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Information needs and sources for health-related information among pregnant women in Tamale Metropolis

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INFORMATION NEEDS AND SOURCES FOR HEALTH-RELATED INFORMATION AMONG PREGNANT WOMEN IN TAMALE METROPOLIS

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ABSTRACT

The purpose of the study is to explore the information needs and sources for health-related information among pregnant women in Tamale Metropolis. A Mixed method approach was used to carry out the study. A questionnaire was used to collect data from 148 pregnant women from three hospitals namely, Tamale Teaching Hospital, Tamale West Hospital and the Seventh Day Adventist Hospital, interviews were conducted with three midwives, one from each hospital and a Gynecologist at the Tamale Teaching Hospital. The findings of the study revealed that antenatal lessons were the most used sources of health information, and the least were newspapers and popular magazines. The information needs of pregnant women include a healthy baby and medication among others. The most highly rated need was having a healthy baby and the least was an on-sex relationship. The study recommends that the management of the hospitals set aside an office to be manned by a midwife at the entrance of every antenatal clinic where the midwife would be solely in charge of consultation on health information provision. Also, the government must pay more attention to the free maternal health policy to enhance access to quality healthcare.

Keywords: Information needs, Information Sources, Health-related information, Pregnant women, Tamale Metropolis, Information-seeking behavior and Health literacy

Introduction

Information, which is recognized as being essential to human existence, occupies a significant position in a variety of situations. Its essential function in societal spheres is emphasized by Alemna and Skouby (2000), who see it as a resource that is required for human endeavors. As a result, information assumes a fundamental place in human existence and is of utmost importance to each individual (Olarongbe et al., 2013).

According to Alemna (2000), in modern society, information has a strategic status comparable to that of land, capital, labor, and entrepreneurship. The impressive technical advancements of the twenty-first century, which have led to an explosion of information accessibility, contribute to support this viewpoint. The difficulty of finding correct and useful information in the online world, however, forces users like researchers, students, professionals, scientists, and pregnant women to seek through a variety of sources.

Ghanaian pregnant women have unique information demands that are essential to both their health and the health of their unborn children. Access to skilled birth attendants (SBAs) during delivery is critical information they need. Studies have indicated that disparities exist in the use of SBAs according to socioeconomic class (SES) (Afulani & Moyer, 2016). The usage of SBAs is directly impacted by variables including perceived need, perceived accessibility of maternal health services, and reported quality of treatment (Afulani & Moyer, 2016). Enhancing pregnant women's use of SBAs in Ghana can be achieved by being aware of and addressing these variables.

Pregnant women in Ghana also require critical information on preventing anemia and maintaining a healthy diet. According to studies, anemia affects pregnant women often in Ghana's rural and urban regions (Ayensu et al., 2020; Saaka et al., 2017). Pregnancy-related anemia is more likely when there are deficiencies in important micronutrients such iron, folate, and vitamin B12. (Ayensu et al., 2020). To make sure they are getting enough of these vital nutrients, pregnant women should be informed about the significance of a varied and nourishing diet (Ayensu et al., 2020). The impacts of undernutrition among pregnant women, particularly those who live in rural regions, can be lessened by nutrition education on the selection and preparation of various meals (Ayensu et al., 2020).

Pregnant women in Ghana require knowledge about prenatal care and the value of routine checkups, in addition to information about nutrition and trained delivery attendants. Prenatal care is crucial in order to monitor the mother's and the child's health, spot any possible problems, and offer the required interventions (Afulani & Moyer, 2016). In order to guarantee a safe pregnancy and lower the rates of mother and newborn mortality, access to high-quality prenatal care services is crucial. The availability and accessibility of prenatal care services in local areas, along with the significance of attending these visits, should be made known to expectant mothers.

In Ghana, pregnant women obtain their knowledge from a variety of sources. These resources are essential in giving them the information and direction they need to have a safe pregnancy and delivery.

Frontline healthcare practitioners in Ghana are a valuable source of information for expectant mothers. According to Oduro-Mensah et al. (2013), a study carried out in the Greater Accra region of Ghana discovered that frontline healthcare providers, like doctors and nurses, make decisions about maternal and newborn health services by combining expert opinion, peer consultation, protocols and guidelines, and tacit knowledge. These medical professionals are an invaluable resource for expectant mothers, providing advice on prenatal care, delivery alternatives, and postpartum care.

Social media is another source of information that Ghanaian pregnant women turn to in addition to medical professionals. During a pregnancy, support and advice from family, friends, and other adults are crucial. Teenagers who are single have strong ties to their families, friends, school, and religious communities, according to a Ghanaian study on teenage sexual behavior (Kumi-Kyereme et al., 2007). These social networks provide pregnant women with information and support, including guidance on many facets of pregnancy, delivery, and parenting.

Additionally, non-governmental organizations (NGOs) that specialize on maternal and child health and community-based organizations may provide information to pregnant women in Ghana. These organizations frequently offer workshops, counselling services, and educational programmes to expectant mothers, giving them the tools, they need to have a safe and healthy pregnancy. These groups may also provide informative materials on subjects including breastfeeding, pregnancy nutrition, and baby care, such as leaflets and brochures. The availability of information sources can differ based on a number of variables, including socioeconomic status and geographic location.

