimate mediator of how much value is attached to patients' care opinions.

Most literature reviewed in this study did not justify their chosen data collection techniques. However, to achieve the aim and objectives of this study, which required in-depth exploration of the research topic, this study was based on qualitative research methodology based on a critical interpretative philosophical ideal. The critical interpretative stance of this study guided the formulation and selection of methods and data analysis. which involved identification, interpretation of information and formulation of themes. It, therefore, involved semi-structured interviews which elicited in-depth information about the VVF experience from VVF women and practitioners, offering detailed and vital information to address the research aim. This added in-depth understanding to most of the previous literature on VVF in Northern Nigeria which previously comprised retrospective studies of patient case files (Gulati 2011; Eniya and Steele 2016; Odimegwu and Dolapo 2017).

Furthermore, this study adopted the six phases of thematic analysis by Braun and Clarke (2006) to provide a systematic process for data analysis. The adoption of interpretivism reflects the epistemological stance underpinning the study, this is congruent with a subjectivist ontology that aim to support exploration of research participants' views. Additionally, this study is based on the principles of critical theory. This was appropriate in this instance as it helped in identifying the influence of power-related issue (e.g., patriarchy, social structure, mistreatment/subjugation of women) and inequalities experienced by VVF women. Moreover, it supported the recognition of the influence these subjugating factors

had on women's autonomy and health, leading to the occurrence of VVF. It also supported this study's proposition for pragmatic action and advocacy (potential solutions) to enable the liberation of women from the scourge of VVF, transform their economic status and limit the influence of cultural factors on their health. In summary, this research utilised an inductive approach to enable a critical-interpretive and in-depth exploration of social, cultural, and economic factors driving the increased prevalence of VVF to meet the aim of the study.

7.1 Summary of key Findings

The findings and discussion elements of this study were presented in three chapters, four, five and six, representing the three overarching themes. A high-level summary of the themes and their associated sub-themes which represent the study findings is shown in Figure 5.

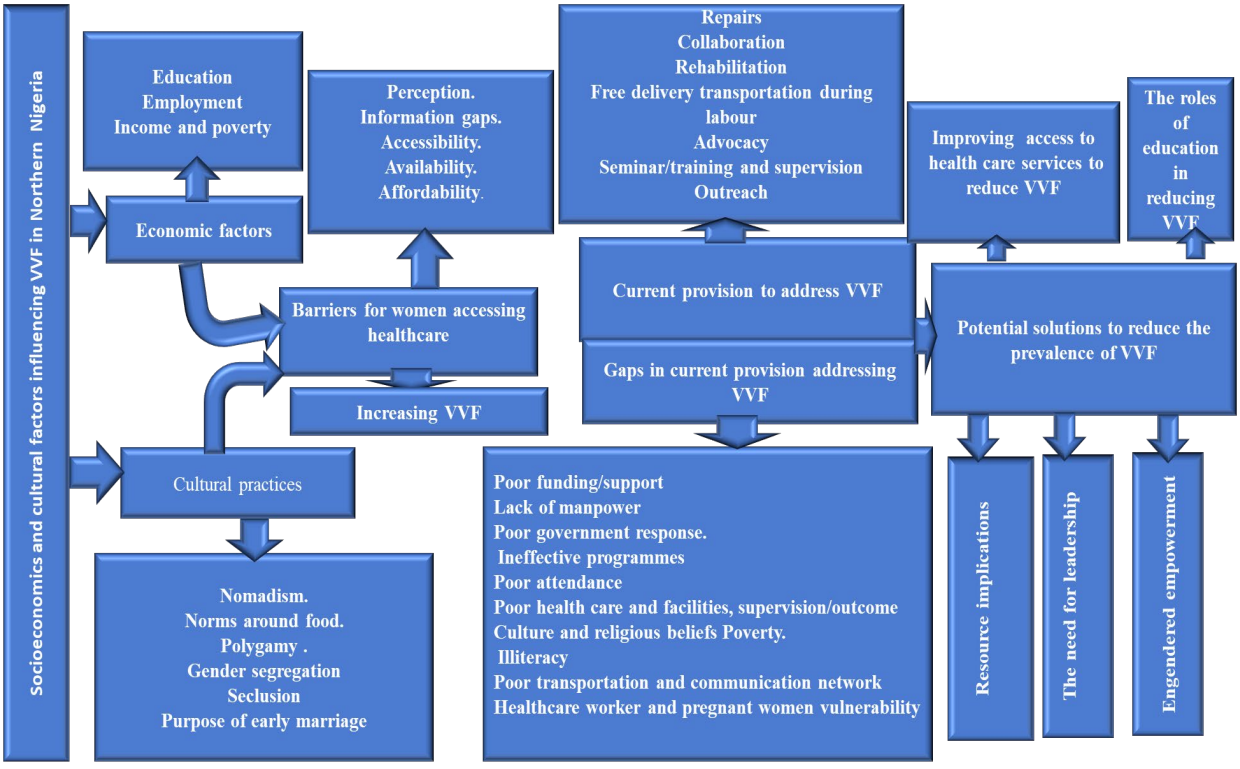

Figure 2: Overview of Study Themes and Sub-themes

Chapter four discussed a range of socioeconomic and cultural factors influencing the occurrence of VVF among women in Northern Nigeria. Chapter five focused on two significant sub-themes: the increasing prevalence of VVF and the challenges hindering women's access to healthcare during pregnancy. Finally, chapter six

discussed the findings regarding potential solutions that may reduce VVF prevalence by addressing challenges hindering women's access to quality healthcare and recommendations for service improvement.

Theme1: **Socioeconomic and cultural factors influencing the occurrence of VVF among women in Northern Nigeria**

The socioeconomic factors identified include education, its role and how the perception of its low value and resulting lack of interest in female education influences the prevalence of VVF. Unemployment or underemployment and their consequences, such as poverty and dependence, also influenced the occurrence of VVF among this study's participants. Further to socioeconomic factors, the findings indicate that cultural practices play an essential role in influencing the prevalence of VVF, mainly due to widespread traditional practices such as nomadism, early marriage, gender segregation and wife seclusion. This study also identified polygamy, cultural preferences, and the belief that God determines the number of children as potential factors increasing the risk of VVF occurrence. The findings of this study supported the current evidence base in identifying the connections between socioeconomics and cultural factors with VVF. However, what it adds to the body of knowledge is a much greater understanding of how and why specific socioeconomic and cultural factors influence and contribute to the prevailing prevalence of VVF.

Theme 2: **The increasing prevalence of VVF and the challenges hindering women's access to healthcare.**

Poor healthcare during pregnancy has been connected to the occurrence of VVF (Raji et al., 2018). Therefore, the findings in chapter five focused on two significant sub-themes: the increasing prevalence of VVF and the challenges hindering women's access to healthcare during pregnancy. While the findings identified increasing VVF occurrence among the participants in the three geopolitical zones in Northern Nigeria with evidence of potential determining factors, other factors enhancing hospital patronage and leading to an increase in VVF women in Northcentral include referrals and location of the hospital. The second sub-theme highlighted various challenges preventing women from accessing medical care and exposing them to the risk of VVF. These challenges include limited availability and poor quality of healthcare services, and lack of confidence in healthcare

workers. The barriers to women accessing quality healthcare also included logistical issues such as poor transportation and telecommunication networks.

Regarding the availability of healthcare facilities and services, some participants reported problems with accessibility and affordability, and practitioners reported that additional financial support and better resourcing of healthcare was needed if improvements are to be achieved. Moreover, this study identified the unfavourable impacts of the participants' location/geography, poverty, and lack of education on their ability to access healthcare services. The impact of lack of education includes language barriers, ignorance of healthcare systems/information, and the causes of VVF.

Cultural practices and religious beliefs were also critical factors contributing to women's ignorance regarding the benefits of accessing medical care, the dangers of prolonged self-care, cultural norms around food and preferences for a home birth. Some of the risks associated with cultural and religious beliefs acknowledged in this study involved God making birth at home easy, belief that pregnancy is not a disease, family/peers influencing the preference for early marriage and home birth, ignorance of the risk of childbirth at home and ignorance or negligence of labour sign.

Theme 3: Potential solutions that may reduce VVF prevalence.

This study also delved into the current interventions or available programmes addressing the occurrence of VVF in Northern Nigeria and identified the repair of VVF across the three geopolitical zones. It also identified some preventive interventions which are in place majorly in the Northwest and Northeast, which include collaboration, rehabilitation, free transportation during labour, advocacy/outreach, and seminar/training. However, most available programmes encountered challenges such as poor funding/support, lack of human resources, poor government response and ineffectiveness. Therefore, having explored the implications of the challenges hindering pregnant women from accessing healthcare, and those encountered by those delivering the current services to address VVF occurrence in Northern Nigeria, this study explored participants' perspectives to identify the potential solutions to reduce the prevalence in chapter six.

Findings regarding potential solutions focused on reducing VVF prevalence by addressing challenges hindering women's access to quality healthcare and making

recommendations for improvement. They are grouped into six major sub-themes which are: the importance of strategic leadership, the need for sufficient resources, engendering female empowerment, promoting the value of education, poverty eradication programmes, and improving access to healthcare services to reduce VVF.

The importance of strategic leadership sub-theme includes political and government commitment. It identified current gaps and the importance of ensuring government engagement to achieve an effective outcome. This included the need for adequate government support, equitable distribution of resources, commitment, and engagement, which may lead to massive achievement in eradicating VVF among women in Northern Nigeria.

Moreover, this study identified the importance of government/NGO support and collaboration, including the need for collaboration within and between governmental and Non-Governmental Organisations. Additionally, prioritising government mobilisation and collaboration with NGOs based on mutual benefit and avoidance of competition and opposition in VVF preventive programmes, may lead to greater effectiveness in service delivery.

Community leaders' involvement was recognised in this study as crucial for NGOs and the successful implementation and impact of any programme to reduce VVF occurrence. It was identified that any resources used to facilitate cooperation and support for community leaders are likely to be well-spent and result in greater success.

Potential solutions associated with enhancing strategic leadership included the re-assessment of current programmes through evaluation of the quality and outcomes of a service or re-viewing the relevance of a particular service. Nevertheless, better leadership and management of healthcare and improving the attitude of the staff responsible for making healthcare available and accessible were also identified as potential solutions to reduce VVF prevalence among women in Northern Nigeria. This may be achieved through evaluating and resolving the healthcare management issues identified by participants in this study, especially the causes of staff hostility; provision of staff training, reasonable remuneration, and employment of enough qualified personnel to improve service user access.

Another critical topic identified as a potential solution in this study was the need for sufficient resources. These include funding, security, human resources, and basic infrastructural facilities. Resourcing issues were identified regarding various aspects of current VVF intervention programmes; these should be addressed by future interventions aiming to reduce VVF's prevalence in the three geopolitical zones of Northern Nigeria. These included the availability of the necessary equipment or materials for treatment in the hospital as vital in providing quality healthcare. Funding programmes designed to reduce the increase in prevalence were not adequately managed by the government but mainly relied on non-governmental organisations. This study highlighted this shortcoming as a critical factor in the availability of the necessary equipment and logistics required to implement the current programmes; better evaluation and management of funding VVF programmes was required to maximise effectiveness. This approach could also help improve the human resources (staffing), infrastructure and communication network challenges identified in this study. Additionally, providing basic amenities, healthcare facilities and qualified personnel in Northern Nigeria, especially in rural areas, is crucial if VVF is to be reduced.

Another sub-theme was engendering empowerment, which may be achieved through social influencers and was raised by participants in this study as a helpful tool for encouraging women to adhere to preventive measures of VVF. Women's empowerment solutions identified in this study included education-based interventions centred on the importance of education, what encourages it and how it can be built upon. However, this study identified the low value placed on women's education, and addressing this perception is essential, but would require the involvement of religious and cultural leaders as essential. Also, enlightenment, mobilisation and parent motivation were cited as very crucial. Moreover, facilitators of education and sustainable education programmes involving building schools in rural areas were mentioned as crucial elements of promoting women's education in the study area. Additionally, online, small group or individualised tutelage were suggested to promote education among secluded women as it is difficult for them to access regular education institutions because of their cultural practices.

Moreover, women's empowerment includes improving access to healthcare, poverty eradication programs and business support. This study's findings indicate that access to healthcare services was challenging for women. Therefore, ensuring the availability of quality healthcare services and promoting women's

autonomy to enable them to benefit from the services available are crucial. Raising awareness of the available services, enforcement of the law, rewarding abiding and punishing deviance from the rules, as well as poverty eradication programmes were identified as potential solutions to improve access to healthcare.

Additionally, supporting women's businesses was identified as a key part of poverty eradication programmes. As such, this represents a different potential solution to reducing the prevalence of VVF because it relates to the ability of pregnant women to afford hospital bills. The study findings identified that the few VVF women who were engaged in business activities complained of their business's limited scale and patronage because of location, and the associated low income. This led to dependency and inability to afford hospital bills or daily expenses. The poverty alleviation programmes identified in this study as potential solutions ranged from skill acquisition training, loaning, empowering husbands, and providing free school fees and business support. However, appropriate poverty alleviation programme provision, coverage, proper evaluation of any scheme, and its management in Northern Nigeria must be ensured to achieve effective and successful VVF intervention.

7.3 Recommendations

The current study filled some of the identified gaps in the literature, by exploring the socioeconomic and cultural factors influencing VVF occurrence among women and identifying potential interventions for addressing the increasing prevalence of VVF in Northern Nigeria. Some gaps remain however regarding the true prevalence and incidence of VVF in Northern Nigeria and how best to reduce this. Addressing these gaps is essential to enable effective planning of VVF prevention and health promotion programmes. The recommendations for further research, policymakers and healthcare practice arising from this study are presented in the following sub-headings:

7.3.1 Further research

- There is need for further evaluation of social, economic, cultural factors on women's marital status, decision on childbearing with fistula, who are depending on marriage partner and further vulnerability.
- There is need to evaluate the benefits of available rehabilitation programs from women's perspectives regarding satisfaction and strategies used to implement it.
- Studies on the generalisable prevalence of VVF is very important in Nigeria.

7.3.2 Policymakers

- Provide adequate government support and commitment to promoting the effectiveness of VVF prevention and treatment programmes.
- Better collaboration within and among governmental and non-governmental agencies
- Appropriate and equitable distribution of workforce and resources for health promotion and VVF prevention programmes among women in all parts of Northern Nigeria.
- Equip community-based institutions to provide post-repair services to promote easy access to rehabilitation for VVF women.
- Evaluate current VVF programmes quality, outcomes, and perceived relevance.
- Promote public health interventions and health promotion regarding fistula designed to address the identified cultural and other factors affecting the family and community's role in assisting women with fistula in accessing care.
- Ensure adequate security in society to enable greater awareness and usage of the healthcare services available.
- Design and implement culturally relevant programmes to address the impact of cultural factors such as early marriage and other belief systems on the prevalence of VVF in the three geopolitical zones of Northern Nigeria. Establish free access to healthcare practitioners mandated to provide and maintain good quality, individualised healthcare services for their clients, to promote easy access and good health among women.

- Ensure standardised assessment of the quality of life for women with fistula adopts a balanced perspective and considers the various social, economic, and cultural factors affecting quality of life.
- Implement prevention strategies for FGM to reduce VVF in the areas where they still exist.

7.3.3 Healthcare Practice

- Review and implement better leadership styles and management of healthcare to improve staff attitudes and healthcare services availability and accessibility.
- Address the resource implications of future interventions aiming to reduce VVF prevalence in the three geopolitical zones of Northern Nigeria to reduce programme failures.

7.4 Summary and Overall Concluding Statement

The aims of this study were met as the current study explored the patients' (VVF women from the three geopolitical zones of Northern Nigeria) socioeconomic factors and the connection of these with cultural factors and experiences, with particular focus on how these influenced to their VVF occurrence. Moreover, patients' responses were analysed alongside and integrated with those of VVF practitioners and demonstrated a high level of congruence. The study findings are of high relevance as they help illustrate why previous attempts to reduce VVF over many years have had limited success, and that reducing VVF occurrence may not be realistic unless there is improvement in maternal healthcare services and the socio-economic and cultural contributory factors identified in this study e.g., poverty, poor quality of education status or access to education and dominance of predisposing cultural practices are addressed.

7.5 Strengths and Limitations of the Study

This study was completed/not abandoned despite many challenges, including a global pandemic, as discussed later in the r reflection on the research journey section. In addition, collecting information from three geopolitical zones of Northern Nigeria provided a rich, and high-quality dataset despite this being a sensitive topic and the research having to work through a translator.

A strength of the study was its inclusion of all three geopolitical zones. However, to minimize personal security risk, the high-risk areas in northern part of Nigeria were not included as study sites, which could affect the findings as women in those areas may have had very relevant experience of the study topic that could not be included. In addition, the study was limited to the participants in Northern Nigeria, which may prevent generalisation of the findings elsewhere.

The data collection method relied on participant readiness to report memories of VVF occurrence, which could be considered at risk of inaccuracy, especially as some of participants had a gap of two or more years between the time of VVF occurrence and interview. While this may be a potential limitation, some authors have argued that this is not necessarily so as there is evidence that in the case of trauma, experience is not dimmed by the passage of time (Brewin, 2001; Janes 2016). This is particularly relevant for this study whose participants described their experience of VVF occurrence as traumatic.

Most existing studies administered their data collection tools in the local languages of participants then translated them into English for analysis without discussing this as a limitation. However, this study used interpreters and the rigour of training provided which enabled them to have the same focus as the researcher would have been avoided if the researcher and the patients had spoken and understood the same language. However, using an interpreter did enable the participants' voices to be heard, which could start to raise awareness/lead to further studies.

Moreover, the study could have benefitted more information and may potentially not needed data collection with the VVF practitioners if the patients had been educated and more explicit in their explanations of the VVF experience. However, including the practitioners did provide an alternative, and confirmatory perspective on the topic, which was crucial, particularly given the stigmatising nature of the condition being studied.

7.6 Contribution to Knowledge

This study contributes to knowledge by filling the gaps in knowledge, identifying, and expanding upon what was previously known about VVF, associated health care provision and the experiences of those involved. By situating the issue and exploration of VVF in a cultural and socioeconomic context, it has also shed light on the highly influential role of patriarchy and the place of women in society regarding VVF occurrence and the potential implications for healthcare policy and practice. Further, it illustrates the synergistic relationship between poverty alleviation programmes which could have a positive impact on reducing VVF prevalence, and the role that VVF prevention and rehabilitation programmes could play in enabling women to make a greater economic contribution to society and economic recovery in support of attainment of the UN Sustainable Development Goals (STDs) in Northern Nigeria. The following sections discuss these contributions to knowledge in more detail:

7.7 Improvements to Healthcare Provision and Experiences

This study identified lack of in-dept explanation of available healthcare provision from the VVF women and practitioners in the literature. Therefore, to fill the gap this study explored and provided in-dept analysis of VVF patient's and practitioners' perspectives on the factors related to the prevention and treatment of VVF across the three geopolitical zones of Northern Nigeria. Crawford et al (2002); Kahissay et al. (2017) agreed that involving the patients and practitioners in diverse aspects of health influences positive change in health care services. Therefore, the in-depth perspectives of patients and practitioners on health issues is important as it may guide appropriate interventions to reduce the influence of the socioeconomic and cultural factors influencing the prevalence of VVF in Northern Nigeria.

7.7.1 Situating VVF in a socioeconomic and cultural context

This study provided explicit understanding and new knowledge of the roles and factors affecting the socioeconomic status of VVF women, especially regarding how these intersected with cultural factors to drive the continuing prevalence of VVF in Northern Nigeria, which was a significant gap in the existing literature. It also identified relevant differences between the three geopolitical zones of Northern Nigeria in that whilst socioeconomic factors appear to influence VVF occurrence among women in all three zones; cultural factors have a more substantial impact in the Northeast and Northwest. This study may also support the recognition of appropriate intervention for reducing VVF among women in the study areas as it identified individual's (socioeconomic and cultural factors leading to VVF) risk of being at risk.

7.7.2 The role of Patriarchy and Women

This study clearly highlighted the influence of patriarchy in the experience of VVF women in the study areas and is one of the most significant and biggest barriers preventing them from accessing VVF prevention and healthcare treatment. This was not a major feature identified in previous research and represents an important contribution of this study to the evidence base.