Comparing pregnant women in urban and rural settings, it is possible that the former has more access to healthcare facilities and a greater variety of information sources. All pregnant women, regardless of geography or financial status, should have access to and availability of information.

Problem Statement

To ensure a safe pregnancy and delivery, pregnant women in Ghana must be aware of their information needs and sources. Nevertheless, there are constraints and disparities in getting access to and making use of the required data and resources. In order to effectively meet the information needs of pregnant women in Ghana, it is imperative that strategies and interventions that take these obstacles into account.

The lack of readily available and easily accessible information sources for expectant mothers in Ghana is one of the difficulties. Research has revealed various obstacles, including high service costs, a physical distance between health facilities and the homes of service users, lengthy wait times at health facilities, inadequate knowledge and skills of staff, subpar referral procedures, and subpar interpersonal relationships among staff (Kyei-Nimakoh et al., 2017). These obstacles make it more difficult for expectant mothers to get accurate and trustworthy information from medical professionals.

Pregnant women's ignorance of the information sources that are accessible to them is another problem. Studies have indicated that demand-side barriers to accessing obstetric care include low household resources/income, lack of access to transportation, indirect transport costs, stigma and women's self-esteem/assertiveness, lack of preparation for childbirth, cultural beliefs/practices, and ignorance about necessary obstetric health services (Kyei-Nimakoh et al., 2017). Expectant mothers might not know where to go for information, or they can encounter social and cultural obstacles that keep them from doing so.

Moreover, depending on a person's socioeconomic status and geographical region of residence, different information seeking practices exist. Pregnant women living in rural areas may have more informational challenges due to a lack of healthcare services and facilities (Asundep et al., 2013). Moreover, women from lower socioeconomic backgrounds might not have as many resources available to them to seek information or might have financial difficulties while trying to obtain healthcare services (Asundep et al., 2013).

It is also necessary to investigate how knowledge affects the outcomes of mothers and newborns. Pregnant women in Ghana have not had much study done on the connection between information availability, utilization, and health outcomes (Asundep et al., 2013). Comprehending the influence of information on health outcomes may offer significant perspectives on the efficacy of current information sources and treatments and direct the creation of evidence-based tactics to enhance the health of mothers and newborns. This study, therefore, explored the information needs and sources for health-related information among pregnant women in Tamale Metropolis.

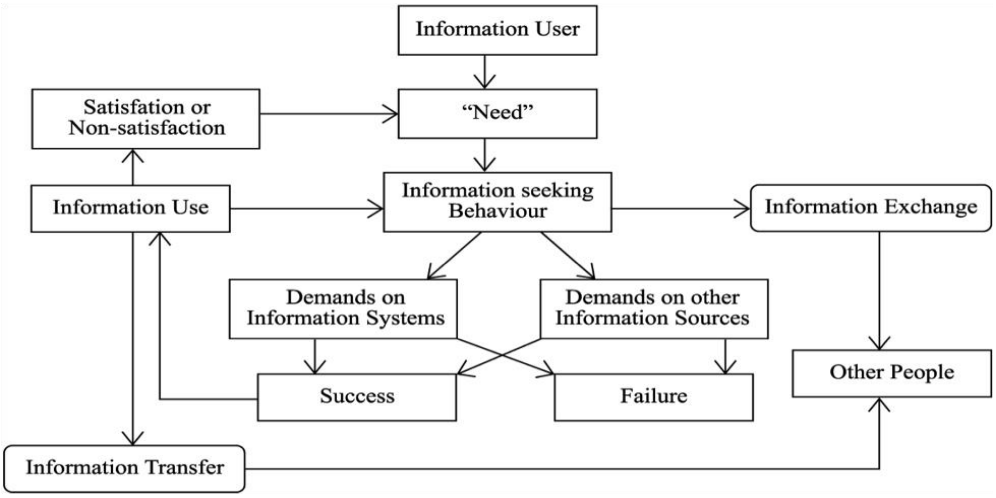
Theoretical framework

Information behavior models

In developing theories, models are of great importance, it is the various models that pave way for the theories to be established. Bate (2006) was of the view that, models are of great value when it comes to description and production of understanding of a phenomenon and with this, one can conclude that there is a theory. Models can be said to be a prototype of theories or a blueprint of theories. There are several models which have been developed to suit or describe information behavior. One of such models is the Wilson's (1981, 1996, 1999, then 2000) models of information behaviour. Others also include Kuhlthaus (1991) models of the stages of information behaviour, Ellis (1989 and 1993) models of information seeking strategies to mention but a few. According to Niedzwiedzka (2003) Wilson (1999) proposed that “information needs are secondary needs caused by primary needs which in accordance with definitions in psychology can be defined as physiological, cognitive or affective". To find sense and order in the world which one belongs results into Cognitive needs. The make-up of a person or the uniqueness of an individual can determine the information behaviour of such a person and this behaviour also affects the choice of information needs. This implies that the needs of a pregnant woman may differ from that of a doctor, the needs of a student may also differ from a farmer, depending on the circumstance. Niedzwiedzka (2003) asserted that, before an individual could obtain information one has to undergo a series of activities or sections of activities which are presented by the information behaviour model. These activities are in phases. When there is a need for information, there is problem identification. The theoretical framework that best suits this study is Wilson's 1999 model.