7.7.3 Potential Impacts on Healthcare Policy and Practice

This study identified gaps and limitations in existing VVF prevention and treatment services along with potential solutions for reducing VVF prevalence. It may therefore enable prioritisation of areas where improvement might be needed and could be made, most importantly this is from the VVF practitioner and patient perspectives. It also suggests the need for a paradigm shift from health strategies that focus on clinical care (only VVF repair services were identified by this study as existing VVF interventions) to a more holistic approach that also enables more equity in access to preventative interventions.

7.7.4 Potential impact on poverty alleviation programmes

This study also contributes to knowledge by providing a more comprehensive understanding of the implications of the socioeconomic and cultural factors associated with income, education, and their links to VVF prevalence. It also suggested potential solutions to reduced VVF which has clear implications for promoting economic recovery and progress toward achieving the UN Sustainable Development Goals (STDs) among women in the study areas.

7.8 Reflection on the Research Journey (Doing a PhD as an international student in a pandemic)

One of the gaps in the literature reviewed for this study is the very limited application of researcher reflexivity apparent in previous studies. However, reflexivity was the main influencing factor in determining the choice of research topic, methodology and the execution of the research process described in chapter three, and the following section explores this reflective research journey.

Although attending learning and development classes such as critical thinking and academic writing positively influenced the original study design, a series of changes to the research were required during the execution of the research process. This resulted in the final study being somewhat different to what was originally planned but with good reason. For instance, the initial design for this study involved a mixed methods approach. The original aim was to use methodological triangulation (i.e., both qualitative and quantitative methods to study a single problem), looking for convergent evidence from several sources like surveys, interviews, and observation (Blanche et al., 2006). Hence, a systematic literature review was conducted; and an open-ended questionnaire and narrative/storytelling interviews planned as data collection methods. However, after the pilot study, I realised that the quantitative aspect was not feasible in terms of participant recruitment in the study setting.

Practical difficulties became apparent in that it would be challenging to find VVF patients; due to stigmatisation, most lived in hard-to-reach places, and I also realised that the potential participants' knowledge gap was more significant than

was initially apparent. Therefore, it felt appropriate to look in more detail at women's lived experiences of VVF, including their engagement with healthcare systems and with providers involved in delivering services, along with any challenges they faced or barriers to providing a good healthcare service for them. In addition, health experiences do not exist in a vacuum but as part of everyday life therefore it was relevant to explore the broader social and cultural factors that underpin women's experiences of VVF. Though I did not set out to adopt a feminist approach, during the course of the study I have realized that one of the main problems facing women in relation to VVF is their lack of power in society and healthcare, resulting from structural inequalities in society such as patriarchy, poverty, and deprivation, as their health is generally not considered important.

Moreover, the storytelling approach was changed to semi-structured interviews due to the limited volume and quality of data collected during the pilot study. As a result of this change, I recognised however that the systematic review approach to the literature review originally adopted was not usual in qualitative studies. I therefore synthesized the findings of the review in such a way as to be congruent with a narrative review of the literature to underpin my theoretical analysis of the data. Other challenges in this research journey include the changes in my supervisory team, which I had no control over. This led to changes in the approach to data analysis from thematic network analysis to thematic analysis. The impact of this was to prolong the study's length. However, this change was beneficial as with the effort and encouragement of the new supervisory team, it enabled a more concise and succinct presentation of the findings that enabled participant views to remain central to the analysis and presentation of the findings.

Similarly, the Covid-19 pandemic and family care responsibilities presented significant challenges that impacted my research journey. For instance, the pilot study and first data collection for the main study involved travelling to the Northern part of Nigeria since meeting participants in person can be considered crucial for qualitative data collection and conducting interviews that were not face-to-face via an interpreter and on a sensitive topic like VVF was not considered feasible. Although the pandemic restricted me to telephone interviews for the second round of data collection, this was achievable because of the characteristics of the VVF practitioners e.g., more highly educated, able to speak English. However, it also prevented a potential recurrence of the road accident I experienced during the first data collection whilst on our way to Northern Nigeria, which nearly claimed the

lives of myself and my baby boy. The society-wide lockdowns implemented during the pandemic also required me to study at home with the distraction of family members, especially my three children who were too young to understand boundaries in the house. For example, on one occasion one of them pulled my laptop down from the table, ruining the screen, and I then experienced difficulties in getting it repaired quickly due to the pandemic.

The impact of family and childcare on my PhD journey has been very significant. For example, pregnancy prompted my previous supervisor's advice to take extensive maternity leave. However, I rejected this and chose to continue. Similarly, the burden of caring for three young children, hindered my progress at various stages of this study. This prompted my present supervisors' interventions, including their support for me to have a slight interruption. However, theirs and my sister's cooperation and support significantly reduced the impact of the family burden and psychological trauma I experienced during this research.

Nevertheless, I am proud of completing the study given the challenges faced and the process has enabled me to develop resilience for accomplishment. Taku, (2014) argued that highly resilient physicians may engage in processes possible of achieving a greater personal accomplishment, therefore God's mercy and dogged determination is important for a health researcher to defeat challenging situations to achieve success.

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Appendices

Appendix 1: Summary of the selected articles

S/N	Author	Study location	Objective	Methodology	Findings	Themes
1.	Alio et al. (2011)	Niger	Explores the psychosocial effects of VVF on women	A qualitative study, which utilised the ethnographic inductive approach and the ecological model. It adopted semi-structured interviews for 21 participants.	The study established the psychological consequences of VVF, and this includes feelings of shame, depression, and loneliness.	Experiences of living with VVF
2.	Ali (2019)	Ethiopia	Investigates experiences of women with VVF	A qualitative study using semi-structured interviews to explore the views of eight women.	Women with VVF are confronted with altered identity, anxiety, depression, disrupted social life, and economic problem. However, they adopted various coping strategies. These include family support, financial independence, reality orientation,	Marital, sexual, and reproductive life

					and religiousness.	
3.	Baba (2017)	Zamfara state Nigeria (Northwest Nigeria)	Explores the knowledge and level of understanding of healthcare workers regarding VVF	A qualitative, descriptive cross-sectional study which utilises questionnaires to explore the views of 60 participants.	While most of the participants (97.6%) have heard of VVF, majority of them (87%) opined that early marriage caused complication during childbirth. Similarly, many of them (88%) were aware of the deleterious effect of VVF on early child marriage.	Antenatal care and child delivery experiences
4.	Mashi & Yusof (2016)	Katsina State Nigeria	Explores the effect of tackling socioeconomic factors while minimising the prevalence of VVF.	A mixed-method study which utilised open-ended questionnaires and in-depth interviews to explore the views of healthcare professionals.	The study established that socioeconomic and sociocultural factors, as well as insufficient health facilities, are major factors influencing the occurrence of VVF.	Socioeconomic factors and the occurrence of VVF
5.	Ekine, Ibrahim & Abasi (2015)	Niger Delta University Teaching Hospital in Nigeria (Southern Nigeria).	Investigates sociocultural and economic impacts of VVF	A quantitative, retrospective, cross-sectional study, which utilised questionnaires as the data collection	The study found that huge complication caused by obstructed labour. Similarly, there is a large proportion of un-	Socioeconomic factors and the occurrence of VVF

				method.	booked patients who utilised traditional birth attendance.	
6.	Mohamed et al. (2009)	Sudan, Khartoum Teaching Hospital	Explores factors contributing to VVF	A quantitative, descriptive cross-sectional study using semi-structured questionnaires to explore the views of 52 VVF patients	Obstructed labour is the main driver of VVF.	Socioeconomic factors and the occurrence of VVF
7.	Khisa & Nyamongo (2011)	West Pokot, Kenya	Examines factors contributing to VVF	A qualitative study which used purposeful sampling to select eighteen participants. The views of these participants were extracted using semi-structured interviews.	The study identified four broad factors: early forced marriage and FGM, unskilled birth attendants and birth-associated rituals, lack of empowerment for women, and poor road network and sparse distribution of health facilities.	Life quality after fistula repair
8.	Emma-Echiegu, Okoye & Odey (2014)	Ebonyi State Teaching Hospital Nigeria (Southeast Nigeria)	Investigates causes of VVF and discrimination faced by VVF patients	A qualitative study utilising semi-structured interviews	While most respondents were unaware of causes of VVF, some considered it a curse from gods. Similarly, respondents	Types and causes of fist ula

					reported cases of stigmatisation and discrimination from relatives.	
9.	Bashah et al. (2019)	Northwest Ethiopia	Evaluates effects of VVF on women	A qualitative design, which used open-ended interviews.	VVF patients experienced diminished self-worth, a deep sense of loss and many social challenges. While they coped with the incontinence, some were ineffective and might have a continuous negative effect on the quality of life of women even after corrective surgery.	Living with incontinence after repair
10.	Nisar, Yousfani & Muntaz (2010)	Sindh Province Pakistan	Explores demographic, environmental, and sociocultural factors driving VVF occurrence	A quantitative descriptive survey	The study identifies some factors, notably illiteracy, unavailability of emergency obstetric care by skilled healthcare professionals, socioeconomic conditions, and early marriage and pregnancy.	Sociodemographic characteristics

11.	Gebresilase (2014)	Addis Ababa, Ethiopia	Explores the experiences of VVF survivors	A qualitative study using in-depth interviews.	The study established that VVF has huge psychosocial, physical, and emotional consequences.	Experiences of living with VVF
12.	Landry et al. (2013)	Bangladesh Guinea, Niger Nigeria, and Uganda.	Explores the profile and experiences of women undergoing surgery for fistula repair	A multisite qualitative study, which utilised structured interviews.	The study found that experiences of women differ across countries. Similarly, improvements vary by repair outcomes.	Experiences of living with VVF
13.	Mselle et al. (2012)	Rural Tanzania	Investigate the worries, expectation and hopes of VVF women after fistula repair return to their family and community	A mixed-method design using survey and interview.	The women's expectations are linked to their history of living with VVF.	Experiences of living with VVF
14.	Muleta et al. (2008)	Rural Ethiopia	Assesses health, psychological and social problems faced by women with treated and untreated obstetric fistula	A cross-sectional mixed-method study which utilised qualitative in-depth interviews and questionnaires.	Obstetric fistula patients encounter health, psychological and social consequences that are not fully resolved after fistula repair.	Experiences of living with VVF
15.	Mwini-Nyaledzigbor, Agana &	10 Ghanaian women	Evaluates the experience of women with	A qualitative descriptive study using in-depth	The study identified prolonged	Experiences of living with VVF

	Pilkington (2013)		obstetric fistula	interviews.	childbirth labour, cultural beliefs and practices, barriers to delivery at a healthcare facility and physical, socioeconomic, and psychosocial as challenges of people living with obstetric fistula.	
16.	Molzan, Johnson & Lake (2007)	Northern Red Sea Zone of Eritrea	Explores the experiences of women seeking medical care for obstetric fistula	A qualitative study which utilised interview.	The study found long delays in accessing emergency care due to lack of transportation facility from the village as a major challenge.	Experiences of living with VVF
17.	Bangser (2007)		Investigates the public health priority regarding VVF, health inequalities and maternal health	Four qualitative studies using a survey as data collection methods	The study emphasised the need to strengthen the management of fistula and prevent its occurrence. Similarly, it advocated for enhancing access and provision of quality maternity care. Furthermore, it recommended	Marital, sexual and reproductive life

					tackling health inequalities that adversely affect the poor.	
18.	Siddle et al. (2013)	Tanzania	Analyses the psychological effects of obstetric fistula	A quantitative study using questionnaires as its data collection technique	Fistula patients experienced high rates of psychosocial and physical morbidity.	Care seeking experiences
19.	Farid et al. (2013)	Kohi Goth Women's Hospital, Karachi, Pakistan	Explores the psychological experiences of women with VVF	A qualitative exploratory study using semi-structured interviews	The study established that women with VVF suffered psychological disturbances, physical discomfort, interpersonal and social relationships and financial constraints.	Psychosocial experience
20.	Yeakey et al. (2011)	Mangochi District of Malawi	Evaluates experiences of women with fistula repair surgery	A qualitative study using semi-structured interviews	The participants highlighted the difficulty in seeking and accessing healthcare services. They noted that bureaucratic challenges were complicated by community wrong perceptions about the condition and	Treatment experience

					fear of the healthcare system.	
21.	Pope, Bangser & Requejo (2011)	Ukerewe, Tanzania	Explores the facilitating factors and barriers women experience during societal integration after treating obstetric fistula	A qualitative study using a purposive sampling method to select participants and interviews to explore their responses.	Most of the women were able to resume many economic and social activities after their successful surgical repairs.	Socioeconomic experiences
22.	Browning & Member (2008)	Barhirdar Hamlin Fistula Centre Ethiopian	Quantifies surgical and quality of life after fistula repairs	A prospective qualitative study using standardised questionnaires.	The women largely maintained their continence status at six months and experienced improved quality of life.	Sexual, marital, and reproductive life experiences
23.	Umoiyoho et al. (2011)	Mbribit-Itam in Akwa Ibom State, Nigeria Southern Nigeria	Explores women's quality of life after successful VVF repairs	A quantitative study using questionnaires as the data collection method.	Most women (90%) were satisfied with their quality of life after VVF repairs.	Quality of life
24.	Nielsen et al. (2009)	Rural Ethiopia	Assesses urinary and reproductive health, and quality of life of women after undergoing	A mixed-method study using community-based interviews and customised questionnaires for data collections.	The surgery improved the quality of life and facilitated social reintegration.	Sexual, marital and reproductive life experiences

			fistula repairs.			
25.	Blum (2012)	Bangladesh and the Democratic Republic of Congo.	Explores the experience of women living with obstetric fistula	A qualitative study using an in-depth interview	The study established that obstetric fistula has physical and social consequences.	Living with incontinence after repair
26.	Velez, Ramsey & Tell (2007)	25 countries in Africa and Asia.	Explores the fistula needs assessment	A mixed-method study using focus group discussion and interviews	The study established that findings from needs assessment are required tools to galvanise actions and guide implementation of national programmes on fistula.	Antenatal care and child delivery experiences
27.	Donnelly et al. (2015)	Ethiopian.	Explores the quality of life of women after fistula repairs	A mixed-method study using in-depth interviews and a facility-based survey for data collections.	The study found that most of the women felt a dramatic sensation of happiness and relief after the repair. However, some continued to experience stigma, mental anguish, and physical problems.	Treatment experience
28.	Degge (2018)	Evangel VVF centre Jos Nigeria	Investigates experiences of women with	A qualitative study using narrative inquiry.	The study identified negative identity	Treatment experience

		(Northcentral)	obstetric fistula	The views of participants were explored using interviews.	changes, and these include leaking identity and spoiled identity. However, visits to the repair centre offered hope and relief.	
29.	Nathan et al. (2009)	l'Hôpital Saint Jean de Dieu in Tanguieta, Benin	Explores patients' perspective on obstetric fistula	A qualitative study using structured interviews.	While most participants linked their fistula to operative delivery trauma, lack of financial resources was considered the most reported obstacle.	Reintegration services
30.	Dolan, Dixon & Hilton (2008)		Explores the quality of life of women after fistula repair	A quantitative study using questionnaires	The study established that all women underwent urodynamic investigation before their surgery, but only 36% of them had normal findings.	Social experiences
31.	El-Gazzaz et al. (2010)		Explores the quality of life after corrective surgery	A quantitative study using validated questionnaires	Patients with more repairs and higher BMI had decreasing healing after the fistula repair. However, the quality of life and sexual function	Referrals to health facilities

					were similar regardless of fistula healing.	
32.	Wall et al. (2004)	Evangel Hospital in Jos, Plateau State, Nigeria (Northcentral)	Describes the characteristics of women with obstetric vesicovaginal fistula	A quantitative study involving a retrospective record review.	The study found that obstetric vesicovaginal fistula is a common occurrence in Northcentral Nigeria.	Sociodemographic characteristics
33.	Ibrahim, Sadiq & Daniel (2000)	specialist hospital Sokoto, Nigeria (Northwest)	Explores the characteristics of patients with VVF	A longitudinal quantitative study	The study found that most women (77%) with VVF did not receive antenatal care, and the pregnancy wastage rate was high at 87%.	Sociodemographic characteristics
34.	Kabir et al. (2003)	Murtala Mohammed Specialist Hospital, Kano (Northwest)	Evaluates medico-social problems of women with VVF	A quantitative study using structured questionnaires	The study established that patients suffered from foot drop, vulval dermatitis, recurrent tract infections, amenorrhoea, and dysmenorrhoea.	Referrals to health facilities
35.	Melah et al. (2003)	specialist Gombe Hospital (SHG), Gombe State Nigeria (North-eastern	Explores cases of obstructed labour problems	A quantitative study	The study found that the leading cause of obstructed labour was cephalopelvic	Treatment experience

		Nigeria)			disproportion, while CS was the common method of delivery.	
36.	Tebeu et al. (2010)	provincial hospital of Maroua-Cameroon	Explore the quality of care given to women with VVF	A quantitative study using documents to extract information about patients.	The study found that bladder neck localisation, large lesion, rigid margin and vaginal adherence are linked with incontinence.	Types and causes of fistula
37.	Daru et al. (2011)	VVF Centre, ECWA Evangel Hospital, Jos, (North Central Nigeria)	Determines socio-demographic characteristics and fistula features	A descriptive retrospective quantitative study using patients' records.	The study found that VVF occurred mostly among illiterate farmers after prolonged obstructed labour.	VVF and its consequences
38.	Roka et al. (2013)	three selected hospitals in Kenya	Investigates factors associate with the occurrence of an obstetric fistula	A case-control study using questionnaires	The study identified various risk factors influencing the development of obstetric fistula.	Timing of fistula occurrence and perceived causes
39.	Waaldijk (2004)	VVF centers in Katsina and Kano in Northwest Nigeria	Investigates ways of managing fresh obstetric fistula	A quantitative study using observation of patients	The study established that the immediate management of fistula is highly effective in terms of closure and continence.	Types and causes of fistula

40.	Essendi, Mills & Fotso (2011)	Nairobi, Kenya	Explores barriers to emergency obstetric services	A qualitative study using focus group discussion	The study found that patients in this study preferred formal to informal obstetric services. However, access to care services was constrained by several factors, notably inadequate transport facilities, ineffective health decision-making and insecurity during the night.	Gender-based factor vulnerability
41.	Johnson (2007)	Malawi Demographic and Health Survey	Explores the prevalence of VVF	A mixed-method study using survey	The study established a negative relationship between fistula symptoms and wealth on the one hand, and fistula symptoms and education on the other hand.	Sociodemographic characteristics
42.	Muleta et al. (2007)	Rural Ethiopia	Determines the prevalence of fistula	A cross-sectional quantitative study using questionnaires	The study found that the prevalence of untreated fistula was about 1.5 per 1000.	Sociodemographic characteristics

43.	Meyer et al. (2007)	National Hospital Fistula Centre, Niamey, Niger	Evaluates the histories of women with urinary incontinence caused by VVF			Sociodemographic characteristics

Appendix 2 Questionnaire for pilot study

Version 0. 1

17/7/2019

Date_____

Centre name_____

Kindly give your response to this questionnaire, it is designed to seek information on the effect of socio-economic and cultural factors leading to increase in the prevalence of Vesico-vaginal fistula among women in northern Nigeria. The information you give will be used strictly for academic purpose, and it will be treated confidentially

1) Demographic information
   a) Age _____
   b) Pseudo name_____
   c) What is your level of education? Pry ☐ Sec ☐ GRD ☐ PG ☐ Others _____
   d) What is your occupation? _____
   e) What is your religion? Cristian ☐ Muslim ☐ Others_____
   f) What is your marital status? Single ☐ Married ☐ Divorce ☐ Separated☐ Others_____
   g) What is your height? _____
   h) What was your age at marriage? Less than 18 ☐ 19-29☐ 30 and above_____
   i) What age were you at the first pregnancy? Less than 15 ☐ 16-18☐ 19-29☐ 30 and above_____
   j) What is your spouse's occupation? _____
   k) What is your spouse level of education? Pry ☐ Sec ☐ GRD ☐ PG ☐ Others _____
   l) How many siblings do you have? One☐ Two☐ More than two_____
   m) Who eats more food? Male☐ female☐

n) How many children do you have? _____

2) Pregnancy care:

a) What were the foods you ate most during pregnancy? _____

_____

_____

_____

_____

b) i Could you eat any food you like during pregnancy? Yes☐ No ☐

ii Can you give reason _____

c) i During pregnancy, did you register for antenatal care? Yes ☐ No ☐

ii Can you give reason _____

d) Did you visit antenatal clinic throughout? Yes ☐ No☐

What hindered you from going for antenatal care? _____

_____

_____

_____

e) Can you remember how regular you attended the antenatal care? Less than 50%☐ less than 100%☐, 100% ☐

f) Did you miss any antenatal throughout the pregnancy? Yes☐ No☐

Can you give reason _____

g) Who or what influenced your visit to the hospital. Husband☐ relative ☐ neighbour☐
illness☐others_____
_____

h) What is the distance between your house and the hospital?