Wilson's 1999 model of information behaviour

Wilson's (1999) model is a revised model of the 1996 model. Wilson proposed that a researcher must seek information in context. Wilson's 1999 information behaviour model focused on the user's information needs, information seeking and information use. Wilson (1999) was of the view that, information behaviour of users can be active or passive. This theory is commonly used when it comes to information use and users. Wilson's theory, therefore, provides a decent framework for the sources and use of information and this was used in the study of pregnant women in Tamale metropolis. People seek information when there's information need, this, however, does not happen in a vacuum. One needs an information source to be able to gather whatever information he or she wants. The figure groups the various sources of information into information systems which comprises of the web or the internet while the other source named in the figure consist of relatives and friends, Midwives, Gynecologists, radio and television stations to mention but a few. Pregnant women in Tamale Metropolis retrieve information from the sources named to help make certain decisions concerning their pregnancy.



Wilson's 1999 Information behaviour model

Source: https://www.researchgate.net/figure/Wilsons-model-of-information-behaviour_fig1_228784950

Methodology and Materials

Ndunguru (2007) define research design as a gathering of conditions for specifying relationships between variables in a study, operationalizing these variables in a study, and controlling effects of extraneous variables, and a strategy for selecting the sources and types of information to be used in answering research questions. In other words, a research design shows the various steps or ways of operational data collection. It permits a researcher to draw conclusions about relationships between variables. Research design links the data to be collected and findings to be drawn to the initial questions of the study. A mixed-method approach was used for this study.

This study was carried out among pregnant women and health professionals in three health facilities in Tamale Metropolis. The hospitals the researcher considered for the study included the Tamale Teaching Hospital, West Hospital, and Seventh Day Adventist Hospital. These hospitals were selected because Tamale Teaching Hospital serves as a referral center and the rest of the hospitals (Seventh Day Adventist Hospital and West Hospital) form part of the major hospitals in the metropolis, and they are well equipped with modern facilities. The availability of such modern facilities attracts a lot of pregnant women to these hospitals. The total number of pregnant women who have conceived the last seven months and have registered with the Teaching hospital as patients as at the time of research is 1122, West Hospital had 352- and Seventh-Day Adventists hospital had 43 which totaled 1517. According to Neuman (2007) when a population is more than thousand it is advisable to use 10% to arrive at a confidence level which depicts the representation of the population. To ensure equity, 10% of the total population was calculated to arrive at a sample size of 151.7 and this represented all the pregnant women at the selected hospitals. Four health professionals (3 Midwives and a Gynecologists) from the selected hospitals also formed part of the population. This brought the sample size considered for the study to 155. Pregnancy is the period from conception to birth, and women who have conceived are expected to carry the pregnancy over a period of nine months. Some pregnant women also deliver within the seventh month. These pregnant women sometimes experience pregnancy symptoms such as enlargement of the nose and breast, swollen feet, nausea, severe headaches, vomiting and preeclampsia or eclampsia. Gynecologists and midwives from the selected hospitals also formed part of this population.

Proportional sampling technique was used to select pregnant women from each hospital after which accidental sampling was used in administering the questionnaire. Purposive sampling was also used in conducting an interview for the Gynecologists and midwives since they are experts in their field of study. The main instruments that were used for data collection were questionnaire and interview guide. The questionnaire was distributed to pregnant women to provide responses and participants who were uneducated responded to the questionnaire with the aid of research assistants who helped with interpretation after which the answers from the respondents were written or documented. Interviews were conducted for midwives and Gynecologists with the view to gathering some professional health issues related to pregnant women and their behaviour with respect to information.

Data collection is a very important aspect of all research activities because the outcome of every study is based on the kind of data collected. Regarding this study, data will be collected in stages.

Stage 1: Meeting with the participants

The researcher met with the pregnant women at the antenatal clinic on the same day but different time schedules and generally spoke to them about the study after which they were to ask questions relating to the research. All the questions asked were answered to clear any doubts in the minds of the respondents. Data collection then commenced the following day since the Directors of the various hospitals gave the researcher the approval to begin at any convenient time.

Stage 2: Distribution/administration of questionnaires

Based on the verbal approval to conduct research from the Directors, the questionnaire was administered to participants of the study. The researcher used a period of five weeks to undertake this exercise. The questionnaire was taken from pregnant women upon completion the same day. Pregnant women who could read and write requested that their questionnaire be given to them to answer on their own after which the questionnaire was taken back and some pregnant women also asked the researcher and the assistants to write down the responses of questions asked since their conditions will not allow them to do the reading and writing at the same time. The pregnant women who were illiterates were assisted by the research assistants who read out the questions in their local dialects (Dagbanli) to them after which responses were written. Convenient sampling method was used to distribute the questionnaire to the pregnant women.