_____

_____

i) What can you say about the issue of money and your visit to the hospital? _____

_____
_____
_____

j) Do you always take permission before visiting the hospital? Yes ☐_No ☐

Can you give reason if yes/no?
_____

k) How did you make your journey to the hospital? by foot ☐ by car ☐Others, please state here
_____

l) Is your house walking distance to the hospital? Yes ☐ No ☐

3) Labor and Delivery

a) What was the duration of the labor before you arrived the hospital?_____
_____
_____

b) Where did you give birth? At home ☐ hospital ☐ traditional birth attendant ☐

Others, please state here _____

c) What was the duration of the labor before you gave birth?

_____
_____
_____

Who took the delivery?
_____

_____
_____
_____

4) Cultural believe:

Were you involved in gishiri cut?
_____

Do you believe VVF can be caused by God ☐ enemies ☐ sin ☐ devil ☐

Others, please state here_____

Appendices 2.1: Findings of the pilot study

Table 1: Patient's characteristics

Age	16-18	2
	19-29	3
	30 and above	1
	Total	6
Religion	Christian	1
	Muslim	5
	Total	6
Education	None	2
	Primary	3
	Graduate	1
	Total	6
occupation	none	1
	Elementary occupation	4
	semi-skilled occupation	1
	Total	6
Spouse occupation	none	1
	elementary job	4
	semi-skilled job	1
	Total	6
Spouse education	none	2
	primary	2
	secondary	1
	less than graduate	1
	Total	6

The age profile of VVF patients indicates two were between the ages of 16 and 18 years, three were between the ages of 19 and 29 years, and one was aged 30 and above, as shown in table 3 above. Similarly, two participants had no formal education, three had primary school certificates and one was a graduate While one of the participants was jobless, four others had elementary jobs and were involved in semi-skilled occupations. On the other hand, one of the participants' spouses was jobless, while four were in elementary occupations. In addition, one had a semi-skilled job, while two participants' spouses had no formal education. Regarding spousal education, two had finished primary education, one had finished secondary education, and one possessed an ordinary diploma certificate.

Appendices 2. 2: Factors influencing VVF

Number of siblings	1-4 5 and above Total	2 4 6
Most food ate by male or female?	male both eat the same Total	4 2 6
Most food during pregnancy	Mostly starchy Not always balance diet Total	3 3 6
Free choice of food	yes no Total	2 4 6
No of children	none one more than one Total	3 1 2 6
Antenatal registration	yes no Total	2 4 6
Reason for registering late at that time.	distance relocation no money illness Total	1 1 1 3 6
Husband permission to go to the hospital	yes no	5 1
Distance to the Hospital	walking distance not walking distance Total	1 5 6
Belief about VVF occurrence.	God	5

	others	1
	Total	6
Delivery at where	traditional birth attendant	1
	home	1
	hospital	4
	Total	6
Regular at antenatal	yes	2
	no	4
	Total	6
FGM	yes	6
Marital status	with the husband	3
	separated	3
	Total	6
Duration of labour	less than 12 hours	1
	12-24 hours	2
	two days and above	3
	Total	6

Regarding the family composition, two participants had between one and four siblings, while four had five or more siblings, as shown in Table 4. However, four participants claimed that their male siblings ate more food during childhood, while two opined that both genders ate the same portion of food. While three participants contended that they mainly ate starchy food, three claimed they do not always have a balanced diet. Nevertheless, two participants had freedom in choosing their food intake during pregnancy, but four participants lacked such freedom because of poverty and cultural practice

. Three participants had no children, one bore a child, and two participants had more than a child before the VVF incidence. Two participants had not registered for antenatal, but the remaining four had. Of these, however, three could not register early due to illness, and one was late due to distance, relocation, and Lack of finance. Similarly, five participants were required to take permission from their husbands before visiting the hospital, while one did not. One of the participants lived within walking distance of the hospital, but the other five lived away from the hospital. Five participants believed that VVF is an act of God, with one of the opinions that other issues cause VVF.

Furthermore, four participants had their children at the hospital, which might be due to an emergency as identified by a participant in the storytelling interview, while one each gave birth at home with traditional birth attendants, respectively.

However, two participants attended regular antenatal clinics, while the remaining four were not regular. While three participants were separated from their husbands, the other three were still married. Although one participant experienced labour of more than twelve hours, another two had laboured for between twelve and twenty-four hours and three for more than two days.

Appendices 2.3: Storytelling Interview

The themes identified from the information of the two pilot story-telling based interviews with VVF patients regarding the causes of VVF were: poverty, distance to the hospital, lack of education and ignorance, belief/practice.

Both? participants identified poverty as one of the significant reasons for their inability to attend antenatal, one stating,

'Lack of money hinders my regular attendance at antenatal care' (P1)'

While the above-indicated poverty another participant mentioned distance as one of the reasons hindering access to health care as this quote summarises their information:

'*Long-distance led to my low turn up at the antenatal clinic' (P2)*.

'Not only that, but the interviews also indicated a lack of education and ignorance regarding labour in participants as indicated here:

'*The labour started at about eight o'clock in the evening, and it was not very serious. I waited till six o'clock in the morning before going to the hospital. I gave birth in the hospital after three days with a caesarean section (CS)'. (P2)*

While delaying at home was identified as resulting from ignorance and lack of health education, another participant did not register at the hospital until she experienced health difficulty, which might indicate pregnancy-related ignorance. Nevertheless, the participants' beliefs were identified as one of the factors predisposing them to VVF; for example: one participant stated that:

'*I believe it is an act of God. If God did not allow the problem, it would not happen' (P1)*

Another one was involved in the cultural practice of Genital mutilation: '*I was involved in Female Genital Mutilation' (P1)* and identified delay in seeking medical help as their practice stating that: *'Delay in decision making regarding hospital visit is our practice'.*

Lastly, both participants expressed the view as one identified doctor's action and the second lack of knowledge her own body:

'The doctor inserted something in my private part (P1)' and that:*' I am not aware that I cannot have a vaginal delivery' (P2)*.

One suggests doctor's action and the second seems to lack of knowledge about her body capacity for child delivery.

However, the four VVF practitioners who agreed to participate in the pilot study made some comments on the increase in VVF occurrence and socioeconomics/cultural factors affecting their service deliveries, as shown in Table 6.

Regarding VVF, three out of the four VVF practitioners claimed the occurrence of VVF is increasing in Northern Nigeria:

it is not very common here, we had some cases, but it's been long though we can provide their detail, but it is increasing in Northern Nigeria, if you get there you will have many participants (PP2).And one of them it is decreasing, and this represent his thought:

It is decreasing because it's been long I have heard about the issue (PP4).

Two participants mentioned the socioeconomic/cultural factors affecting service delivery regarding VVF prevention, as one of them stated that:

they exhibit Illiteracy, poverty, beliefs /practice, custom (PP3)

Another VVF practitioner identified deficiency of practitioners as the major problem:

limited skills of health workers on VVF prevention is a barrier in Nigeria (PP1)

Moreover, they all provided information on how socioeconomic and cultural factors hindered service delivery regarding VVF prevention as one of them recognised information gap*:*

They do not have adequate information (PP3).

A practitioner identified irregular hospital visit during pregnancy:

They do not come to the hospital regularly (PP2).

While a practitioner identified issues related to cultural practises stating:

Early marriage/ childbirth and delayed decision making in receiving hospital services (PP4).

Another reiterated the negative influence of health workers:

VVF doctor/Nurses' Paucity of knowledge is the major problem (PP1).

Appendix 3 Semi structure interview guide for the main study

Appendix 3.1 (VVF patients)

Data Required	Method	Questions
1 Introduction	Semi-structure interview.	a) I would like to get to know you, can you tell me about yourself? b) Did you experience any problem during childbirth? c) Can you tell me about the problem? d) What would you say has caused the problem?
2 **Pregnancy care and Education**		a) Did you attend antenatal care? b) Is antenatal care important? c) Did you find it difficult or easy to understand instruction giving to you during the antenatal? d) What were the health information you were given during the pregnancy? e) Who gave you the information? f) What stage in pregnancy was the information given?
3 Pregnancy care, Employment, and income		a) Do you work? b) Did you have to have education to certain level before being employed? c) What do you do at work? d) How many hours do you work? e) Does the job you are doing give you enough income required for all your expenses? f) Do you have to get to certain level of education before you earn certain amount of income? g) Could you afford the hospital bill? h) Do you have to depend on anybody for income?
4 Choice of healthy food?		a) Which type of food do you eat**?** b) Why do you like to eat them? ci)Do you hate any food**?** cii) Why do you hate them?

		e) Does your believe change anything about the food you eat especially during pregnancy?
5 Choice of living environment		a) Where do you live? b) Is the place you live in urban or rural area? ci) Do you love where you live? Cii) If yes, why? If no, why? c) How close is the place you live to the hospital?
6 Choice of Healthcare, Labor and Delivery		a) Did you attend antenatal care in the hospital or traditional birth attendant care? b) Why did you choose where you did your antenatal care? c) Where did you go when the labor started? d) How did you know that it was labor for child delivery? e) How long did it take between the start of your labour and child delivery? f) Where did you give birth to your baby? g) Who took your delivery? h) Did you do Operation/ Caesarean Section (CS) to give birth to your baby? i) Who suggested the operation (CS)? j) Was your reply to do operation (CS) quick or not quick? Why was it quick or not quick?
6 Family belief and pressure		a) Were you required to give birth to certain number of children by any of your family member b) How many children do you think are good for a woman to have? c) Which healthcare consultant did your family member prefer for healthcare and child delivery? C i) Does given birth at home happens in your family? C ii) Why is it or not happening ? d) How old were you when you got married? e) What is the common age in your family to get married? f) At what age do you think it is right to get married? g) Why do you think it is right at that age to get married?

		h) Why did your parent want you to marry your husband? i) Did your parent consider how wealthy the man was before giving their consent in your marriage to your husband? j) If you married before 18 years, is early marriage good or bad? k) Why do you think early marriage is good or bad? l) Does Female genital mutilation happen in your family? li) If yes, why and by who? lii) If no, why not? liii) What are the benefits of FGM to you?
8 Belief about healthcare		a) Did your belief/religion determine the type of health care you asked for?
9 Culture/religious belief about the causes of VVF		a)What do you think has caused your VVF? What is the reason for your answer to (9a)
10 Gender segregation		a) What are the duties of male child in your family? b) What are the duties of female child in your family? c) Why do the male and female child have to do different or the same duties? di) Did your male sibling always eat bigger portion of food when you were young? dii) Why was he eating more or not eating more than you did?

Appendix 3.2 Semi-Structure Interview for VVF Practitioners

A) This study seeks to collect information on the effort/programmes designed by the appropriate authority to reduce the influence of Socioeconomics and Cultural factors (SeCfs) on the increase in the occurrence of VVF in Northern Nigeria, and the impact/outcome of the programmes designed on both the pregnant women and on service delivery to preventing VVF using the following questions:

1) can you please tell me the programmes you designed to prevent the influence of socioeconomics and cultural factors on the increase in the occurrence of VVF in Northern Nigeria?

2)What are the outcome of the programmes?

3) What are the challenges encountered?

4) How did the beneficiaries respond?

5) What is/are the effect(s) of the program(s) on the beneficiaries and on your service deliveries?

6) What is/ are needed for the program(s) to be more effective?

7) Who sponsored the program(s)?

B**) It also seeks to explore the view and the suggestion of the appropriate bodies and VVF practitioners on the intervention(s) that can reduce the influence of socioeconomics and cultural factors on the occurrence of VVF in Northern Nigeria using the following questions**.

1. In your own opinion how can every woman in Northern Nigeria be educated?

2. a) In your view, what do you think can bring more value to women's education in Northern Nigeria?

b) What do you think can attract you to enrol your daughter in western school?

3. How can a secluded wife be educated?

4. a) Is western education important?

b) How can family promote western education?

5. Does your religion allow western education?

6. How can more women be encouraged to have western education through religion practices?

8. a) Can you mention how cultural practices can promotes western education?

9. How do you think a nomad wife and daughter can have access to western education?

10. a) Do you support early marriage?

a. b) if yes what are the benefits?

b. if not, how can it be reduced?

11. 11 Can you please suggest how every woman in Northern Nigeria can be gainfully employed?

12. What type of job do you prefer for women to do?

13. How can women have stable income?

14. How can husband be encouraged to allow their wife to work?

15. How can those that are doing petty business be assisted to increase the scale of their businesses?

16. What do you think will make pregnant women in the Village to have easy access to healthcare facilities?

17. what do you think can reduce delay in seeking medical attention?

18. How can visiting antenatal care be promoted among women in Northern Nigeria?

19. Can you suggest how women in rural area can get easy access to information about their health at any time?

20. What do you think will help women to easily go for qualified medical care instead of other health care provider when pregnant/sick?

21. what intervention do you think will be helpful in reducing the effects of socioeconomics and cultural factors on the occurrence of VVF?

Appendix 4: Participants information sheet

Participant's information sheet

Exploring the roles of socioeconomic and cultural factors (SeCfs) on the increase in the prevalence of vesico-vaginal fistula in Northern Nigeria.

1. Invitation to research

I am a student undertaking a PhD at Manchester Metropolitan University, to explore the role of socioeconomics/cultural factors influencing the increase in the prevalence of Vesico Vaginal Fistula (VVF) among women in northern Nigeria. The sponsor of this study is the Nigerian government through the Petroleum Technology Development Fund (PTDF).

I would like to invite you to take part, but before you decide you need to understand the reason why this research is being done and what it would involve for you. Please do take time to read the information carefully. When you go through this information sheet, then you can give your consent if you agree to take part.

2. **Why have I been invited?**

The managing director of……. VVF centre identified you and your colleague as someone who may be interested in participating in the study. This study builds on a previous study involving VVF practitioners.

Ten VVF practitioners from different VVF centres of each geopolitical zones in northern Nigeria will participate.

Research of this type is important because it enables a greater understanding of the issues affecting women and the findings from practitioner like yourself who contributes to research, has potential to guide the government policy towards raising socioeconomic status of women and implementation of appropriate intervention towards prevention and cure of VVF in Nigeria. Additionally, the research will contribute to the teaching and learning of health care professionals.

3. What will I be asked to do?

The researcher will ensure that you give informed consent and it will be audio recorded before participating in the interview. If you agree to participate in this research, you will be invited to take part in phone interview with the researcher to discuss the result of the previous data collected for this study and what you think as the way forward to reducing the influence of socioeconomics and cultural factors on the increase in occurrence of VVF. However, the following explanations may help you to understand more about this study and the previous data collected.

This study aimed to explore the socioeconomics/cultural factors (SeCfs) influencing the prevalence of VVF and how it affects the occurrence in Northern Nigeria. Semi-structured interview was used to collect data from VVF patients and practitioners at teaching hospital Makurdi Benue state (Northcentral), FMC Jalingo Taraba state (Northeast) and Birnnin Kebbi, Kebbi state (Northwest) Nigeria. Though it was challenging recruiting participants and collecting in-depth information nevertheless, the data collected were analysed to answer the research question. However, there is a need for supplementary data to compliment the fragmented data generate previously and choosing all VVF centres in Northern Nigeria may help and be a better option to achieve the require data.

The supplementary data aim to provide the basis for recommendation or suggestion of the appropriate interventions for reducing the influence of socioeconomic and cultural factors on the occurrence of VVF in Northern Nigeria.

4. Information that you will be asked to give to the researcher includes

i) Your opinion about the Socioeconomics and Cultural factors leading to the prevalence of VVF among the women in northern Nigeria.

ii) How do these SeCfs affect the prevalence of VVF among the women in northern Nigeria?

iii) how can the influence of socioeconomics and cultural factors on the occurrence of VVF be prevented in Northern Nigeria?

iv) What is the programme(s) designed to reduce the influence of socioeconomics and cultural factors on the occurrence of VVF in Northern Nigeria?

5.Voluntary Participation

Your participation in this research is voluntary. If you do decide to participate, you may withdraw at any time without any consequences or giving any explanation. If you withdraw from the research, your data will only be used if you give permission for its use. The researcher is not a clinician, therefore, will not be able to answer any personal clinician questions. Should you have any question, not clear or you would like more information about this study the researcher will be happy to answer you adequately.

6. **Are there any risks if I participate?**

No questions that may cause upset or embarrassment are included in the interview. It will be made clear at the onset that the research team is not qualifying to give advice on health or clinical issue.

7.Benefit to Taking Part

Though there is no immediate reward attached to this study however, it is likely to inform knowledge and guide implementation of appropriate interventions and government policy interested in the management and prevention of vesico-vaginal fistula.

8.What will happen with the data I provide?

When you agree to participate in this research, we will collect from you personally identifiable information. The Manchester Metropolitan University (‘the University’) is the Data Controller in respect of this research and any personal data that you provide as research

participant. The University is registered with the Information Commissioner’s Office (ICO),

and manages personal data in accordance with the General Data Protection Regulation (GDPR) and the University’s Data Protection Policy. We collect

personal data as part of this research (such as name, telephone numbers or age). As a public authority acting in the public interest, we rely upon the 'public task' lawful basis. When we collect special category data (such as medical information or ethnicity) we rely upon the research and archiving

purposes in the public interest lawful basis.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained.

We will not share your personal data collected in this form with any third parties. If your data is shared this will be under the terms of a Research Collaboration Agreement which defines use and agrees confidentiality and information security provisions.

It is the University's policy to only publish anonymised data unless you have given your explicit written consent to be identified in the research. The University never sells personal data to third parties.

9.Data handling

What is consider as data in this study is oral information that will be provided by the participant through telephone with the use of semi-structure interview.

i.**Sample Size**

This study chose purposive sampling technique because it allows that participants are deliberately selected with an explicit purpose in mind, for instance, to address the research aim and because they are rich sources of data (Marshall, 1996). Base on the aim of this study the sample size selected is 30 participants in total, estimates 10 participants from each geopolitical zone, this is to generate high volume of data and achieve maximum variation of VVF practitioners across Northern Nigeria.

ii.**Data Collection/tool.**

The supplementary data collection will use semi-structured interview because it expatiates and provides an in-depth understanding of the dimension of the phenomenon. to collect qualitative, open-ended data; to explore participant views, state of mind and beliefs about a topic; and to delve deeply into a particular and sometimes complex issues (Floerch et al., 2010).

The interview will be based on a one-to-one discussion, through telephone to explore the view and suggestion of the participants on how to prevent the influence of socioeconomics and cultural factors on the occurrence of VVF in Northern Nigeria. The VVF practitioner and will give information on the programmes designed by the appropriate authority to reduce the influence of Socioeconomics and Cultural factors (SeCfs) on the increase in the occurrence of VVF in Northern Nigeria, and the impact/outcome of the programmes on both the pregnant women and on service delivery to preventing VVF. The result of the previous data collected will also be reviewed. The interview will be audio recorded.

The data analyses will be based on qualitative phenomenon technique of conversion and transcription of oral data to text data and the use of repeated readings of the text data for central themes (Schwandt, 2001; Slavin, 2007). Transcription will be verbatim; the transcripts will be done by the researcher. Each response will match the respondent's transcripts against audio recordings to make sure they are accurate. The findings will be analysed using thematic network analysis. The data will be stored in a secure and passworded computer.

iii.**Access to Data**

Besides the researcher, access will be granted to authorised representatives from the Manchester Metropolitan University to permit study-related monitoring, audits and inspections.

iv **Record Keeping**

We will only retain your personal data for as long as is necessary to achieve the research purpose. The recorded data will be deleted after the transcription while the transcript will be store for about five year for research purpose, after five years it will be deleted.

v. Anonymity and Confidentiality

To protect your anonymity, no name will be used in any reports; all identifiable information will be removed from the transcripts before they undergo analysis. Your confidentiality and that of your data will be protected by ensuring that all data from interview is store in password protected computer files.