Stage 3: Conducting the Interview

A flexible face-to-face interview was conducted using a guide (see Appendix B). The interview was recorded by writing and audio/ tape recording of the responses to the questions that were asked. Gynaecologist and midwives were interviewed, one Gynaecologist and one midwife from the selected hospitals were interviewed accordingly. The midwives who were interviewed proposed a convenient date and time and a less busy scheduled date which suit the researcher. The researcher began the interview by explaining the aims and objectives of the study to each health professionals that were interviewed and it was conducted at their own convenience. A telephone interview was used in interviewing the Gynaecologist at the Tamale Teaching Hospital.

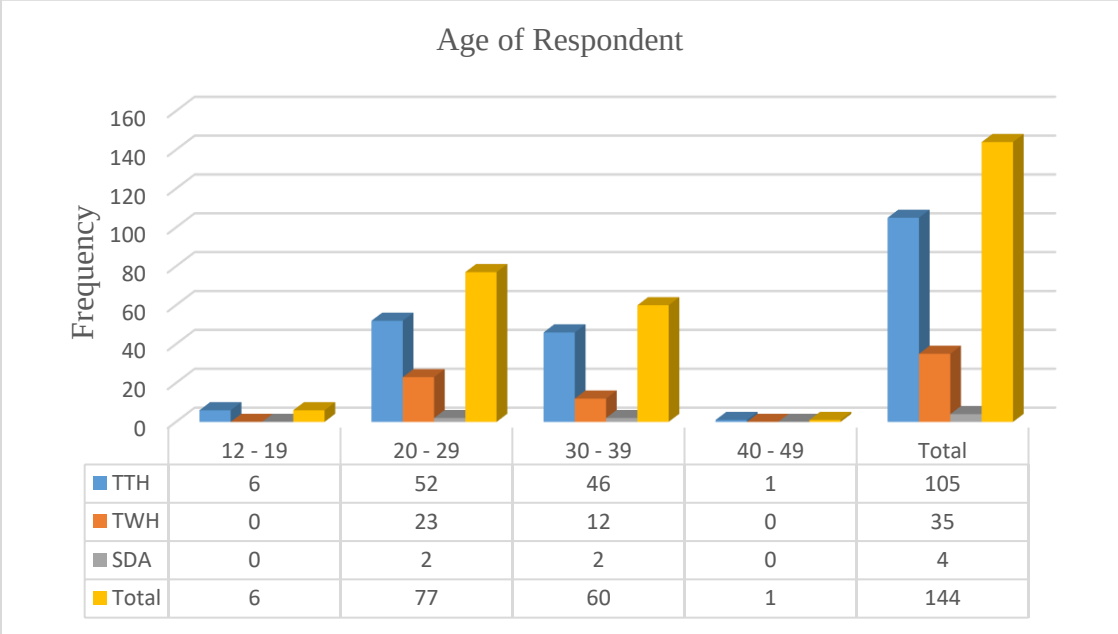
Presentation of Results and Findings

Background Information/demographic characteristics

The demographic information collected included age, education, marital status, and occupation. These have been presented in the table below and under the sub-headings below.

Age

Age is considered an important factor in determining one's maturity. In Ghana, children are considered adult when they attain the age of eighteen. However, in the northern part of Ghana, the girl child can be given out for marriage at any age which forms part of the Northern traditional practices. Until recently young girls have always been given out to older men for marriage and the government is doing everything possible to fight for the right of these girls who are considered to be juvenile. Figure 1 represents the age distribution of respondents.



	12 - 19	20 - 29	30 - 39	40 - 49	Total
TTH	6	52	46	1	105
TWH	0	23	12	0	35
SDA	0	2	2	0	4
Total	6	77	60	1	144

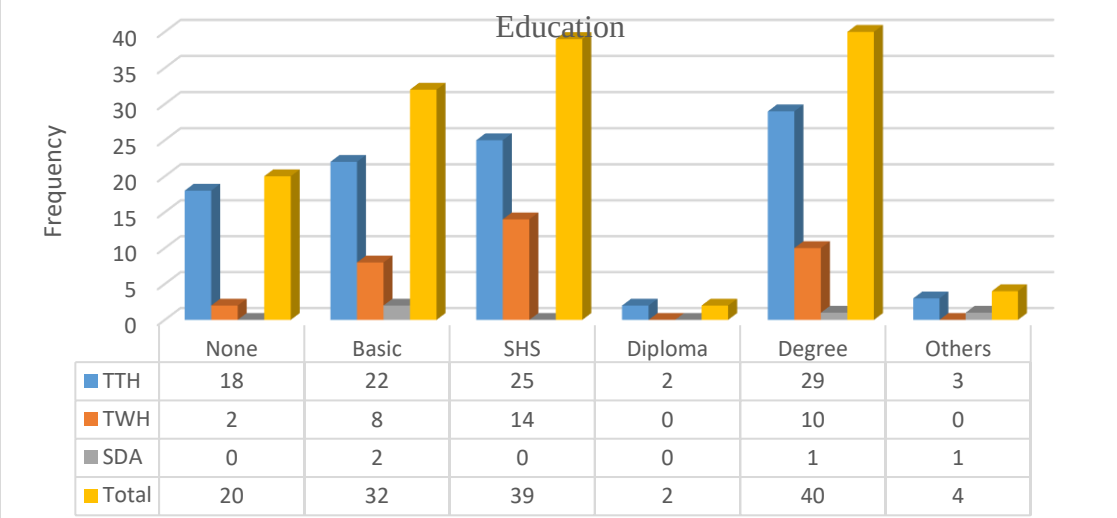
Figure 1: Age distribution of pregnant women in Tamale metropolis

The results presented in figure 1, show the age distribution of respondents across the hospitals. From the figure, 6 (4.17%) of the respondents were in the age group of 12 – 19 years. This is only made up of respondents from the Tamale Teaching Hospital with zero (0) recorded for the Tamale Hospital and Seventh Day Adventist Hospital. The remaining 52(36.11), 46(31.94%) and 1(0.69%) were in the 20 – 29, 30 – 39 and 40 – 49 categories respectively. This puts the majority of the respondents at the hospital in the age 20 – 29 categories.

At the Tamale West Hospital, out of the 35 respondents, majority of 23(15.97%) respondents were in the 20 - 29 categories. No respondent was in the 12 – 19 and the 40 – 47 categories with 12(8.33) in the 30 -39 group. In all, 35(24.31) pregnant women responded at the TWH. At the SDA hospital, all 4 pregnant women representing 2.78% responded to the questionnaire with 2 (1.39%) each in the 20 - 29 and 30 – 39 age groups. There were no respondents recorded for the other two categories. The overall observation from the sample is that there were relatively younger pregnant women than older women.

Education

Education also contributes largely to the individual's ability to read and write. It can be formal or informal but whichever form it takes, it is important that one takes education seriously. Figure 2 shows the distribution of educational background of respondents.



	None	Basic	SHS	Diploma	Degree	Others
TTH	18	22	25	2	29	3
TWH	2	8	14	0	10	0
SDA	0	2	0	0	1	1
Total	20	32	39	2	40	4

Figure 2: Education of respondents

In Figure 2, the educational levels of the respondents have been presented. It can be seen from the figure that the majority of the respondents had had some level of formal education; thus, from basic school to tertiary level. From the figure, 40 pregnant women representing 29.20% of the respondents had been to a university. Out of the 40 pregnant women who had attended a university, 29 (21.17%) were from the TTH with the least of 1(0.73%) recorded at the SDA Hospital. The remaining ten (10) respondents which represent 7.30% were recorded at the Tamale West Hospital.

Twenty-five representing 18.25% were recorded to have been to SHS at TTH. No respondent was recorded in this category at the SDA hospital with a total of 39(28.47%) reporting to have attended

SHS. There were two respondents who also had attended Polytechnic with a Diploma certificate. There were 20(14.60%) who did not have any education at all with 4(2.92) respondents having other forms of education.

Marital Status

Marriage is a union between two people, it goes a long way to unite both families of the two partners involved. The findings, however, revealed that some of the women were not married even though the figure was insignificant compared to those who were married. This segment of pregnant women was those who had dropped out of school and young girls who had no form of education and were engaged in unhealthy relationships. Figure 3 presents the distribution of the marital status of pregnant women sampled for the study in Tamale metropolis.

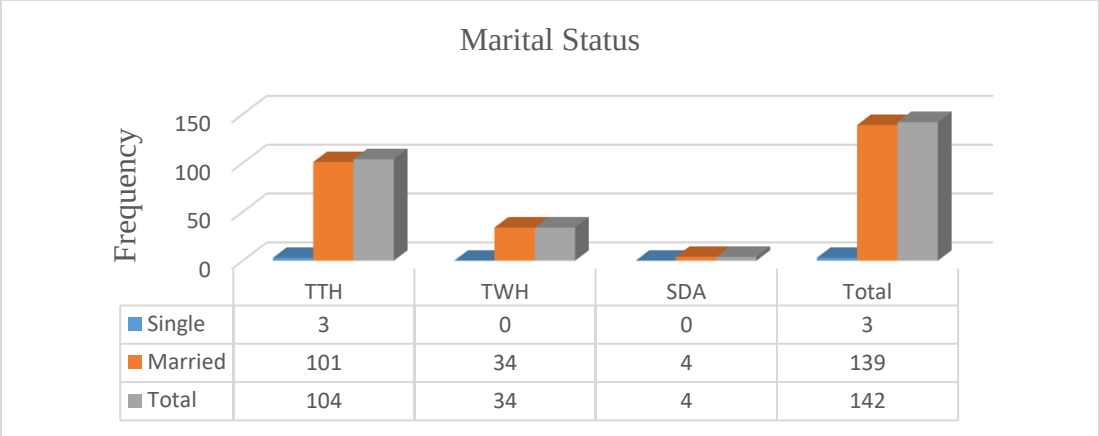


Figure 3: Marital status of respondents

From figure 3, it can be seen that majority of the respondents (139) representing 97.89% were married with the remaining 3(2.11%) being single. This single group of respondents were recorded only at TTH with zero recorded for the Tamale West Hospital and the Seventh Day Adventist Hospital.