The interviews will be by telephone (because of the COVID 19 pandemic) from a work office; the researcher will ensure that the participant's privacy is respected by keeping the door closed and hanging up a sign that she was not to be disturbed.

Vi. Storage and Data Disposal

Data will be stored in a locked cupboard in a password-protected office or on a password-protected computer in Manchester Metropolitan University. The research team are the only people authorised to access it. As the data in storage will be anonymised, there is no danger to the participant about the release of information. All the data will be stored for a period of five years as they may provide useful and background information for continued research and after five years, it will be destroyed.

vii. Dissemination of Results

It is anticipated that the results of this research will be shared with the participant through the managing director of VVF centre, research team, exhibit and presentations, reports, academic theses and published articles.

10.Ethical Approval

This research has gained ethical approval from the required research ethics committees. You may verify the ethical approval to this study or raise any concerns you might have, by contacting Manchester Metropolitan University ethics and Research Governance Manager at ethics@mmu.ac.uk.

For any other questions about this research contact Professor Susan Powell (Director of studies) s.powell@mmu.ac.uk, Dr Maxine Holt (Supervisor) m.holt@mmu.ac.uk 01612472240, Dr Nail Dagnall (Supervisor) n.dagnall@mmu.ac.uk 01614272560, Towoju Folake Veronica (Research student) folake.v.towoju@stu.mmu.ac.uk +44744810220. For further information about use of your personal data and your data protection rights please see the University's Data Protection Pages (https://www2.mmu.ac.uk/data-protection/).

Thank you for considering participating in this project.

F.V. Towoju.

Appendix 5: Consent form

Centre Number: _____

Study Number: _____

Patient Identification Number for this study _____

PhD Proposal: Exploring the role of socioeconomic and cultural factors (SeCf) on the increase in the prevalence of vesico-vaginal fistula among women in Nigeria.

Participant:

I have read the foregoing information, I have had the opportunity to ask questions, and they have all been answered to my satisfaction. Sign _____

I consented voluntarily to be a participant in this study and understand that I can withdraw from it at any time I wish to do so. Sign_____

I understand that I will not be identifiable for the data I provide. Sign_____.

I consent to the use of audiotaping, with possible use of verbatim quotation. Sign_____

I am aware that my information may be kept for at least five years in case of any investigation about the study. Sign_____ Date_____

Researcher:

I have accurately read out the information sheet to the potential participant, and to the best of my ability, I have ensured that the participant understands that they will be interviewed/given a questionnaire to fill out in the process of the study.

I confirmed that the participants were given an opportunity to ask questions about the study, and all the questions asked by the participants have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent form has been given freely and voluntarily.

Researcher signature_____ Date_____

Appendix 6: Sample of Transcripts

6.1 Sample of transcript for the VVF patients

Data Required	Methods	Questions
1 Introduction	Semi-structure questions	a) I would like to know you; can you tell me about yourself? R) My name is----, I married at the age of 15 am presently 40years. I presently have 4 children. 2boys and 2 girls. My eldest daughter is 17 years old. She'll marry very soon. This problem started after I gave birth to my last baby last year. The baby died in my womb b) Can you tell me about the problem you experience during childbirth? R) The labour was prolonged with severe pain, so I was taken to the hospital. it was at night. I was at home. Someone went for the health care personnel to come but she was not around, and it was raining heavily. She only came in the morning. When she saw It was complicated, she asked us to go to the hospital in the main town
2 Education, Employment, and income		a) Do you work? R) No A2) Did you go to school? R) No. A3) Why? I didn't go to school because there is no school in the village. Only boys go to school in another village which is a little far from our village, that's why girls don't go to the school. (because of the distance).

		b) Did you have to have education to certain level before being employed? c) What do you do at work? d) How many hours do work? e) Does the job you are doing give you enough income required for all your expenses? f) Do you have to get to certain level or get additional qualification before you earn certain amount of income? g) Could you afford the hospital bill? R) My husband (a farmer) sold his farm to bring me to the hospital. He is also uneducated. **h)** Do you have to depend on anybody for income? **R)** I depend on my husband for income.
3 Pregnancy care.		a) Did you attend antenatal care? R) yes b) Is antenatal care important? R) yes B2) why is it important to you? R) Because the health worker gave us information about our pregnancy. c) Did you find it difficult or easy to

		understand instruction giving to you during the antenatal? R) It was not difficult to understand. I understand what they say there. They speak Hausa **d)** What were the health information you were given during the pregnancy? R) That we should eat good food, take our drugs, we should not be dirty. e) Who gave you the information? R) nurse. **f)** At what stage in pregnancy was the information given? 4 months
4 Choice of Healthcare, Labour and Delivery		a) Did you attend antenatal care in the hospital or traditional birth attendant care? R) in the hospital b) Why did you choose where you did your antenatal care? R) It's the only place available in the village. (There is no traditional antenatal care) c) Where did you go when the labour started? R) I was at home till the following day before I was taking to the hospital. d) How did you know that it was labour for child delivery? R) I know when I was feeling discomfort continuously. e) How long did it take between the start of your labour and child delivery?

		R) Two days f) Where did you give birth to your baby? R) hospital g) Who took your delivery? R) doctor h) Did you do Operation/ Caesarean Section (CS) to give birth to your baby? R) yes i) Who suggested the operation (CS)? R) staff of the hospital I don't know his role but he was there to check me when I was admitted. j) Was your reply to do operation (CS) quick or not quick? R) It was quick K) Why was it quick or not quick A) **R)** When I came to the hospital, they first tried and when they saw I couldn't give birth on my own, they ask us to do operation (CS) and they started the operation immediately.
5 Living Environment ***(Mariyat 40 years old).***		a) Where do you live? R) Takwali b) Is the place you live in urban or rural area? R) rural area Ci) Do you like where you live? R) I love my village but if there is an opportunity to come to a city like this (referring to birnin-kebbi), I will come Cii) If yes, why? If no, why? R) The city is better, there is better hospital and other things.

		How close is the place you live to your hospital? **R)** my house is far from the main hospital; I pay 3000 naira to reach the hospital (3hr 30 mins by car)
6 Diet		A) Tell me about your diet. Takwali Bi) Do you like/dislike any food? R) I eat the food available in my environment and when I was pregnant, my husband tried to buy things like egg, and other food for me. I don't have preference for a specific kind of food and during pregnancy, I don't vomit, get nausea or any form of irritation from food. I eat anything available to me Bii) Why do you like/dislike the food? R) I don't dislike any food because if you don't eat what is available you may go hungry C)Does your belief determine the type of food you eat especially during pregnancy? **R)** Only sugar is discouraged to avoid baby having pile.
7 Personal/family belief		A) Were you required to give birth to certain number of children by any of your family member? R) no B) How many children do you think think are good for a woman to have? A) R) Any number God give you B) Which healthcare consultant did your family member prefer for healthcare and

		child delivery? R) Whenever there is a health issue, we go to the hospital. If its child delivery, we only go to the hospital when we can't handle it at home Why do you handle it like that? I don't know, that's how they do it before I was born, we continue how we met things Di) Does given birth at home happens in your family? R) yes Dii) Why is it or not happening? R) ? that's how we met people do, we follow the trend E) How old were you when you got married? R) 15 F) What is the common age in your family to get married R) 15-17 G) At what age do you think it is right to get married? R) 20 years and above H) Why do you think it is right at that age to get married? R) At that age, a lady would have been mature physically and emotionally to handle marriage Because if there is no school, she is just staying at home and the villagers will be talking. Also, since she didn't go to school, am afraid the boys around will corrupt her. Why not go to school? There is no school in the village beside Islamia (where they teach Quran like Sunday school or bible study i) Any reason Why your parent did want you to marry your husband? R) They choose him for me

		because they like him and his family he come from, they are good no information of bad behaviour from them. J) Did your parent consider how wealthy the man was before giving their consent in your marriage to your husband? R) No K) If you married before 18 years, is early marriage good or bad? R) It's bad L) Why do you think that early marriage is good or bad? R) At that age, a girl is not matured enough at 20 Mi) Does Female genital mutilation happen in your family? R) no M ii) If yes, why and by who? M iii) If no, why not? R) How will they circumcise woman? What will they cut? M iv) Is FGM beneficial? M v) If yes or no What are the reasons?
8 Gender segregation		A) What are the duties of male child in your family? R) They go to farm B) What are the 5 B) What are the duties of female child in your fam family? R) house chores 6 family? C)Why do the male and female child have to do different or the same duties? R) It's our culture Di) Did your male sibling always eat bigger portion of food when you were young?

		R) I can't determine the quantity since we don't eat together. Women don't work, they stay at home all day long, so they eat a lot but portion they eat at once, I don't know who eats more Dii) Why was he eating more or not eating more than you did?
9 Culture/religious belief		Did your belief/religion determine the type of health care you asked for? **R) no** b) What do you believe has caused your VVF? R) God

Appendix 6.2: Transcript for VVF Practitioners

What can you say about VVF patient's socioeconomics and cultural factors?

Patients with lower educational, high-risk patients, poor, they will not come to the hospital at the right time because they don't have money or cannot access health care or are being guided by what they are told to do maybe by their in-law or husband. They are not educated to seek good health care however is not only about been educated we have seen some educated have VVF so many, but not poor people can also have fistula from any other issue/reason.

Is VVF increasing?

Presently Kwali hospital is like referral hospital for VVF repair not only Kwali people patronise the hospital, VVF patients are increasing here due to referral for VVF patients since they are aware that I and some of my colleagues operates VVF, where the condition is being manage. Also being a village it is easier for them to come for treatment and go back, it is not only the patient in Kwali that are increasing but cases are increasing because patients from other cities of the country like Lagos, Ekiti, Ibadan, within Abuja like Robochi, Kuje, Buhari, Kwali even Asokoro come for repair. Statistically, some patients are there that are developing VVF some are coming for repair.

1) can you please tell me the programme (s) designed to prevent the influence of socioeconomics and cultural factors on the increase in the occurrence of VVF in Northern Nigeria?

The issue of occurrence being the general hospital where we have consultant managing the patients has really gone a long way to help, the quality of care has improved beside the consultant managing, they also train the doctors around them, the whole hospital system has increase because of the improved quality of care we now have the consultant managing, extra staff around we manage together by so doing even the nurses we managing together teaching the younger ones how to prevent things like that, When the patients come to you for anti-natal how do you select the right patient for delivery, CS, to check high risk condition patients to select for special delivery, know the patients that will end up using CS that will not need any labour, there are lot of things that will avert by so doing, also by educating people to know that they need to come to healthcare centre for clinic and things like that, by so doing it will go a long way in improving the quality of care generally, if you improve the quality of care of the hospital, then generally the incidence will reduce, not talking about people that have delivery at home but as long as they come to the hospital on time with immediate response to manage any patients that come. Early intervention can prevent other complication, Sometimes the patient come from primary health care before coming for labour, We have situation whereby we remind them the kind of patient they (primary health care) cannot keep, we remind them of referral system and they referred to us as soon as any patient come that they cannot manage all these collaborative (involve health worker team work with primary health centre).

Collaboration, can you explain?

Collaboration within health worker the collaboration with them is That they should know their boundary, so it doesn't affect them, all this working together has led to less proportion of morbidity in Kwali particularly. One or two NGO has come to help the women in this case they came for the surgical repair of the women to repair and rehabilitate them, but in terms of prevention is not what they are doing but taking care of them they go around mobilise the women who have VVF they bring them to the hospital and repair them, they just finish something like that, so we collaborate with them make people who don't know that there is a place like this that can repair and change my situation, those ones that are hiding in their suburb areas are all coming out small, small now the NGO go to get them from different places, when they get them they bring them to us we repair them and when they get better they go back to their village and the government is extending to rehabilitate may be to start a business or something to empower them.

For the prevention which I mentioned earlier we give a quality anti-natal care to prevent VVF, then also on family level the family can support to bring them to the hospital at the right time sometimes they fear financial cost, to get good health care all these are being thought at antenatal for prevention.

Does NGO go to the community?

Yes

Does it yield positive result?

Yes

Challenge to the practitioners

There are time they come and you have to render immediate emergency care they leave hospital without paying and there is nothing we can do, it affect the hospital financially sometimes you are able to save their lives and you manage them and they can pay or their family but some end up leaving the hospital without paying and there is nothing we can do. there are lack of man power some time we sort things out and employ casual staff and you have to pay them if you have to pay and you are not getting money to pay casual worker financially it affects the hospital.

Effect of the program

By them coming to the aid of patients it goes a long way to reduce suffering from fistula and the NGO on action fund help to pay the medical bill, they help the patient in restoring her quality of life. They also help the hospital by paying for the surgical bill so is the positive response I see.

Is the response enough?

Is not enough because we can't leave the job for one person, the government and everybody have to put their hand there not just one NGO, other NGO have to put their hand together to come forward to help reach out in this kind of thing. And we also have maternal and new born committee which also help in maternity care in maternity clinic so if every hand is on desk it help these women in accessing good antenatal care and helping them at the time of delivery and things like that we will have less of this problem but of cause I will say it is not enough, there are still a lot of work to be done there are still many cases and women out there that need to be called upon and treated there is need for a lot of jingles on antenatal care to educate the women on the need for antenatal care. Educate women on what they should and not to do during pregnancy and if it happen that they need to deliver they should go to health care to have their delivery instead of home so that they can have hospital delivery, it will also go a long way and even the hospital too need to be equipped properly not that things we be combine in situation where if they come to the hospital there is no doctor or not enough doctor to manage her of course what you trying to avoid will still happen or person come to hospital there is no equipment, logistic issue to manage and things like that, no light, no water nothing to do you still can not help her so it is not enough to say just come for antenatal you also need good health care system you have good system and all those things and staff put in place. Then patient will be taking care of then you can say come to the hospital, but you come to the hospital and find out is nothing has being well equipped then there is no need to walk in there that is why I say it is an incorporate multifactorial problem that need plenty solution we should arrange things. I think your question is whether it is enough no is not enough because many women are still having morbidity and mortality rate.

Government programs to reduce cultural factors on VVF.

I don't know because there are programs that come as nothing, program come they die, they are not maintain, they are corrupted there is no anything on ground but what I know in one of which I have worked is that the hospital bills are subsidise a woman come she does not pay for antenatal and delivery or surgery, government subsidise the charges for her but hospital may demand for somethings to work with or have to pay for one or two things to work with, that is

the only things the government is doing that it is still working (subsidising antenatal care which they have to pay less) but it is not applicable to people that goes to private hospital where they have to pay heavy amount.

Why do they do referral to this hospital

Referral is being done to where there is specialist for it, you can't take fistula patient to an eye doctor or to any surgeon it has to be sent to fistula surgeon who know the job isn't it? Yes, that is the problem if they have patient who need fistula doctor and not available, they have to do referral to where there is doctor where they will get treatment. Before now we use to do referral to Jos, surgeon were not many in the country, so they have to refer to get the right treatment from the right people, fistula is not a common thing that is being treated every were.

Hmm thank you ma, please is there any complain from those patients who come from far distance and whether anything hinder some from coming.

Yes, there are plenty things hindering them from coming down, either they don't have money in fact that is the main reason they are afraid, that if they come to the hospital, they cannot afford the surgical bill. Then another reason is that they think that their condition can not be repaired that is a permanent one and no one can repair it for them some just accept to die with the condition, some time is stigma they are afraid that if they come people we laugh at them that this woman is passing urine without control so they have to keep it so that other people in the community will not know. Other thing some of them when they know they send them out of the house that how can old woman be passing urine they are afraid of what people in the community will say like rejection and lack of association.

Section B

How can every woman in Nigeria be educated?

Why only in Northern Nigeria?

I did literature review and most of the literature identified Northern Nigeria as having increased number of prevalence of VVF.

Maybe you didn't have the updated data/literature because what we are seen is not only in Northern Nigeria o, the statistic is even more in other zone in the past everybody think is more in the North because they marry early, the Northerners are not educated and it is more but it is even worst in other part like west and south now than Northern Nigeria. Though there is no data to reveal it yet, but the issue of genital mutilation and rape are higher in other part of Nigeria. FGM is very common among the southerner and Easterners which is not practice in the North. yes!!! I discovered that in my study. Now come to iatrogenic cutting even by health worker, the issue of unqualified worker and not enough doctor is almost found everywhere. The issue of early marriage the Eastern and West get married early and Northerners now go to school unlike before that they don't go to school. What am saying is that the perception about north having higher fistula have change now because the kind of cases that come for the treatment you might operate ten people and Northerners might be two or three among them base on the evidence with what we did in Kwali so it depend on where you did the surgery and depend on what things that cause the fistula. Even the issue of early marriage should not

cause fistula because we have seen women at 40- and 42-years having fistula. Yes, that's true that's true because is not about age anymore if the woman have prolong labour with obstruction without relieve she will have fistula issue, that is why I say all the statistic of the past are no more thigs to hold on now fistula cut across every religion because Christian and everybody have it. That is why I say it cut across religion social cultural statistics.

How can every female be educated in Nigeria?

If everybody has opportunity to go to school why not because they don't have financial backing, they can't pay school fees, how many public schools is available to have good education there those that are going to school have financial backing. Now a lot of women are educated some do professional courses unlike in the past where there are some courses where there are no women there now a lot of women do managerial courses and empower, they work. Also, I think is not about going to school and work alone, even if you don't go to school, you can be educated once you are empowered don't just sit down there and went to school and wait for a job, keep moving in life you can work you can use your talent anything you can do. Of course, you can go to school because when you go to school that is when you can make the choice of what you want to become and encourage people to go to school and when you are in school you get to finish school and finish marriage all the whole things will be left. But to cut the whole short, that is a general that is' sociocultural issue we have in the whole Nigeria if everyone is a wealthy man we won't be talking about this thing. Because a woman from when she was small talking about the care for girl child, right from when she was small, she should have complete immunisation, it will prevent her from having infection and childhood diseases if they have deformity it affects her in future by the time she exceeded these things she will be alright in future.

Who will encourage those that doesn't give birth in the hospital to do those things?

That is why we are talking about education, lets educate as much as possible even me as I am for example some of our doctors, nurses health workers don't know the cause of fistula if you don't educate them they wont know if everybody is educated it will be good.

So, what will make everybody to be educated?

When there are basic amenities of life

So, who is responsible for that?

My dear government and you. (Laugh) yes now government is the number one government if the government provide and you didn't go it is your problem and there are people that want to go, and government did not provide for them. If government play is own role people can also play their role.

How can women education be valued?

Those that didn't value women education are still not educated, if they are there, are women that got the school fees and everything and yet they are not working doing the kitchen and other room work, that's family that does not stop you from being educated you know I told you that being educated, being literate are all

things you can get even without going to school because if you go to school and do all the wahala (struggle) and end in husband house what if you did not need it.

Some people said after schooling they become Kule (secluded wife)

Yes, but the knowledge will help you because if you become Kule you will have the knowledge you can tell another person and you can save yourself, but if the people coming to us with the condition have the knowledge they will not stay at home and deliver. If they are Kule but they will not be Kule for pregnant you will come out one day if you have knowledge and have money the knowledge will push you to go to health centre accept care even the religion Islam advise the woman to have education with both western and religion but if you have education in western and religion you can apply to issues but if you have one you are like a bird that have one wing it will not fly, the religion of Islam teaches education in fact the prophet said you can go as far as china for learning, then it encourage you to specialise look for work you can do and specialise in it, that is why am a doctor so that you don't do everything, if you have only religion knowledge you will be like bird with one wing you will not be able to fly well but the two will help you to fly very well

So Knowledge is something you can get even it is teachable, in fact the teaching work the knowledge you have is better than the woman that did not have knowledge, Yes even if you will serve your husband till the rest of your life you will do it better if you are knowledgeable woman with education is better, if the husband know you are illiterate he can show you wahala (trouble) but if you are educated he will caution if you have education you don't have to go and work even in side your kitchen you can make it better.

Are you saying it good for women to be enlightened?

Let women continue education and continue learning Yes, if one is enlightened, like am talking now if I tell those women with that type of thought and some of them are convince I have educated them and enlighten them you see that is why am talking about enlightenment and education people that are saying it they don't know this version of my story if they know they will realise that it is not right not to be educated try to teach through affection by educating enlighten and inform them it go a long way.

What do you think can attract you to enrol your daughter in western school?

Empower and knowledge ok even in husband house education help women.

How can family promote western education?

They can promote by helping them because if you want to help someone you will either advise or probably might help them financially a child will be jobless before becoming something, a child cannot go and pay for himself even if it is affordable government school you can encourage them to go and help them financially.

How can religion organisation encourage western education?

They should preach it and encourage the parent to take their children to school.

How can western education be encouraged by cultural practices?

The religious leaders should preach to them, am a muslim too, if Kule was 100% what is expected in Islam then I wouldn't be a doctor today and if I do I can not practice because that is belief some belief is difficult for some people there is no place that they force to do Kule it is your choice if you want to do kule it your own problem. But the religious leaders because I belief it is what they believe the religious says teaches what the religious say, if they belief in what religion says and their manner convince that yes that is exactly what I want then you won't get the manner and push otherwise to them that is why I say if you get the imam or pastor to preach to them what they believe but you know that is religion not things like Kule it out of it . Early marriage is a cultural practice yes early marriage is both religious and cultural and there is nothing wrong with early marriage if I do early marriage go to school that is a problem but if early marriage get pregnant ant take care of oneself is not a problem we should not see early marriage as the issue or cause of the problem in the western world now you see a lot of girls once they come out of their childhood age, they have right to get married get pregnant and they keep it we should shy away from those thing that help and not do the right thing if you get marry early no work go to school if you don't marry early won't you have a husband now that you marry early can ban you from going to school after all if your parent put you in school before marriage continue from there is no religion or culture that say stop because you are marry no some of us married when we were in secondary school and we still continue and today we are doctor some of us married when were in University and we still finish so it depend on what both the wife and the husband accept so early marriage should not be an excuse waao I like your point honestly why will you go for early marriage in the first place is because you are paying financial responsibilities, and then they push the children go go go to get marry and give the member of the family relief so that they have less to manage trying to remove the girl from their custody they are trying to put the burden on the husband then anything the person get is what he will give to you but if the husband have good intention the husband marry a child in her home at 14 years you keep the child in your house then you should know that the child has not finish school now make sure you support the child to finish school and become what she need to become in your home you will even be proud that you are the one that did that so that one is not an excuse. Same thing a girl at 15 years get pregnant what do we do go to antenatal at antenatal let the doctor analyse if she can have child on her own if she can she should go through antenatal through labour and deliver the child if you know there will be a problem or problem has started arising do caesarean section and remove the baby for her to deliver the baby safely after all nobody is looking for plenty children this day three or highest now is four because it is difficult generally in the economy for you to manage plenty children now so that's what I have to say about a girl marry early I believe the earlier she deliver the better for her she will have time to continue her growing and the children also growing and the time she start her profession she will have time for her carrier and that is what I have to say.

How can all the women be gainfully employed? Should we say is the government again

That's the problem everybody want to be a government worker, everybody cannot work with the government that one is for sure if everybody want to be a government worker there will be a lot of problem that's why I say just be

empowered you must not work with the government you can finish your school and take other things government work is not the final answer we have a lot of private business you can be a boss of a certain business can make things you can employ people is not about I finish school am looking for government school no, you as house wife now when you finish you have your job but now you are at home you need to look out for something and your husband is managing the situation because now just because of the situation both husband wife everybody is working is not like in those days when our fathers go to work and mothers satay at home we must do something even at home we can learn something so let not be looking for gainfully employment, finish and start something if what you have studied in University is professional you can look for government or private organisation in that professionalism or you start something of your own in a little scale and things like that I don't think that every body must do a government work if everybody want to work for government we are going to get problem. Talking about how women can be gainfully employed is by empowering them if I start a tomato business with a woman I think I have empowered her she is already gainfully employed by herself, if you help a woman to start fishing just examples there are many thing they can do if a woman learn fishery and she can produce she already she already get job for herself because government can not afford all the payment for government worker in the country like here.

Somebody said she want to start something but no money what advise can you give to such person?

Some of the NGOs empower women, some of them give them small scale business, some of them go to micro finance bank, some go to agricultural bank, some of them go to word bank, the reason government do those things is for them to start something as long as they can do something, but the question is that can a woman do something? What can she do? If she can do something and she know what she can do then I think she can start somehow somewhere, you can start something even assist somebody they pay that payment for assistant can be used to start capital your own. So there are many ways only that some times we lazy around yes and give ourselves excuses but there are time that when we stand up to do something and we put in our best we will move on don't say heen because I don't go to schools so what can I do or I would have love to do it and you sit down thinking and lamenting you will just be deceiving in your life but when you ask yourself what can I do talk to someone any how I know that something will happen, you can even go and start by working with someone the field you think you want to do get money and start your own.

Some of the women said the husband told them not to do any work.

No problem now if you say I should not work I will even rest is a good thing now then provide for me but if you say I should not work and you can not provide for me and the children it doesn't make sense if you say I should not work in fact it is good to have something as a woman, you should truly support your husband even those that are at home can do something the only thing is that they should not go outside they can do something in the house now like baking cupcake chin, chin, am not going out am in my house even neating those that say the husband told you that they should not work may be that the husband did not want them to go out to work for example I sell water and other things in my house the customer will

buy and be happy if you can buy somethings like Maggi at home no husband will not be happy.

What will make pregnant women in the village to have easy access to health care facilities.

Government can help them 1 in making accessible road because there is no road they complain of trekking and facing a lot of obstructions like bridge and far distance (Wanini) like 1-3 hours journey so they complain so there should be good road then 2 at least let there be good primary health centre not just building with good health facilities and if they have it nearby community health care if you go there if there is any one that is beyond their power they refer and take to the state hospital and there is means of transportation they will come up but if a good health care centre will take 1 hour with no car and good road what do you expect? That is why I said that government have a major role to play. Let them provide transportation even if is Keke, (tricycle) machine (motor cycle) if road is good transportation will be better if healthcare is like 20minutes to my house at least I can manage to go but if it is like one hour healthcare centre should be spread all around not just some places so that every one will enjoy that is what government supposed to do.

The health centre is very close, but they had to wait until the situation get worst, what should be the solution ma?

That is her problem you can only take the horse to the river you can not force the horse to drink water. But if such woman was enlightened and educated, she will know that there is benefit in going to health centre maybe she thought she didn't have problem and that nothing will happen, and she is ignorant. But if she is aware, enlightened, educated and informed about the consequences of not going to the hospital nobody will even tell her she may think that until the thing become bad but let her know that before that things can become bad. So, enlighten and education is very important and getting other encouragement from the government is very important.

How can visiting antenatal be more promoted among pregnant women?

Enlighten, financial support availability of healthcare.

Can you suggest how women in rural area can get access to health information at any time?

Through the traditional rulers like village head, Oba, Zariki's, the traditional rulers are the number one to be consulted to take information to their people because most time they don't have TV because there is no light some have radio to hear news from radio and the radio need batteries which they may not have money to buy but the best way is to contact religious leaders like pastor, Imam and the traditional rulers that is one of the best way so far other ones may not get information to them.

How can women be encouraged to go for quality health care when pregnant or sick.

Get the traditional ruler to give them information, the information can be passed to their husband since they relate more with the husband while the wife stays at home.

What intervention can you suggest for the reduction of socioeconomic and cultural factors?

There are lot of programs but fails as a result of corruption but if there is law and punishment in my country sorry to say it laws are being made but are not being promote, those that sit down and squander the money and escape should have been punished for it they still be going about, so that is it they don't give punishment for crime committed and even if you mention nothing will be done, people will commit crime and eee get away with it they talk about genital mutilation till now nothing is being done about it. So many things happen if nobody is taking responsibility for it will continue to happen, then people should be rewarded for good thing and punish people for their bad. So your submission is that the programs on ground should be reinforce by punishing the offenders and reward the people that do the right thing? Yes.

Appendix 7 Initial theme search

Table 7.1: Socioeconomic Factors Influencing VVF

Northwest	Northcentral	Northeast
Education 1. Not educated14 2. Women education not necessary1 3. 4. Poverty hindered schooling4. 5. 6. Preference for business not education1 7. Only boy's school available1 8. No daughter attended school1 9. No school6 10. Lack value for education2 11. Drop out of school1 12. Poverty hindered schooling 4 Family crisis hindered schooling1 **Employment** 1. No job10. 2. Low income business4 3. Husband caused joblessness4 4. Secluded wives 1 **Income** 1. Partially dependent4 2. 5 Insufficient income 11 3. 6 Fully dependent10	**Education** 1. Not educated3 2. Poverty hindered schooling2. 3. Parent neglect to education1 4. No interest in schooling1 **Employment** 1 No job1: apprentice 2 Low income business2 **Income** 1. 1 Seasonal income1 2. 1 Partially dependent 2 3. 5 Insufficient income3 4. 6 Fully dependent1	**Education** 1. Not educated5 2. Wrong perception about women education. 3. Seclusion hinder education1 4. Practice hindered women education1 5. Not educated because of poverty1 6. Nomadic hinders education1 **Employment** 1. No job2 2. 2 Low income business2 3. Nomad1 **Income** Dependant5 2 Fully dependent2 3 Partially dependent 3 4 Insufficient income1

Table 2 shows the sociocultural factors that emerge from data set as the contributing factors to the occurrence of VVF in Northern Nigeria, the identified sociocultural factors are cultural practice, religious belief, influence of family and peer group. In Northwest, there are cultural practices of traditional herbal care and birth attendant, gender segregation, early marriage, wife seclusion, self-care before hospital, the belief that God can make childbirth at home easy and seeing God as the cause of disease and influence of culture on food. The influence of family on marriage, segregation, healthcare and food predicts the occurrence of VVF.

Appendix 7.2: Cultural Factors Influencing VVF

Northwest	Northcentral	Northeast
Cultural practice/religious belief. 1. Traditional birth attendant at labour3 2. Cultural Practice promote gender segregation5: Separate duties10 Respect for tradition predicts seclusion1 3. Practice selfcare before hospital 1 4. Cultural Practice predicts home birth3 5. Traditional Herbal treatment2 6. Traditional Herbal treatment is free7 7. God can make it easy2 8. God caused the VVF5 9. God determines the number of children10 10. grow up to see segregation1 11. Married early11 12. Seclusion hindered	**Cultural practice/religious belief:** Gender segregation: Separate duties 1 Culture promote gender segregation1. Culture predict early marriage2 **Family influence** Parents prefer early marriage2. Parent causes gender segregation1	**Cultural practice/religious belief** 1. Traditional pregnancy care2 2. Early marriage4 3. Influence of belief on food1 4. Cultural practice predicts early marriage2 5. Culture predict gender segregation1: Separate duties5 6. Culture predicts birth at home1 7. Not eating certain meat1 8 Seclusion 8. Eat accustomed foods1 **Family influence** 1. Parental influence2: on marriage and childbirth.

employment 1 1. Cultural practice hindered antenatal2 Culture predict food to eat1 **Family influence** Constrained to eat available food2 Grandmother took the delivery1. 1. Polygamy predicts gender segregation 1 2. Parents chosen the husband4 Parental influenced early marriage2, Early marriage out of pity 1 3. 4. Family crisis hindered schooling1 5. Family prefer hospital and traditional 1 6. Family prefer selfcare 1 7. Family Prefer selfcare before hospital1 8. Family prefers care at home1 9. Family promote early marriage1 Married for errand 1 **Peer influence** Peer influenced birth at home1		2. Family prefer selfcare1. 3. Community influence1. 4. Eat accustomed foods1. 5. Enticed by wealth1. **Peer influence** Peer influence predicts early marriage1

Table 3: How socio-economic factors influences VVF

Northwest	Northcentral	Northeast
Not educated No antenatal information1. Ignorance of signs of labour5 Ignorance of importance of antenatal1.	**Not educated3** • Ignorance of signs of labour3	**Education** Number of children no preference1 Patronised any care provider1

Don't understand antenatal information 1

Don't understand FGM1

Language barrier1.

No value for hospital birth1

No value for antenatal care2

Not schooling predicts early marriage1

Ignorance of marriageable age4.

Unemployment

1. No job6 causes dependency.
2. Low-income business caused insufficient income4.
3. Secluded wives 1.
4. Unemployment predicts early marriage1.
5. Seclusion hindered employment1.

Income

Select food and have none1.

Poverty hinders choice of food1.

Can't afford hospital bill1

Poverty hindered antenatal visit2.

Poverty predicts home birth1.

Complication before sick bay7

- Negligence of signs of labour1.

Unemployment

- Fully dependent1
- No job1: No source of income1/
- Low income business2

Poverty

- Considered wealth1.
- Poverty predicts sickness ().
- No choice of food1
- Sickness predict hospital visit2
- Inconsistent antenatal1.
- Discriminating male doctors1.
- Sudden labour causes home birth1
- Complication before sick bay2.
- Prolong labour3
- Prolong labour caused VVF3.

Ignorant of segregation1

Ignorance of signs of labour2

Ignorant of antenatal importance1

Lack priority for healthcare1.

9. Not aware of marriageable age1.

Not know the reason1

1. Not educated 14

2. Wrong perception about women education

3. Seclusion hinder education1
4. Practice hindered women education1
5. Not educated because of poverty1

Nomadic hinders education1.

Employment

1 No job2

2 Low income business4

3 Nomadic prevent hospital visit1

Income

1 Dependant5

2 Fully dependent2

		3 Partially dependent 3 4 Insufficient income1  Poverty5 Poverty hindered antenatal1 Couldn't afford hospital bill4 No choice of food3 No antenatal visit4 Delayed antenatal visit2 Patronised any care provider1 Tiredness hinders antenatal1. No consistent antenatal visit3. Selfcare 1 Laboured at home5 Prolong labour5 Complication before sick bay8 Sickness predicts hospital visit1. Prolong labour caused VVF1 Childbirth at home4 Childbirth caused VVF1

Appendix 7.4: How Sociocultural Factors Influences VVF

Northwest	Northcentral	Northeast
Cultural practice/religious	**Cultural practice/religious**	1. Traditional pregnancy

belief 1. Traditional birth attendant at labour2. 2. Married early11. 3. Culture predicts early marriage2. 4. Belief that God caused the VVF5. 5. Belief that God determines the number of children10. 6. Cultural Practice promotes gender segregation5: Separate duties10. 7. Practice self-care before hospital 1. 8. Cultural Practice predicts home birth3. 9. Traditional Herbal treatment2. 10. Traditional Herbal treatment is free4. 11. God can make it easy. 12. Seclusion hindered employment 1. 13. Cultural practice hindered antenatal2. 14. Culture predict food to eat1. Women's care Men's. responsibility. **Family** Husband caused joblessness4 1. Polygamy predicts gender segregation. 2. Grandmother took the delivery1. 3. Parental influenced early marriage3, Early marriage out of pity 1. 4. Parent chosen	**belief** • Gender segregation: Separate duties 1 • Culture promote gender segregation1. • Culture predict early marriage2 **Family** • Parent prefer early marriage2: Fear of being promiscuous2 • Parent causes gender segregation1	care2 2. Early marriage4 3. Influence of belief on food1 4. Cultural practice predicts early marriage2 5. Culture predict gender segregation1: Separate duties5, Male eat more food4 6. Culture predicts birth at home1 7. Not eating certain meat1 8. 8 Seclusion 9. God can make it easy at home 1 10. God caused my VVF1 11. God determine number of children3 12. God determines early marriage1 13. God determines living environment1 14. God predicts marriage1 15. Culture predict gender segregation1: Separate duties5, Male eat more food4 16. Culture predicts birth at home1 17. Not eating certain meat1 8 Seclusion 18. God can make it easy at home 1 19. God caused my VVF1 20. God determine number of children3 21. God determines early marriage1

husband4. 5. Family prefer hospital and traditional 1. 6. Family prefer selfcare 1. 7. Family Prefer selfcare before hospital1. 8. Family prefers care at home1. Constrained to eat available food2 **Peer influence** Peer influenced birth at home1.		22. God determines living environment1 23. God predicts marriage1 Family influence 24. Parental influence2: on marriage and childbirth. 25. Family prefer selfcare1 26. Community influence1: Neighbour took the delivery 27. Eat accustomed foods1 28. Enticed by wealth1 Peer influence Peer influence predicts early marriage1.

Appendix 8 Commonalities and disparities among the three geopolitical zones of Northern Nigeria.

Themes.	**Sub-themes**	Geopolitical zones

1. Education	1. Not educated. 2. Poverty.	NW, NE, NC
	1. Wrong perception. 2.No value 3. Seclusion. 4. Practice.	NW, NE
	1. Nomadic	NE
	1. neglect to education 2.No interest.	NC
	1. Preference for work. 2. Only boy's school available. 3.No daughter attended school. 4.No school. 5. Drop out of education. 6. No money for school fees. 7. Polygamy.	NW
2.Employment Income/Poverty.	1.No job. 2. Low-income business. 3Partially dependent. 4. Insufficient income. 5. Fully dependent.	NW, NE, NC.
	1. Seasonal income. 2. Apprentices	NC
	1Secluded wives. 2 Husbands instruction	NW, NE
Cultural practices/religious beliefs.	1. gender segregation. 2. Birth at home. 3. Early marriage. 4 Parental influence	NW, NE, NC.

	promotes early marriage and childbirth at home. She lives in a rural area. Lives in temporary settlement.	
	1. God making birth at home easy. 2. God Cause of the VVF. 3. Number of children. 4. Seclusion. 5. Selfcare before the hospital. 6. Traditional Herbal treatment. 7. Traditional birth attendant. 8. God determines early marriage. 9. God determines the living environment. 10God predicts marriage.	NW, NE.
	Peer influenced birth at home.	NW
	1. Not eating particular meat. Peer influence early Marriage. Community influence: Neighbour took the delivery.	NE
Other factors influencing the occurrence of VVF in Northwest. 1. environmental and Individual	1. Village is a deprive d environment. 2.No permanent settlement. 3. Far from the hospital. 4. Labour at home. 5.Distance caused childbirth at	NW, NE, NC.

factors.	home. 6.No choice of health care. 7.Stature predicts early marriage. 8.Discriminating against male doctors. 9No hospital. 10.. Lack infrastructural facilities.	
	1.Like village in-spite of Poverty. 2.Means of transportation Caused emergency. 3.Overseeing inheritance. 4.No permanent settlement. 5.Personal Discrimination of male doctor. 6.Lack confidence in health Workers. 7.Late marriage is time -wasting.	NW
	1.Marriage is about body development. 2.No choice of living environment. 3.No hospital no antenatal. Selfcare first. 4.Prefer many children. 5.Marriage is about body development. 6.Prefer early marriage. 7.No hospital in the bush.	NW, NE

	1.Unconducive environment. 2.Lives in temporary settlement. 3.Wrong information of the causes.	NC
	1.Can't remember antenatal information. 2.Village characterised with 'poverty and hard labour'. 3.Living environments prevents antenatal care. 4.Nomadic determines living environment.	NE
Perception of VVF practitioners: Occurrence of VVF in Northcentral.		
	Increasing.	NW, NE, NC
	Not changing	NW, NE
	Decreasing	NE, NC
Socioeconomics/cultural factors hindering the service delivery towards the prevention of VVF in Northern Nigeria.	Distance, farming/Poverty.	NW, NE, NC.
	cattle rearing. Insecurity.	NE, NC
	Belief.	NE, NW
	Illiteracy. Language barriers. Custom.	NW
factors hindering the service delivery towards the prevention of VVF in Northern Nigeria.	1Poverty. Illiteracy.	NW, NE
	belief practices. Illiteracy.	NW

	Custom	
	Lack manpower. Lack community outreach.	NE
	Bandit hinders/ Insecurity antenatal. They won't come because of one reason or the other. Ignorance of available care.	NC
Program/(s) designed to tackle the effect of Socioeconomics/cultural factors to prevent the occurrence of VVF in Nigeria.	1Reaching out to the community with health education. 2Outreach towards the prevention of VVF, on media Radio station to enlighten the people in the rural area. WHO. 3Health education in rural area.	NW
	NGO's. Encouraging people to attend antenatal clinic.	NE
	There is no surgeon. We have a good antenatal program. referrer to VVF centre. There is no specific program.	NE/NC.

Appendix 9 Process of themes collapsing.