Occupation

The profession or job description of pregnant women was also considered in trying to capture the demographic characteristics of respondents, being employed would also mean being capable of absorbing the cost of some expenditure such as the cost of ultra-scan, medication, transportation

and feeding. When one is gainfully employed, then a healthy lifestyle is better assured. Figure 4 shows the occupation of pregnant women sampled.

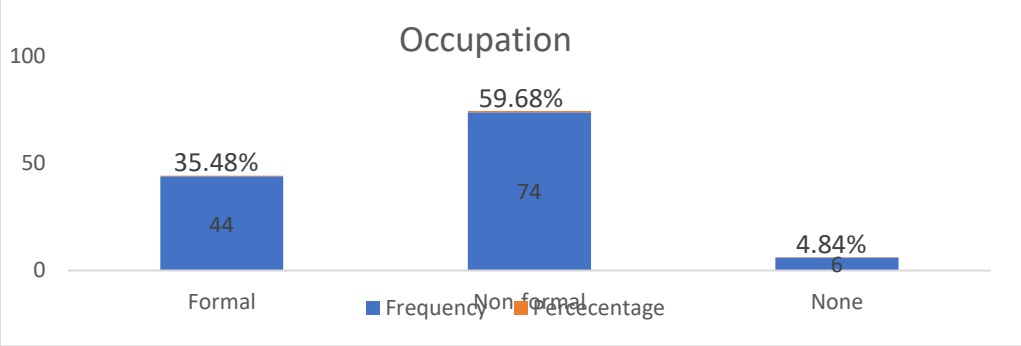


Figure 4: Occupation of respondents

Most of the respondents reported that they were either working in the formal or informal sector with a few of them reportedly not working at all. One hundred and twenty-four (124) pregnant women responded to the question of occupation with the remaining 24 choosing to abstain. Out of this number, 74 (59.68%) were employed in the informal sector which forms the majority as is the case generally in the country. 44 (35.48%) of them were employed in the formal sector with the remaining 6(4.84%) not employed at all. The formal sector had such jobs as teaching, civil and public servant among others. The informal sector comprised of trading, dressmaking, farming and many more. Those who were not employed by either the formal or informal sector consisted mostly of housewives.

Frequency of antenatal visits

The frequency of antenatal visit goes a long way to avoid complications and reduce maternal mortality. The more a pregnant woman visits antenatal the more she becomes information sufficient. Figure 5 presents the frequency of antenatal visits by sampled pregnant women.

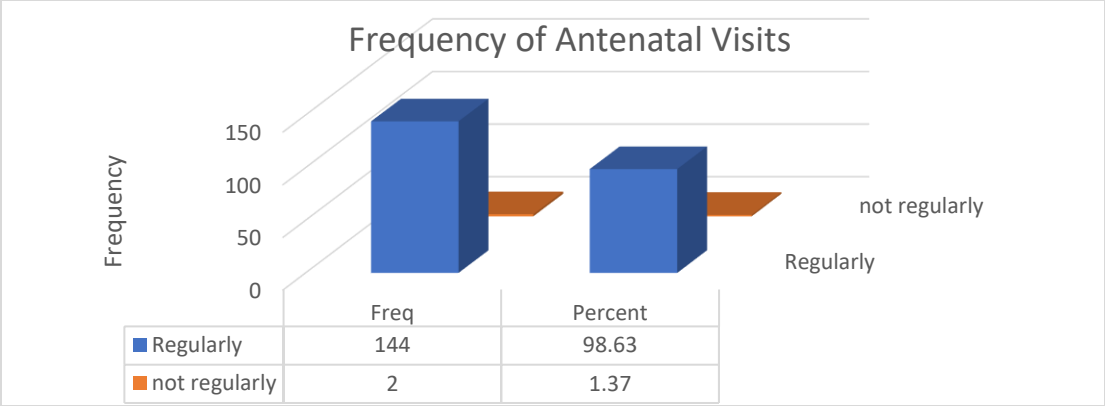


Figure 5: Frequency of antenatal visits by pregnant women

Figure 5 represents the frequency of antenatal visits as reported by pregnant women. It can be observed from the figure that 144 (98.63%) of the respondents attended antenatal sessions regularly during the period of pregnancy. Two respondents representing less than 2% (thus 1.37%) of the respondents reportedly did not attend antenatal sessions regularly. This means that pregnant women have sufficient information since they attend antenatal regularly.

Information needs of pregnant women.

Everybody has information needs and these needs also vary from person to person. Pregnant women have needs and these needs may be unfelt to people who are not pregnant. Needs of pregnant women comprises of having a healthy baby, medication, diet, sex relationship, complications and labour to mention but a few. The first objective of this study was to examine the information needs of pregnant women attending antenatal clinic in Tamale Metropolis. This objective was addressed in two parts. The first part presents the ratings of the needs in all three (3) hospitals and the second part presents the mean scores after the ratings from these hospitals.

Table 1: Information needs of pregnant women across the three Hospitals in Tamale Metropolis

Information needs	Hospital	Highly important	Important	Not important	Don't know	Total
		Freq.	Freq.	Freq.	Freq.	Freq.
Healthy baby	TTH	100	2	0	6	108
	TWH	31	0	0	4	35
	SDA	3	1	0	0	4
Diet	TTH	78	24	0	6	108
	TWH	22	8	0	5	35
	SDA	2	0	0	2	4

Sickness/ Complication	TTH	69	18	5	16	108
	TWH	26	1	2	5	34
	SDA	2	0	0	2	4
Labor and delivery	TTH	69	17	13	9	108
	TWH	23	2	3	6	34
	SDA	1	1	0	2	4
Medication	TTH	66	29	4	9	108
	TWH	19	9	0	7	35
	SDA	2	0	0	2	4
Household chores	TTH	26	16	38	28	108
	TWH	7	7	9	11	34
	SDA	2	0	0	2	4
Sex relationship	TTH	22	17	46	23	108
	TWH	8	8	9	9	34
	SDA	1	0	1	2	4

A total of seven (7) needs were put to the respondents to assess. These information needs include a healthy baby, diet, sickness and/or complications during pregnancy, labour and delivery, medication, the amount of household chores to do during this pregnancy and sex relationships. Table 4.1 represents the needs of pregnant women sampled for the study in Tamale Metropolis. From Table 4.1, it can be seen that a total of 148 respondents assessed the importance of the various information needs as presented to the respondents during pregnancy. On the issue of giving birth to healthy babies, out of 148 respondents, 100 (68.03%) pregnant women at the TTH rated it as highly important, 2(1.36%) rating it as important with 6 (4.08%) unable to rate this need. However, no respondent considered the need as not important. Similar observations were made at the TWH and the SDA hospital with 31(21.09%) and 3(2.04%) rating this need as highly important respectively.

On diet, 78(53.08%) of the respondents at TTH considered this need as also highly important, 22(14.97%) at the TWH reported same need as highly important with 2(2.04%) at SDA expressing same opinions about the need. For respondents who considered the information on diet as important, 24(16.33%) were at the TTH, 8(5.44%) at the TWH and none at the SDA hospital. The importance of the above two needs cannot be over-emphasized in the lives of pregnant women, therefore, their rating of these two was not unexpected.

Information on how much household chores to do during pregnancy and also, on sex relationships were rated relatively lower than the earlier ones. In this regard, a total of 42(28.14%) at TTH,

14(9.58%) at the TWH and 2(1.37%) at the SDA hospital rated it as an important information need to have access to during pregnancy. Majority 66(45.21%) at the TTH, 20(13.69%) at the TWH and 2(1.37%) at the SDA hospital rated it as a not important information need during pregnancy. Likewise, information on sex relationship was generally considered as not important in all the three hospitals. At TTH a total of 39(26.71%), 16(10.96%) at TWH and 1(0.68%) at SDA hospital reported that this was an important information need during pregnancy. In terms of rating the need as not important, 69(47.26%) at TTH, 18(12.32%) at TWH and 3(2.05%) came to this conclusion. Largely, all the information needs respondents were asked to rate were considered and rated as important.

Evaluating information needs of pregnant women by mean scores

No information is irrelevant. Information which is important to someone may not be important to another person. However, not all sources of information are reliable. In trying to evaluate the needs of pregnant women, currency, relevance, and reliability of information were. Table 4.2 shows the various needs of pregnant women and the corresponding mean score. This was to show in order of priority which needs comes first.

Table 2: Information needs of pregnant women ranked by mean score.

Information needs	Highly important	Important	Not important	Don't know	Total	Mean Score	Rank
Healthy baby	134	3	10	0	147	2.80	**1st**
Diet	102	32	13	0	147	3.28	**2nd**
Sickness/ Complication	97	19	7	23	146	3.66	**3rd**
Labor and delivery	93	20	16	17	146	3.67	**4th**
Medication	87	38	4	18	147	3.68	**5th**
Household chores to do	35	23	47	41	146	5.42	**6th**
Sex relationship	31	25	56	34	146	5.49	**7th**

The ranking of information was on seven (7) key issues. These included having a healthy baby, diet, how much household chores to do among others. Mean scores were calculated for each need with the least mean score ranked the most important and the highest mean score ranked as the not so important. Information on having a healthy baby was ranked as the most important need by most of the women. One hundred and thirty-four (134) and three (3) women ranked healthy baby as highly important and important needs respectively. This was ranked as the first most important need.