Appendix 9.1: Process of Theme Collapsing for VVF patients

A) Socioeconomic factors and influence on the occurrence of VVF in Northern Nigeria.			B) Cultural factors and how they are influencing the occurrence of VVF in Northern Nigeria.			C) Other factors influencing the occurrence of VVF in Northern Nigeria.			D) practitioners		
Themes:	Sub-themes:	initial themes	Themes:	Sub-themes:	Initial themes	Themes:	Sub-themes	Initial themes	Themes:	Sub-themes	initial themes
Education	1.Not educated.		1.Cultural practices/ religious beliefs	1. Cultural norms	1.gender segregation NW, NE, NC. 2.Early marriage NW, NE, NC. 3Seclusion NW, NE. 4. Culture predict food to eat NW, NE. 5. Traditional herbal care NW, NE. 6. Traditional birth attendant NW, NE. 7. Selfcare before hospital. 7. Home birth NW, NE, Nc. 8.	Environmental factor	1.Village a deprived environment.	No permanent settlement NW, NE, NC. No hospital no antenatal NW, NE, Far from the hospital NW, NE, NC. Distance caused childbirth at home, NW, NE, NC. No choice of health care NW, NE, NC. No choice of living environment. Means of transportation caused emergency. Labour	1. Occurrence of VVF in Northwest.	Perception of the rate of occurrence.	1Increasing rate NW, NE, NC. 2Not changing NW, NE. Decreasing, NE, NC.

					Traditional Herbal treatment is free. 8. Traditional Herbal treatment. 9Practice selfcare before hospital. 10.Cultural practice hindered antenatal 11. belief that women's care is Men's. responsibility.			at home NW, NE, NC. . Lack infrastructural facilitie s, NW, NE, NC. Village characterised with 'poverty and hard labour NE. Living environments prevents antenatal care NE. Nomadic determines living environment NE.			
				2. Wrong assumptions	God making birth at home easy NW, NE. Belief that God determines the number of childre n NW, NE.		2.Overseeing inheritance. 3.Familiarity with environment.				
	2.Hinderance to women educati on.	Percepti on NW, NE. . Poverty.									

		Preference for work/ Prioritising income over education NW. provision of education (Only boy's school NW. No school) NW No daughter attended school NW. Not valued2. Drop out of education NW. No money for school fees NW. Polygamy. Practice NE. Seclusion NE Practice NE. Illiteracy NE Nomadic NE neglect			9. God Cause of the VVF, NW, NE. God determines living environment NW, NE. God predicts marriage NE						

		to education NC . No interest NC. Polygamy NW									
	3. Illiteracy and VVF.	ignorance of healthcare information. Ignorance of signs of labour and childbirth at home. . Language barrier hindered health education. . Not aware of the importance of antenatal care and hospital birth. Illiteracy predicts early marriage and ignorance of marriage able age.									
Employment	1No job.	NW, NE, NC Seasonal income, NC. .	2.Family influence	.1 Parental choice in marria	Parent influenced early marriage, NW,	1. Personal Preferences.	2.Individual factors.	Personal Discrimination of male	factors hindering the service delivery towards the prevention of VVF in	1.Poverty. 2. belief NW, NE.	

		Apprenti ces, NC.		ge.	NE, NC. Purpos e of marriag e. marriag e out of pity. Parent chosen husban d.			doctor NW. Lack confide nce in health Worker s NW. Late marriag e is time wasting NW. Marriag e is about body develop ment NW, NE. Selfcar e first NW, NE. Prefer many childre n NW, NE. Prefer early marriag e NW, NE. Wrong informa tion of the causes NC. Can't remem ber antenat al informa	Northern Nigeria	practic es/ Custo m. 3.Illiter acy Distan ce.3 Farmin g 3.	
	2 Reason and effects of unempl oyment	Seclusio n NW, NE . Husband s' instructi on, NW, NE. 3.Unemp loyment predicts early marriage , Low income business 4.Unemp loyment and low-income business predict poverty, NW, NE, NC.		2. Priorit ies within the house hold	Family crisis, Polyga my.						
				3.Famil y constr aint	Constra ined to eat availabl e food, Prefere nce for number of childre n						
				4 Care Prefer ences	Family Prefer selfcare before hospita l, Family prefers care at home, Family prefer hospita l and traditio nal. Family prefer selfcare . Family choice of healthc are,						

					Child delivery			tion NE.			
Income/ poverty	Depends on family members for income.	Insufficient income/Partially dependent on family. 5 Fully dependent on family. NW, NE, NC. Seasonal income. . Apprentices, NC.	3.Peer influence.	1 Peer influenced birth at home 1	Peer influence early Marriage NE. Peer influenced birth at home NW.				socioeconomics/cultural factors affect the service delivery towards the prevention of VVF in Northern Nigeria.	1Illiteracy. 2.Language barriers. 3.Poverty.	
									4.Program/(s) designed to tackle the effect of Socioeconomics/cultural factors to prevent the occurrence of VVF in Nigeria.	1.Outreaches towards the prevention of VVF.	Reaching out to the community with health education. on media Radio station to enlighten the people in the rural area. Health education in rural area NW. There is no specific program. NGO's. There

											is none. Encouraging people to attend antenatal clinic NE. Referrer to VVF centre. Antenatal. no surgeon. 2.We have a good antenatal program 3.They won't come because of one reason or the other NC.
										2 Funding	Program sponsored by NGO W.H.O NW.

Appendix 9.2: Process of Theme Collapsing of Second Round of Data Collection for VVF Practitioners

Themes collapsing	Themes (combining all geopolitical zones).	Themes (combining for each geopolitical zones)	Initial themes from different participants
1) Available programs	Free delivery and transportation during labour, Repairs, collaboration, rehabilitation, Advocacy, seminar, training, and supervision.	Repairs, Training, Antenatal care, Collaboration, Rehabilitation, didn't know any program NC. advocacy, seminar and intervention, early Referral, Enlighten school children, Awareness, training, and supervision NE. Free delivery, Recommended program, sensitization, Emergency obstetric care, free transportation during labour, ward development volunteer, training, Rehabilitation, Sensitization about VVF, awareness, repair, Outreaches NW	Repairs, Training. Antenatal care. Collaboration, Rehabilitation NC1. Repairs NC2 didn't know any program NC3 Free delivery, Recommended program, sensitization, Emergency obstetric care, free transportation during labour NW1 advocacy, lecture seminar and intervention within hospital, early Referral, Enlighten school children, Training community health workers and supervision NE1. Awareness about fistula's danger NE2. Community awareness NE3. ward development volunteer, train volunteers. Rehabilitation, Sensitization about VVF

			NW2. Public awareness NW3 Surgery NW4 Public awareness, community Outreach NW5
Challenges of the available programmes	Funding/support, manpower, government response, VVF increasing, poor attendance, poor healthcare and facilities, supervision/outcome, culture and religious belief, poverty, illiteracy, poor transportation and communication network, Health care worker and pregnant women vulnerability	Funding/support, manpower, government response, VVF increasing, Poor attendance, Lack of education, Converted VVF hospital to COVID19 centre NC Supervision, minimal outcome, No equipment's, Poor road and communication network, Trained no report for duty, funding NE. Poverty, illiteracy, rural dwelling, poor healthcare and facilities, culture/Belief/religion, only 5% of Good obstetric-care, women eventually pay, home delivery, FGM, poor transportation system, overwhelmed available program, No drastic change, 5% reduction, health workers, pregnant women are vulnerable, funding NW2, manpower, VVF increasing, NW.	Financial problem, Lack of manpower, Many women are at risk, Lack government response, VVF patients, increasing, Poor hospital attendance, Lack of education NC1, Converted VVF hospital to COVID19 centre, NGO support and outreaches stopped three years ago NC2. No supervision minimal outcome, No equipment's for trainees, Poor road and communication network, Trained no report for duty, NE1. Funding NE2. Financial issue hindered community access NE3.

			Poverty, illiteracy, rural dwelling poor healthcare and facilities, over reliance on NGO, Patriarch culture, Belief that Pregnancy is not a disease, scepticism of religious leaders about early marriage, only 5% of Good obstetric-care, Government programs are not effective, women eventually pay, home delivery, FGM, Gender inequality, women seclusion, poor hospital experience, poor transportation system, poor emergency obstetric services, Poor healthcare attendance, overwhelmed program NW1 No drastic change, we have seen 5% reduction, Our health workers know nothing, pregnant women are vulnerable, Low dowry for non-circumcised woman. Lack funding NW2. Lack of

			manpower, Financial problem NW3 VVF patients increasing, Not enough bed, We have 6-7 patients every weekly NW4. Manpower and financial problem NW5
Needs for the available programmes to be effective.	mobilization, logistics/New location for VVF centre, Political will and Government commitment, Funding, Collaboration, manpower and more training. Enforce education, Economic intervention, Provision of good road. And communication network, Reassessment	community mobilization, VVF doctors, logistics New location for VVF centre NC. Political will and Government commitment, Funding, Collaboration, manpower, effective Government program, more training. funding NW. Government intervention, Enforce education, Economic intervention, Provision of good road. And communication network, More collaboration with the NGOs, Reassessment of previous programs, Funding NE.	Community mobilization to educate pregnant, VVF doctors, logistics NC1. New location for VVF centre NC2. Political will and Government commitment, Funding, Collaboration, manpower, Government program effectiveness, NW1. Support for more training NW2. manpower and financial support NW3. More fund NW4 we need more manpower NW5. Government intervention, Enforce education, Economic intervention,

			Provision of good road. And communication network, More collaboration with the NGOs, Reassessment of previous programs NE1 Financial problems NE3.
Review of the previous data with the VVF practitioner to find solution to the issues mentioned			
Educating women in Northern Nigeria.	Compared with other zones. Funding, building, and promoting good public schools/basic amenities nearby, empowerment/support programmes, awareness/sensitization/enlightenment, free education for girls. Cultural/religious factors, government and public commitment. Employ qualified teachers, good security system, Enforce education and late marriage	More in other zones. High FGM in other zones. Higher raping in other zones. Iatrogenic causes VVF everywhere. Other zones also marry early. VVF more from other zones. Early marriage not an issue. Financial support. Good public schools. Empowerment. public awareness. Good basic amenities. Government should make provision. People should be responsive NC1 Free girls education NC2 Every woman can't be educated, Well-structured plan can help. Consider cultural and religious factors. Consider only girl school. Consider free and quality education. Family empowerment . Life support programs Teach subjects using local language. Religiously teach Arabic NW1. Educated women also has VVF. Sensitization and commitment of government NW2. Building more school. Recruit people to enlighten villagers. Employ qualify teachers NW3. Sponsorship. availability of schools nearby. some don't have road. Insecurity chase some away NW4. Enlightenment through Media and

		outreach NW5. Enforce education. Involve traditional and religious leaders. Involve religious education. Education to secondary be enforce. Enforce marriage until after secondary school. Law should be enforced NE1. leaders, parents should be enlightened. Involve religious and traditional leadersNE2. Enlightenment NE3.
Promoting the Value of education among women in Northern Nigeria.	Means/importance of education. Enlightenment/awareness/mobilization, women empowerment, traditional/religious factors, access to good education, free education, good teachers, infrastructural facilities, government commitment, funding, schools in rural areas, availability of valuable jobs, enforce education.	Marriage does not stop education. can get education without schooling. Educated Kule can help others. Educated Kule/Educated pregnant women can save herself. Education and religion are balance. Educated wife is better, Husband respects educated wife. Women should be enlightened. Awareness of value of education NC1. Special consideration to women employment NC2. Religiously teach Arabic. Husband respect educated wife. Educated women values healthcare. Educated women values education. Educated women ensure children education. Ensure Access to good school. Community mobilization. Ensure free education. Show evidence of good outcome. Good teachers. Government should be the facilitator. Financial support for rural women. Free education for rural women, Ensure infrastructure and basic amenities. Government should be the facilitator. Financial support for rural women. Free education for rural women. Poor-farmer can't afford quality education. Government should be blame. Nigeria is rich but poor leadership Government should enable development NW1. I don't know. you go to school you work NW2. Educated can help her children.

		Educated woman can help neighbours. Availability of female health workers NW3 Quranic and schooling no relationship. No job for Secondary leaver. Job has no value. Am educated my children must. Awareness about girl child education NW4. Enlighten them. Build schools in rural areas. Involve traditional and religious leaders. Educated girl know right things. She will not fall victim Enforce education. Involve traditional and religious leaders. Involve religious education. Education to secondary be enforce. Enforce marriage until after secondary school. Law should be enforced NE1. leaders, parents should be enlightened. involve religious and traditional leaders NE2. Enlighten traditional and religious leaders. Enlightenment and empowerment NE3.
Educating secluded women in Northern Nigeria.	Online education, religious/cultural factors, quality education, sex-based/sensitization and classrooms, Home visit/one-to-one tutor/neighbourhood-based teaching, part time school program	Women should be enlightened NC1. She can be educated online NC2. Religious leaders should be educated, Availability of quality education, Accessibility of quality education No strong factor if quality education NW1. Trained women sensitized secluded women. Trained men sensitize men NW2. Man should not take delivery? female will take her delivery NW3. Jealous men hinder his wife. One sex school. Movie makers show decent films NW4. Home visit and teach them. VVF patients are reducing. Some of them

		are aware NW5. Sensitization using women counterpart. It is government's responsibility NE1. One to one tutor Educate the husband, Neighbourhood based teaching NE2. Part-time school program NE3.
Motivating family/parents to girl child school enrolment in Northern Nigeria.	Empowerment, good leadership, parents education, funding, sensitization/awareness of the importance of education, family's willingness.	Empowerments increase value of educationNC1. Same opportunity for both sexes NC2. Nigeria is rich but poor leadership, Government should enable development Educated parent ensure children education, Education brings empowerment Education bring about leadership, Education bring changes Education is children fundamental intervention NW1. Every development depends on education, Many people don't have school fees NW2. Availability of female health workers, Encourage parents and children Provide school and teachers NW3. Am educated my children must, Awareness about girl child education, Girls schooling depends on family. Willingness of the family matters NW4. Educated girl know right things. She will not fall victim, Awareness of importance of education. Many of them are illiterate, NW5. Education reduces crime and vices, educated person value others' culture, Educated person value other's religion, Women have empathy than men. Women with education sustain generation NE1. the importance of education. I am educated NE2 Enlightenment and empowerment

		NE3.
Promoting education through religion	Religious/traditional leaders and decision makers, sensitization, Funding, success story,	Religious leaders should promote education. religious leaders preach the truth NC1. Incorporating western education in religion NC2. Community sensitization, Success story will go round Involve religious leaders, Provide same sex school NW1. Is not education that matters. How will they do that? You need to give them funds NW2. Is not education that matters. How will they do that? You need to give them funds NW3. Decision makers should be educated. Our people follow the leaders NW4. Involve the religious leaders NW5 Include Islamic education. Include religious leaders NE1 Incorporate western education with Islamiyah NE2 Educate the religious leaders NE3
Promoting western education through cultural practices	Community leaders involvement, women empowerment, sample-based sensitization, promoting culturally tolerated education	Involve community leaders NC1 Cultures are more impediment, gender equity and equality, Women empowerment, Involve religious and traditional leaders Use samples for sensitization NW1. Economic and government matters NW2. Public enlightenment NW3. I don't know how culture helps NW4. Public enlightenment. NW5. Enforce law NE1. Education has good and bad, Expose them to good side NE2. Create awareness among decision

		makers NE3.
Educating nomad wife and daughter	Awareness/enlightenment, mobile education, build many schools in rural/communities and consider cattle route, nomad education, intelligent gathering by traditional leaders, internship for Fulani's, sponsoring educative programs on radio.	Awareness, NC1 Mobile education NC2. Economic and government matters, NW2. Government should build many schools,NW3. Schools in community encourage attendants. Long distance barrier to education. Enlightenment on the importance. Sponsored schooling but pool out a 13yrs brilliant girl to get married. Grandmother wanted her married early. Father couldn't overcome the pressure. Father wants education when enlightened. Awareness of education brings acceptance, NW4. Build schools in rural areas NW5. Activate nomad system of education. Build schools along cattle route, Law involving traditional leaders intelligence. Internship for Fulani after schooling. Enrol your children or fine NE1 Sponsor educative program on radio, NE2 Nomadic education NE3.
Early marriage support and education in Northern Nigeria	Benefits of early marriage, effects of early marriage, Sensitization, religious/traditional leaders, antenatal is important, funding, prevention of early marriage.	Early marriage does not affect education, early marriage to relief burden, Intention of the husband matters, Proud husband sponsors his wife, good healthcare safes early pregnancy, Is better to marry early NC1. I don't support early marriage. Girl. education and contraception NC2. I don't support early marriage. Early marriage is an abuse., Early marriage risk of VVF. Virgin marriage earns father paradise. Late marriage leads to promiscuity. It is a difficult task. Don't

		condemn early marriage. Community sensitization on children education., Talk to religious, traditional leaders Involve community discussion. Children education is the key. NW1. Yes. Early marriage is not bad My mother married 12 years-old and she gave birth to ten children, Regular antenatal care matters. Marriage is beneficial. Early marriage ends promiscuity There is punishment for promiscuity NW2. I don't support early marriage. Early marriage prevent schooling. Every woman should be employed, Government sponsorship to school NW3. I support early marriage. Early marriage reduces social vices. Men also cause early marriage. Early marriage reduces promiscuousness. Early marriage reduces unplanned pregnancy. Religion neither support nor against , NW4. No problem with early marriage. It prevents promiscuousness. It prevents public harassment NW5 No, Involve traditional and religious leadersNE1 I don't support early marriage. Father know importance of education NE2. I support early marriage. It prevents sexual violence NE3
How every woman in Northern Nigeria can be gainfully employed	Empowerment, loan/support programs, vocational centres, employment opportunities for women, enlightenment, free education for women. Education attainment first. Job preference for women.	Every woman should be empowered. NGO can help, Microfinance bank can help. Start what you can do. Every woman should do something, any job NC1. Work that allows family roles, NC2. Education first, Production through support program, Provision of vocational centres Women's job should be easy. Family responsibility determines women's job, Women's job

		should be flexible African men and domestic responsibility NW1. Secure more job for women Woman can do any job NW2. Every woman should be employed, Any job especially health worker NW3. The problem is getting job. Let all educated be employed. Non-educated should get loan, Women can do any job NW4. Social media Social media, we need women at home. I prefer fishing Nursing not always on duty, Nw5 Education first. Structural empowerment programs. Women should do poultry. Buy and rear cattle. NE1 It depends on the husband,. Woman can do any job. Play your family roles NE2. Sponsorship, empowerment, and free schooling Work that allow family rolesNE3
Women having stable income	Right job, right market, diversification	Start what you can do, NC1 Involve in what your community need, NW1 Don't rely on a job, NW2. Diversify NE1. Locate the right market, NE2
Husband to supporting women to work	Work from home, sensitization,/enlightenment, women's conduct, quality job opportunity, religious and community leaders	Husband should make provision. Women can work from homeNC1 Discussion with men group. Good marital relationship. Involve the religious leaders. Educated husband supports his wife NW1 Women being promiscuous at work. Women pride over money, Sensitize men and women together NW2. Enlighten the husbands. Your wife can

		become doctorNW3. Convenient and well-paid job availabilityNW4. Enlighten the husbandsNW5 Marriage require compatibility, educated husband support educated wife. Sensitization. Educated man support educated wife NE1 Involve religious and community leaders NE2 Enlighten husband through district head. Enlightenment about importance of workNE3
Assisting small scale business	NGO, Loan/financial support, assessment, husband's support, job training centres and supervision, government assistance	NGO can help Microfinance bank can help Every woman should do something NC1 Soft loan NC2 Do assessment, study the community Know what is selling Set up saving scheme NW1. Their husband should help them, NW2 Money to the businesswomen, Animals to cattle breeders NW3 Provision of loan not gift. Good supervision. Training centre for all jobs. NW4. Financial support NW5. Government assistance NE1 Microfinance bank. Government aid NE2 Provision of Loan NE3
having easy access to healthcare facilities in rural areas	Accessible road, affordability of quality healthcare nearby. Referral system, financial support	Government should make accessible road Good primary healthcare nearby. Good referral system, Good transportation system Government should play major role, Affordable means of transportation NC 1 Accessible maternal health care. Affordable maternal health care NC2.

		Every ward has quality healthcare NW1 Sensitization of men and women. Access to good road NW2 30mins journey takes 2hrs. Provide facilities nearby NW3. healthcare centre in the village NW4. Good road. Financial help. Healthcare nearby NW5. Free medical care NE1. Healthcare centre nearby NE2. Availabilities of healthcare facility nearby NE3
reducing delay in seeking medical attention	Awareness/sensitization means of transportation/network, decision maker, punishment, care workers. Financial support	More awareness and education. Encouragement from the government NC1 Reduction of healthcare expenditure, NC2 Community mobilization talking to leaders. Quality antennal care, NW1 First delay is sensitization. Second delay is government. Third delay is hospital management.NW2 Poor transportation network Poor mean of transportation NW3. sensitization of decision makers. Some women were not allowed NW4. Good transportation network. Access to means of transportation NW5. Sensitization of men Motivation for women. Punishment for late referral., Attitude of health worker NE1. Good transportation network. Financial assistance. Access to medical care, NE3
Promoting	Awareness/sensitisation/enlightenment	Awareness. Financial support,

antenatal among women in Northern Nigeria	, availability ,accessibility and affordability of health care, health workers training/attitude.	Availability of health care NC1 Free maternal care NC2. Health workers respect the patients. NW1 Change attitude of healthcare workers. Healthcare facility nearby and sensitization NW2. Community outreach NW3 Financial stability. Good attitude by health workers NW4. Enlightenment about importance of antenatalNW5 Build hospital structure. Training hospital personnelNE1 Sensitization NE2 Improved healthcare facilities. Create awareness. Good attitude by health workers NE3.
Access to health information by village women in Northern Nigeria	Availability of health care in the village, traditional /religious leaders, mass media/Jingles, outreaches.	Availability of health care. Passing information through traditional leaders. Passing information through religious leaders NC1 Mass media. Involve traditional and religious leaders NC2 Mass media in local languageNW1 Use mass media and jingles. Community outreachNW3 provision of primary healthcare nearby.NW4 Visit them in the village. Using social media. Social media where car can't.NW5. radio station in rural areaNE1. Mass media ME2 Media and outreach programs NE3.
Accessing qualified medical care.		Information through the leaders. The husband should be informed NC1 Qualify provider's Availability and

	Community leaders, availability/affordability of qualified providers/ facilities in the village, sensitization, insecurity, financial stability.	affordability NC2. Community structures using town crierNW1. Continuous sensitization NW2. Provide good facilities in villages. Employ doctor nurses and midwives. Provide good social amenities NW3 Availability of quality medical care. Health personnel don't like villages. Corruption in health workers distribution. Insecurity and lack of manpower NW4. Health enlightenment NW5. education is very important. punish offendersNE1. Enlighten the husband and wife. Accessibility to quality healthcare NE2. Enlightenment and financial stability
Suggested intervention to helpful in reducing the effects of socioeconomics and cultural factors on the occurrence of VVF	Reward/punishment, poverty eradication, availability accessibility and affordability of health care facilities, employment, sustainable education. Government and community leaders involvement, awareness/enlightenment , good road	Law and punishment of offenders. Reward for good did NC1. Poverty eradication through skill acquisition NC2 Provision of health facility to the patient in the community NC1. Tackle poverty ,Gainful employment, Sustainable educational programs. Access to Quality obstetric care. Most VVF patents are innocent. VVF is increasing Maternal health care is poor , Poor access to quality education NW1. Women should be involved. Government should get involved. Media should get in volved. Traditional and religious leadersNW2 Public enlightenment. Health care facilities nearby. Good roads NW3. Health awareness and education

		NW4. Good road and social media. Involve traditional and religious leaders. Involve the husband NW5. punishment for delivery at homeNE1 Provision of health facility to the patient in the communityNE2 Grass-root health awareness. Media programs encouraging hospital labour NE3.

Appendix 9.3 All data combined and rearranged.

Column1	Column2	Column3	Column4	Column5
Sorted Codes	Initial themes	Sub-themes	theme	Overarching themes
1Perception NW, NE. Poverty. Preference for work NW. provision of education (Only boy's school NW. No school) NW No daughter attended school NW. Not valued2. Drop out of education NW. No money for school fees NW. Polygamy. Practice NE.	Hinderances to women education	Not educated	Education	Socioeconomics and cultural Factors influencing VVF prevalence in Northern Nigeria

Seclusion NE Practice NE. Illiteracy NE Nomadic NE neglect to education NC No interest NC. Polygamy NW				
ignorance of healthcare information. Ignorance of signs of labour and childbirth at home. Language barrier hindered health education. Not aware of the importance of antenatal care and hospital birth. Illiteracy predicts early marriage and ignorance of marriageable age	Illiteracy and VVF (recorded as education)			
Funding, Availability, quality, and location of schools	How every woman in Northern Nigeria can be educated	Educating women in Northern Nigeria		
Enlightenment/mobilization. Women support/employment.	Promoting the Value of education among women in	Value		

traditional/religious factors, government commitment/funding	Norther Nigeria			
sensitization. Online/individualise based education system Availability and accessibility of quality education	Educating secluded women in Northern Nigeria	Secluded women education in Northern Nigeria		
16Empowerment, good leadership, parents' education, Funding/support, sensitization/awareness of importance of women/girl's education, family's willingness	Motivating family/parents to enrol girl child in formal school Northern Nigeria.	Girl child education		
Religious/traditional leaders and decision makers. Funding. Sensitization, Success story	Promoting education through religion	education and religion		
Community leader's involvement, women empowerment, sample-based sensitization, promoting	Promoting western education through cultural	Education and cultural practices		

culturally tolerated education	practices			
Awareness/enlightenment Mobile education. Build schools in rural/communities. Nomadic education. Intelligent gathering by traditional leaders. Fine for not enrolling girl children.	Educating nomad wife and daughter	Nomad wife and daughter		
Benefits of early marriage. Effects of early marriage. funding. prevention of early marriage. Religious/traditional factor. Precaution for early pregnancy.	Early marriage, support, and education in Northern Nigeria	Early marriage		
3No job NW, NE, NC Seasonal job, NC. Apprentices, NC.	1No job. Low-income job	Underemployed/unemployment	Employment	
Seclusion NW, NE Husbands' instruction, NW, NE.	Reason and effects of unemploym			

Unemployment predicts early marriage, Low income Business 4. Unemployment and low-income business predict poverty, NW, NE, NC.	ent			
Good marital conduct. Nature of job. Sensitization/enlightenment. Husbands' education and responsibility. Sensitization	Husband to support women to work	Husband and women's employment in Northern Nigeria		
Support. Assessment/job training and Supervision.	Assisting small scale business.	Assisting small scale business		
Insufficient income/Partially dependent on family. 5 Fully dependent on family. NW, NE, NC. Distance PR. Farming PR Seasonal income. Apprentices, NC.	Depends on family members for income	Income/poverty	Income/poverty	
21Empowerment/Employment opportunity Enlightenment.	How every woman in Northern Nigeria can	Women and source of income in Northern Nigeria		

Prioritise Education first. Nature of Job. Right job, market, and diversification	be gainfully employed with stable income.			
gender segregation NW, NE, NC. 2.Early marriage NW, NE, NC. Seclusion NW, NE. Culture predict food to eat NW, NE. Traditional herbal care NW, NE. Traditional birth attendant NW, NE. 7. Selfcare before hospital. Home birth NW, NE, Nc. Traditional Herbal treatment is free. Traditional Herbal treatment. Practice selfcare before hospital. 10.Cultural practice hindered antenatal belief that women's care is Men's. responsibility (renamed cultural norms)	Cultural norms	Cultural practices/religious beliefs	Cultural practices/religious beliefs	
God making birth at home easy NW, NE. Belief that God	Religious assumption	Combined with cultural practices.		

determines the number of children NW, NE. God Cause of the VVF, NW, NE. God determines living environment NW, NE. God predicts marriage NE	s			
Parent influenced early marriage, NW, NE, NC. Purpose of marriage. marriage out of pity. Parent chosen husband	Parental choice in marriage	Family influence (combined with cultural practice		
Family crisis, Polygamy. Constrained to eat available food, Preference for number of children.	Priorities within the household Family constraint. Care Preferences			
Peer influence early Marriage NE.	Peer influence	Peer influence		
Peer influenced birth at home NW.	Peer influence.			
No permanent settlement NW, NE, NC. No hospital no antenatal NW, NE, Far from the hospital	Village a deprived environmen t	Environmental Factor.	Other factors	

NW, NE, NC. Distance caused childbirth at home, NW, NE, NC. No choice of health care NW, NE, NC. No choice of living environment. Means of transportation caused emergency. Labour at home NW, NE, NC. Lack infrastructural facilities, NW, NE, NC. Village characterised with 'Poverty and hard labour NE. Living environments prevents antenatal care NE. Nomadic determines living environment NE.				
Overseeing inheritance. Familiarity with environment				
Personal Discrimination of male doctor NW. Lack confidence in health Workers NW.	Personal Preferences	Individual factors		

Late marriage is time wasting NW. Marriage is about body development NW, NE Selfcare first NW, NE. Prefer many children NW, NE. Prefer early marriage NW, NE. Wrong information of the causes NC. Can't remember antenatal information NE				
Availability, accessibility, and affordability of quality healthcare.	having easy access to healthcare facilities in rural areas	access to healthcare	Healthcare	
Awareness/sensitization. Government. Management and accessibility of quality healthcare means of transportation Financial support.	reducing delay in seeking medical attention	reducing delay.		
Financial support. Enlightenment Management and accessibility of quality	Promoting antenatal among women in	Promoting antenatal		

healthcare	Northern Nigeria.			
Availability of health care. Traditional /religious leaders mass media/outreaches	Access to health information by village women in Northern Nigeria	Health information		
Enlightenment/Information through decision makers. Accessibility, availability, and affordability of qualified providers punish offenders NE1. Security and Financial stability.	Accessing qualified medical care	qualified medical care		
Reward/punishment. poverty eradication programmes. Availability accessibility and affordability of health care facilities. Sustainable education programmes. Joint forces Awareness/enlightenment Provision of basic amenities	Overview of Suggested intervention that may reduce the effects of socioeconomics and cultural factors on the occurrence of VVF.	Suggested intervention.		

Repairs, collaboration, rehabilitation, Free delivery and transportation during labour, Advocacy, seminar, training, and supervision. Outreaches towards the prevention of VVF	Available programs	Available programs	Available programs	Available intervention on the prevalence of VVF in Northern Nigeria
Funding/support, manpower, government response, VVF increasing, poor attendance, poor healthcare and facilities, supervision/outcome, culture and religious belief, poverty, illiteracy, poor transportation and communication network, Health care worker and pregnant women vulnerability	Challenges	Challenges of the programmes		
mobilization, logistics/New location for VVF centre, Political will and Government commitment, Funding, Collaboration, manpower and more training. Enforce education, Economic intervention, Provision of	Needs	Needs of the programmes		

good road. And communication network, Reassessment				
Government and NGO's support	Sponsors for the available programs	Sponsors for the available programs		

Appendix 9.4 More themes collapsing and redefining.

codes	sub themes	themes	Overarching themes
Perception NW, NE. Poverty. Preference for work NW. Provision of education (Only boy's school NW. No school) NW No daughter attended school NW. Not valued2. Drop out Of education NW. No money for school fees NW. Polygamy. Practice NE. Seclusion NE Practice NE. Illiteracy NE Nomadic NE neglect to education NC No interest NC. Polygamy No job NW, NE, NC Seasonal job, NC. Apprentices, NC. Seclusion NW, NE Husbands' instruction, NW, NE. Unemployment predicts early	Hindrances to education (**Reasons for Low levels of Education**) No job. Low-income job Reason and effects of unemployment.	Education Underemployed/unemployment (**Employment**).	Socioeconomics factors

marriage, Low income. Business 4. Unemployment and low-income business predict poverty, NW, NE, NC. Insufficient income/Partially dependent on family. 5 Fully dependent on family. NW, NE, NC. Distance PR. Farming PR Seasonal income. Apprentices, NC	depends on family members for income	Income/poverty.	
Gender segregation NW, NE, NC. Early marriage NW, NE, NC. Seclusion NW, NE. Culture predict food to eat NW, NE. Traditional herbal care NW, NE. Traditional birth attendant NW, NE. 7. Self-care before hospital. Home birth NW, NE, NC. Traditional Herbal treatment is free. Traditional Herbal treatment. Practice self-care before hospital. 10.Cultural practice hindered antenatal Belief that women's care is Men's. responsibility (renamed cultural norms) God making birth at home easy NW, NE. Belief that God determines the number of children NW, NE. God Cause of the VVF, NW, NE.	Cultural norms Religious assumptions Parental choice in marriage.	Cultural practices/religious beliefs. Religion beliefs combined with cultural practices. Family influence (combined with cultural practice)	Cultural factors

God determines living environment NW, NE. God predicts marriage NE. Parent influenced early marriage, NW, NE, NC. Purpose of marriage. Marriage out of pity. Parent chosen husband. Family crisis, Polygamy. Constrained to eat available food, Preference for number of children. Peer influence early Marriage NE.	Priorities within the household Family constraint. Care Preferences. Peer influence.	Peer influence.	
Ignorance of healthcare information. Ignorance of signs of labour and childbirth at home. Language barrier hindered health education. Not aware of the Importance of antenatal care and hospital birth. Illiteracy predicts early marriage and ignorance of marriageable. Peer influenced birth at home NW. No permanent settlement NW, NE, NC. No hospital no antenatal NW, NE, Far from the hospital NW, NE, NC. Distance caused childbirth at home, NW, NE, NC. No choice of health care NW, NE, NC. No choice of living environment. Means of	Ignorance Illiteracy Peer influence. Village a deprived environment.	Environmental Factor	Barriers for women accessing healthcare

transportation caused Emergency. Labour at home NW, NE, and NC. Lack infrastructural facilities, NW, NE, and NC. Village characterised with 'poverty and hard labour NE. Living environments prevents antenatal care NE. Nomadic determines living environment NE Overseeing inheritance. Familiarity with environment. Personal discrimination of male doctor NW. Lack confidence in health Workers NW. Late marriage is time wasting NW. Marriage is about body development NW, NE Selfcare first NW, NE. Prefer many children NW, NE. Prefer early marriage NW, NE. Wrong information of the causes NC. Can't remember antenatal information NE. Availability, accessibility, and affordability of quality healthcare. Funding/support, manpower, government response, VVF increasing, poor	Personal Preferences Having easy access to healthcare facilities in rural areas. Challenges of the programmes	Individual factors Access to healthcare Challenges of the programmes	

attendance, poor healthcare and facilities, poor supervision/outcome, culture and religious belief, poverty, illiteracy, poor transportation and communication network, Health care worker and pregnant women vulnerability			
Repairs, collaboration, rehabilitation, Free delivery and transportation during labour, Advocacy, seminar, training, and supervision. Outreaches towards the prevention of VVF.	Available programs	Available programs	current provision,
Funding, Availability, quality, and location of schools Enlightenment/mobilization. Women Support/employment. traditional/religious factors, government commitment/funding Sensitisation. Online/individualise based education system Availability and accessibility of quality education Empowerment, good leadership, parents' education, Funding/support, sensitization/awareness of importance of women/girl's education, family's willingness Religious/traditional leaders and decision makers.	How every woman in Northern Nigeria can be educated **Promoting the Value of education** among women in Northern Nigeria Value Secluded women education in Northern Nigeria. Motivating family/parents to enroll girl child in formal school Northern	Educating women in Northern Nigeria Secluded women education in Northern Nigeria. Girl child education. education and religion Education and cultural practices	Potential solutions to reduce the prevalence of VVF.

Funding. Sensitization, Success story Community leader's involvement, Women empowerment, sample-based sensitization, promoting culturally tolerated education. Awareness/enlightenment Mobile education. Build schools in rural/communities. Nomadic education. Intelligent gathering by traditional leaders. Fine for not enrolling girl children. Benefits of early marriage. Effects of early marriage. Funding. Prevention of early marriage. Religious/traditional factor. Precaution for early pregnancy. Good marital conduct. Nature of job. Sensitization/enlightenment Husbands' education and responsibility. Sensitization Support. Assessment/job training and Supervision. Empowerment/Employment opportunity Enlightenment. Prioritise education	Nigeria. Promoting education through religion Promoting western education through cultural practices. Educating nomad wife and daughter Early marriage, support, and education in Northern Nigeria. Husband to support women to work Assisting	Nomad wife and daughter. Early marriage, support, and education in Northern Nigeria Husband and women's employ ment in Northern Nigeria Assisting small scale business. Women and source of income in Northern Nigeria.	

first. Nature of Job. Right job, market, and diversification. Awareness/sensitization. Government. Management and accessibility of quality healthcare means of transportation Financial support. Financial support. Enlightenment Management and accessibility of quality healthcare. Availability of health care. Traditional /religious leader's mass media/outreaches. Enlightenment/Information through decision makers. Accessibility, availability, and affordability of qualified providers punish offenders NE1. Security and Financial stability. Reward/punishment. poverty eradication programmes. Availability, accessibility and affordability of health care facilities. Sustainable education programmes. Joint forces Awareness/enlightenment Provision of basic amenities.	small scale business. How every woman in Northern Nigeria can be gainfully employed with stable income. Reducing delay in seeking medical attention. Promoting antenatal among women in Northern Nigeria. Access to health information by village women in Northern Nigeria. Accessing qualified medical care. Overview of Suggested intervention that may reduce the effects of socioeconom	Reducing delay. Promoting antenatal. Health information. Qualified medical care. Suggested intervention Needs of the programmes.	

Mobilization, logistics/New location for VVF center, Political will and Government commitment, Funding, Collaboration, manpower and more training. Enforce education, Economic intervention, Provision of good road. And communication network, Reassessment	ics and cultural factors on the occurrence of VVF. Needs of the programmes		

9.5 Three Final Sub-themes, themes, and overarching themes

Sub-themes	themes	Overarching themes
1. Low levels of education 2. Reasons for Low levels of Education. 3. Reasons for Unemployment 4. Impacts of Unemployment for Women.	1 The role of education 2 The Role of Employment 3Cultural Preferences and Religious Beliefs	1 Socio-economic and Cultural Factors Influencing the Prevalence of VVF.

	around Pregnancy and Childbirth.	
5. Nomadism 6. Early Marriage and VVF 7. Limited Education and Links to Early Marriage 8. Income, poverty, and early marriage 9. Peer and parental influences on early marriage and marriage 'out of pity' 10. Gender Segregation and Wife Seclusion 11. Polygamy 12. Lack of Available Healthcare Services 13. Poor Healthcare Services 14. Poor Perceptions of Healthcare System and Staff 15. Poor Transportation and Telecommunication	4 The Intersection of Socio-economic and Cultural Factors. 5 The Increased in VVF Prevalence. 6 Challenges Hindering Women's Access to Healthcare.	2 VVF and Challenges to Healthcare Access.

Networks 16. Location or Geography 17. Poverty 18. Lack of Education and illiteracy 19. Lack of knowledge about Healthcare Systems and Provision 20. Lack of Knowledge About the Causes of VVF 21. Culture and Religious Beliefs. 22. Political Will and Government Commitment 23. Government/NGO support, Collaboration 24. Community Leaders' Involvement and Mobilisation 25. Reassessment of the Effectiveness of Interventions 26. The Management of Healthcare/Attitudes	7 The Importance of Strategic Leadership.	3 Potential solutions to reduce the prevalence of VVF.

of the Staff. 27. Funding and Security 28. Human Resources (staffing), Infrastructure and Communication Networks. 29. The Roles of Female Influencers 30. Education-based Interventions 31. Facilitators of Women's Education (Current) 32. Promoting Education through Religious and Cultural Practices 33. Motivating Parents to Enrol Girls in School 34. Build Quality Schools in Rural Areas and Educational Methods that Align with Women's Lifestyles 35. Enlightenment and mobilization	8 The Need for Sufficient Resources. 9 Engendering Female Empowerment. 10 Promoting the Value of Education.	

36. Raising Awareness about the Risk of VVF and Available Services 37 Enforcement, Reward, and Punishment.	11 Improving access to healthcare services to reduce VVF. 12 Poverty Eradication Programmes.	

Appendix 10: Ethical Approvals

Appendix 10.1: Ethical approvals from MMU

08/11/2018

Project Title: The role of socioeconomic and cultural factors (SeCf) on the increase in the prevalence of vesico-vaginal

fistula in Nigeria

EthOS Reference Number: 1140

Ethical Opinion

Dear Folake Veronica, Towoju,

The above application was reviewed by the Health, Psychology and Social Care Research Ethics and Governance

Committee and, on the 08/11/2018, was given a favourable ethical opinion. The approval is in place until 02/04/2021 .

Conditions of favourable ethical opinion

Application Documents

Document Type File Name Date Version

Consent Form Version 0.2 consent form 22/08/2018 0.2

Information Sheet prompting questions for Narrative or storytelling. 16/10/2018 0.1

Information Sheet Version 0.1 Qustionnaire for Ethos 2 19/10/2018 0.1

Information Sheet Version 0.1 Nurses and management questionnaire for Ethos 2 20/10/2018 0.1

Consent Form Version 0.1 for interview consent form 20/10/2018 0.1

Information Sheet Management information and consent form version 0.1 for Ethos 20/10/2018 0.1

Project Proposal version 0.1 proposal for Ethos(3) 24/10/2018 0.1

Consent Form Assent form for participant below 18 years old 25/10/2018 0,1

Information Sheet Version 0.1 Participant information sheet 25/10/2018 0.1

Information Sheet Request to Withdraw from a research study 1 29/10/2018 0.1

The Health, Psychology and Social Care Research Ethics and Governance Committee favourable ethical opinion is granted with the following conditions

Adherence to Manchester Metropolitan University's Policies and procedures

This ethical approval is conditional on adherence to Manchester Metropolitan University's Policies, Procedures, guidance and Standard Operating procedures. These

can be found on the Manchester Metropolitan University Research Ethics and Governance webpages.

Amendments

If you wish to make a change to this approved application, you will be required to submit an amendment. Please visit the Manchester Metropolitan University Research

Ethics and Governance webpages or contact your Faculty research officer for advice around how to do this.

We wish you every success with your project.

HPSC Research Ethics and Governance Committee.

Appendix 10.2: Ethical Approvals from MMU for Second Round of Data Collection

30/10/2020

Project Title: Exploring the role of socioeconomic and cultural factors on the

increase in the prevalence of vesicovaginal fistula in northern Nigeria

EthOS Reference Number: 11591

Ethical Opinion

Dear Folake Veronica, Towoju,

The above amendment was reviewed by the Health, Psychology and Social Care Research Ethics and Governance

Committee and, on the 30/10/2020, was given a favourable ethical opinion. The approval is in place until 31/10/2020.

Conditions of favourable ethical opinion

Application Documents

Document Type File Name Date Version

Additional Documentation Protocol for supplimentary data 1 10 20 01/10/2020 01

Additional Documentation Practitioners semi-structures interview questions 1 10 2020 01/10/2020 01

Additional Documentation Management information for suplimentary data version 01a 20/10/2020 version 01a

Additional Documentation PIS version 03a 29/10/2020 version03a

Additional Documentation PIS version 03b 29/10/2020 version03b

Additional Documentation PIS version 03c 29/10/2020 version03c

Additional Documentation PIS version 03d 29/10/2020 version03d

Additional Documentation PIS version 03e 29/10/2020 version03e

Additional Documentation Interview consent form version 04 29/10/2020 version04

Additional Documentation Protocol for supplimentary data 23 10 20 30/10/2020 version 02

The Health, Psychology and Social Care Research Ethics and Governance Committee favourable ethical opinion is granted

with the following conditions

Adherence to Manchester Metropolitan University's Policies and procedures

This ethical approval is conditional on adherence to Manchester Metropolitan University's Policies, Procedures, guidance

and Standard Operating procedures. These can be found on the Manchester Metropolitan University Research Ethics and

Governance webpages.

Amendments

If you wish to make further changes to this approved application, you will be required to submit an amendment. Please

visit the Manchester Metropolitan University Research Ethics and Governance webpages or contact your faculty research

officer for advice around how to do this.

We wish you every success with your project.

HPSC Research Ethics and Governance Committee

HPSC Research Ethics and Governance Committee

For help with this application, please first contact your Faculty Research Officer. Their details can be found here.

Appendix 10.3: Ethical approvals from National Health Research Ethics Committee of Nigeria (NHREC)

NHREC Protocol Number NHREC/01/01/2007-25/11/2020

NHREC Approval Number NHREC/01/01/2007-21/01/2021

Date: 21 January 2021

Re: Exploring the roles of socioeconomic and cultural factors (SeCfs) on the increase in the prevalence of

vesico-vaginal fistula in Northern Nigeria.

Health Research Committee assigned number: NHREC/01/01/2007

Name of Student Investigator: Folake Veronica Towoju

Address of Student Investigator: Manchester Metropolitan University

53 Bonsall Street Hulme

Manchester M156GX

Email: vtowoju@yahoo.com

Tel: +447448102201

Date of receipt of valid application: 25/11/2020

Date when final determination of research was made: 21-01-2021

Notice of Expedited Committee Review and Approval

This is to inform you that the research described in the submitted protocol, advertisements and other

participant information materials have been reviewed and given expedited committee approval by the

National Health Research Ethics Committee.

This approval dates from 21/01/2021 to 20/1/2022. If there is delay in starting the research, please inform

the HREC so that the dates of approval can be adjusted accordingly. Note that no participant accrual or

activity related to this research may be conducted outside of these dates. All informed consent forms used in

this study must carry the HREC assigned number and duration of HREC approval of the study. In multiyear

research, endeavour to submit your annual report to the HREC early in order to obtain renewal of your

approval and avoid disruption of your research.

The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules

and regulations and with the tenets of the Code including ensuring that all adverse events are reported

promptly to the HREC. No changes are permitted in the research without prior approval by the HREC except in

circumstances outlined in the Code.

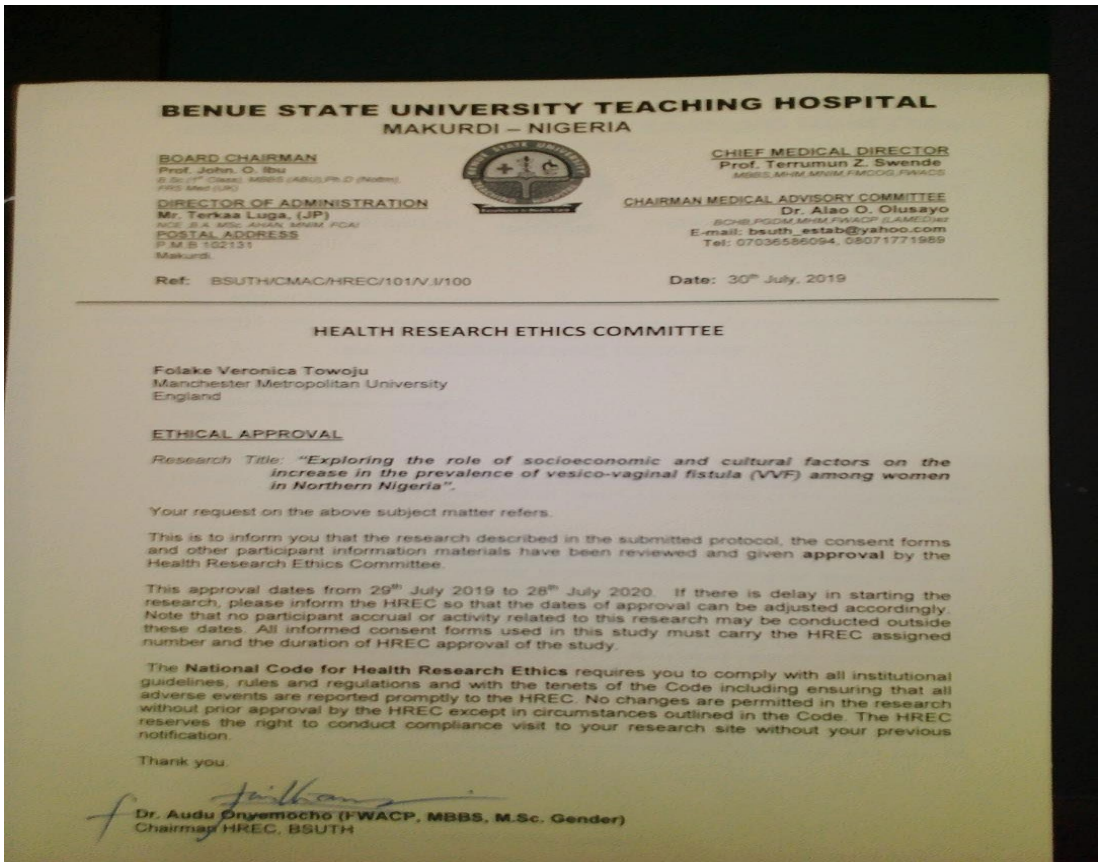
The HREC reserves the right to conduct compliance visit to your research site without previous notification.

Signed

Professor Zubairu Iliyasu MBBS (UniMaid), MPH (Glasg.), PhD (Shef.), FWACP, FMCPH

Chairman, National Health Research Ethics Committee of Nigeria (NHREC

Appendix 10.4: Ethical approvals from Benue state Nigeria



BENUE STATE UNIVERSITY TEACHING HOSPITAL
MAKURDI – NIGERIA

BOARD CHAIRMAN
Prof. John. O. Ibu

DIRECTOR OF ADMINISTRATION
Mr. Terkaa Luga, (JP)

POSTAL ADDRESS
P.M.B 102131
Makurdi.

CHIEF MEDICAL DIRECTOR
Prof. Terrumun Z. Swende

CHAIRMAN MEDICAL ADVISORY COMMITTEE
Dr. Alao O. Olusayo
E-mail: bsuth_estab@yahoo.com
Tel: 07036586094, 08071771989

Ref: BSUTH/CMAC/HREC/101/V.I/100 Date: 30th July, 2019

HEALTH RESEARCH ETHICS COMMITTEE

Folake Veronica Towoju
Manchester Metropolitan University
England

ETHICAL APPROVAL

Research Title: *"Exploring the role of socioeconomic and cultural factors on the increase in the prevalence of vesico-vaginal fistula (VVF) among women in Northern Nigeria".*

Your request on the above subject matter refers.

This is to inform you that the research described in the submitted protocol, the consent forms and other participant information materials have been reviewed and given **approval** by the Health Research Ethics Committee.

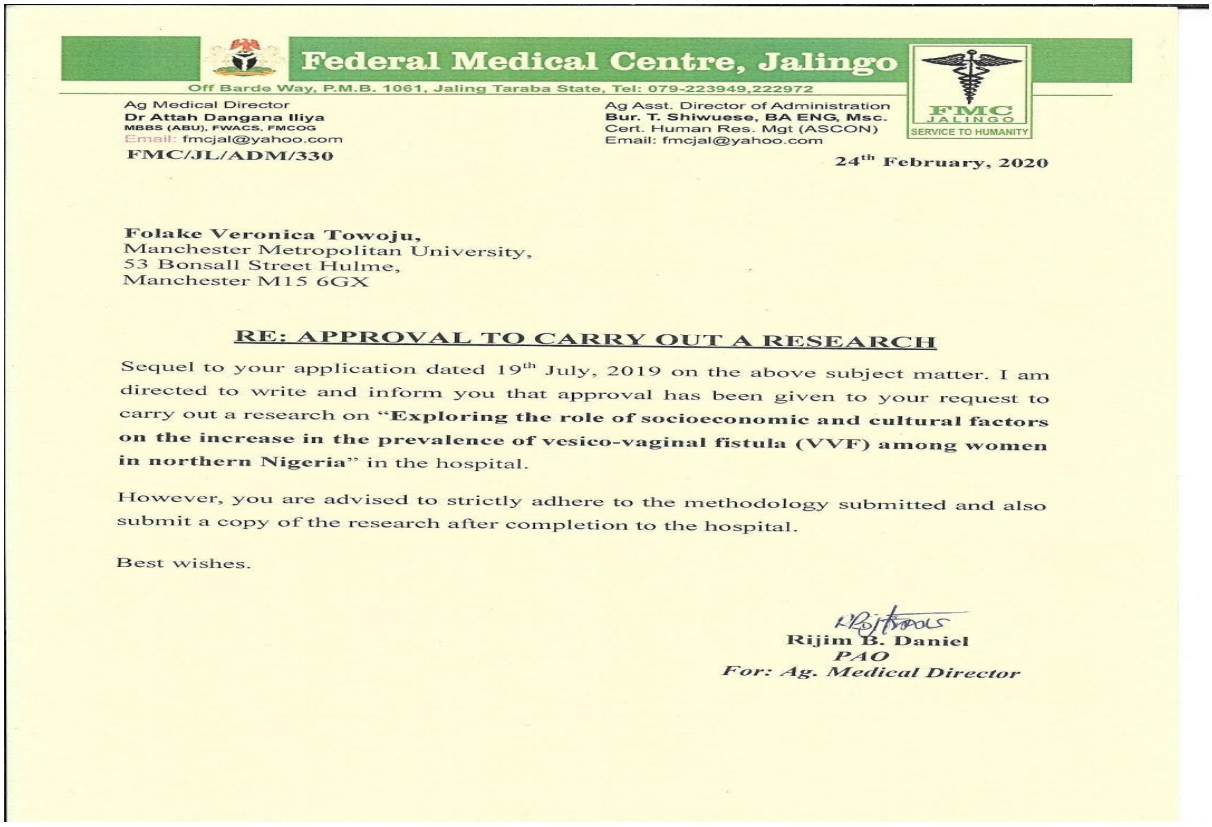
This approval dates from 29th July 2019 to 28th July 2020. If there is delay in starting the research, please inform the HREC so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside these dates. All informed consent forms used in this study must carry the HREC assigned number and the duration of HREC approval of the study.

The **National Code for Health Research Ethics** requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the HREC. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit to your research site without your previous notification.

Thank you.

Dr. Audu Onyemocho (FWACP, MBBS, M.Sc. Gender)
Chairman HREC, BSUTH

Appendix 10.5: Ethical approvals from Jalingo Taraba state Nigeria



Federal Medical Centre, Jalingo

Off Bardo Way, P.M.B. 1061, Jaling Taraba State, Tel: 079-223949,222972

FMC JALINGO SERVICE TO HUMANITY

Ag Medical Director
Dr Attah Dangana Iliya
MBBS (ABU), FWACS, FMCOG
Email: fmcjal@yahoo.com

Ag Asst. Director of Administration
Bur. T. Shiwuese, BA ENG, Msc.
Cert. Human Res. Mgt (ASCON)
Email: fmcjal@yahoo.com

FMC/JL/ADM/330

24th February, 2020

Folake Veronica Towoju,
Manchester Metropolitan University,
53 Bonsall Street Hulme,
Manchester M15 6GX

RE: APPROVAL TO CARRY OUT A RESEARCH

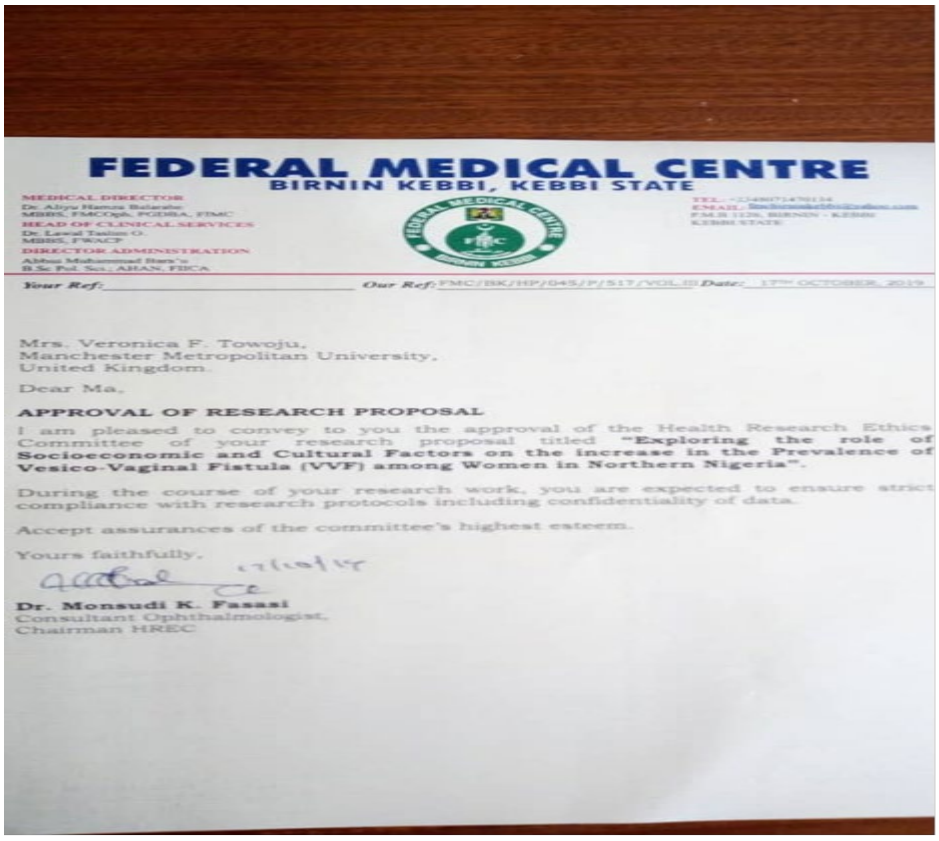
Sequel to your application dated 19th July, 2019 on the above subject matter. I am directed to write and inform you that approval has been given to your request to carry out a research on "**Exploring the role of socioeconomic and cultural factors on the increase in the prevalence of vesico-vaginal fistula (VVF) among women in northern Nigeria**" in the hospital.

However, you are advised to strictly adhere to the methodology submitted and also submit a copy of the research after completion to the hospital.

Best wishes.

Rijim B. Daniel
PAO
For: Ag. Medical Director

Appendix 10.6: Ethical approvals from Birnin Kebbi Kebbi State Nigeria



FEDERAL MEDICAL CENTRE
BIRNIN KEBBI, KEBBI STATE

MEDICAL DIRECTOR
Dr. Aliyu Hamza Bukarabe
MBBS, FMCOph, PGDBA, FMC
HEAD OF CLINICAL SERVICES
Dr. Lawal Taslim O.
MBBS, FWACP
DIRECTOR ADMINISTRATION
Abbas Muhammad Bara'u
B.Sc Pol. Sci., AHAN, FIBCA

TEL: +2348071479134
EMAIL: fmcbirninkebbi@yahoo.com
P.M.B 1126, BIRNIN - KEBBI
KEBBI STATE

Your Ref: _____ *Our Ref:* FMC/BK/HP/045/P/517/VOL.III *Date:* 17TH OCTOBER, 2019

Mrs. Veronica F. Towoju,
Manchester Metropolitan University,
United Kingdom.

Dear Ma,

APPROVAL OF RESEARCH PROPOSAL

I am pleased to convey to you the approval of the Health Research Ethics Committee of your research proposal titled **"Exploring the role of Socioeconomic and Cultural Factors on the increase in the Prevalence of Vesico-Vaginal Fistula (VVF) among Women in Northern Nigeria"**.

During the course of your research work, you are expected to ensure strict compliance with research protocols including confidentiality of data.

Accept assurances of the committee's highest esteem.

Yours faithfully,

17/10/19

Dr. Monsudi K. Fasasi
Consultant Ophthalmologist,
Chairman HREC

FEDERAL MEDICAL CENTRE
BIRNIN KEBBI, KEBBI STATE

MEDICAL DIRECTOR
Dr. Aliyu Hamza Balarabe
MBBS, FMCOph, PGDBA, FIMC
HEAD OF CLINICAL SERVICES
Dr. Lawal Taslim O.
MBBS, FWACP
DIRECTOR ADMINISTRATION
Abbas Muhammad Ibm'u
B.Sc Pol. Sci.; AHAN, FIICA

TEL: +2348071470134
EMAIL: fmcbirninkebbi@yahoo.com
P.M.B 1126, BIRNIN - KEBBI
KEBBI STATE

Your Ref: _____ *Our Ref:* FMC/BK/HP/045/P/517/VOL.III *Date:* 17TH OCTOBER, 2019

Mrs. Veronica F. Towoju,
Manchester Metropolitan University,
United Kingdom.

Dear Ma,

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During the course of your research work, you are expected to ensure strict compliance with research protocols including confidentiality of data.

Accept assurances of the committee's highest esteem.

Yours faithfully,

17/10/19

Dr. Monsudi K. Fasasi
Consultant Ophthalmologist,
Chairman HREC