Information on diet was ranked as the second most important need by the majority of the pregnant women. Out of hundred and thirty-four (134) women, 102 ranked information on diet as highly important and 32 ranked information on diet as important. Information on sickness and/or complication during pregnancy was the third highly ranked need. Ninety-seven (97) respondents ranked it as a highly important need, 19 ranked it as an important need and seven (7) ranking it as not important. The amount of household chores that a pregnant woman should do during this period was ranked as the sixth (*6th*) important information need. Sex during pregnancy is not always guaranteed because of the unpredictable nature of the condition. The least ranked important information need was sex. This was not surprising that it has been rated as the least of the needs. The above list and analysis are a general reflection of what pregnant women consider as most important and what is least important at the various stages of pregnancy.

Sources of information

Sources of information means home of knowledge, the bases on which knowledge is gathered. Sources that serve pregnant women with health information must be scrutinized since pregnant women find themselves in life-threatening and fragile condition.

Table 4.3 represents the various sources and frequencies available to pregnant women across the three hospitals as the researcher sought to do in objective 2.

Table 3: Sources of information for pregnant women

Source of information		**Tamale Teaching Hospital**	**Tamale West Hospital**	**SDA Hospital**	**TOTAL**
		Freq.	**Freq.**	**Freq.**	**Freq.**
Antenatal Lessons	No	19	5	0	24

	Yes	90	30	4	124
Midwives/Nurses	No	29	11	0	40
	Yes	80	24	4	108
Doctor	No	25	8	4	37
	Yes	84	27	0	113
Relatives/friends/ Peers	No	19	7	1	27
	Yes	90	28	3	121
TV/Radio programmes	No	74	19	4	97
	Yes	35	16	0	51
Internet	No	89	28	4	121
	Yes	20	7	0	27
Visitations by midwives/nurses (Outreach)	No	106	35	4	145
	Yes	3	0	0	3
Newspapers and popular magazines	No	107	33	4	144
	Yes	2	2	0	4

A total of 124(83.78%) of the overall sample 148 attended antenatal lessons in the 3 hospitals. Out of this number, 90(60.81%) were recorded at TTH; 30(20.27%) were recorded at TWH with the remaining 4(2.70%) at SDA hospital. In terms of seeking information from midwives/nurses, 80(54.05%) respondents used this medium at TTH; 24(16.22%) at the West Hospital and 4(2.70) at the SDA hospital. Forty (40) respondents representing 27.03% however, did not use this medium to seek information.

In respect of using the doctor as a source of information, a total of 113, representing 75.00% used this source. This number comprises 84(56.76%), 27(18.24%) and 0 from TTH, TWH and SDA hospital respectively. The Internet also recorded a frequency of 121 respondents who did not use the internet as a source, with 89(60.14) from TTH, TWH 28(18.92) from TWH and 4(2.70) from SDA. Only 20(13.51) made use of the internet at TTH, 7(4.73) TWH and SDA recording 0(0.00).TV/Radio programmes also rated quite high in terms of non-use. Out of the 148 respondents, 74(50.00%) at TTH, 19(12.84%) at TWH and 4(2.70%) at SDA reportedly did not use this medium to seek information. Relatives and friends recorded a total of 121 across the three hospitals with 90(60.81) at TTH, TWH 28(18.92) and SDA 3(2.03) reported using this source.19 (12.84) at TTH, 7(4.73) TWH and 1(0.68) did not use this source. This could mean that they used other forms more to get the same information they needed during pregnancy.

Information from newspaper and popular magazine was rated as the least medium. A total of 144(97.30%) responded in the negative when asked about this information source. The number is

made up of 107(72.30%) at TTH, 33(22.30%) at TWH and 4(2.70%) at SDA. This means that only 4(2.70%) reportedly used this medium to seek information.

Measuring sources of information by pregnant women using a Likert Scale

The ability to search and distinguish between what information best fit what information needs best describes one's evaluation skills and this also means that pregnant women would be able to tell what is good for them if they have some level of knowledge about their needs.

Table 4: Measuring Information Sources using a Likert Scale by prepregnant women.

Sources of information	Hospital	Highly Important	Important	Not important	Don't know	Total
		Freq.	Freq.	Freq.	Freq.	Freq.
Antenatal lessons	TTH	93	7	0	9	109
	TWH	25	6	0	4	35
	SDA	4	0	0	0	4
Midwives/ Nurses	TTH	67	18	1	23	109
	TWH	20	4	0	11	35
	SDA	4	0	0	0	4
Doctor	TTH	22	73	2	10	107
	TWH	7	15	3	10	35
	SDA	0	0	0	4	4
Relatives/friends/ peers	TTH	19	74	0	16	109
	TWH	4	19	2	10	35
	SDA	1	1	0	2	4
TV/Radio programmes	TTH	9	29	4	66	108
	TWH	6	5	1	23	35
	SDA	0	0	0	4	4
Internet	TTH	9	15	4	81	109
	TWH	5	3	1	26	35
	SDA	1	0	0	3	4
Visitations by midwives/ nurses (Outreach)	TTH	2	5	3	99	109
	TWH	2	0	0	33	35
	SDA	0	0	0	4	4
Newspapers and popular magazines	TTH	1	4	6	98	109
	TWH	1	1	0	33	35
	SDA	1	0	0	3	4

The importance or otherwise of eight (8) information sources were measured by the respondents. These include antenatal lessons, midwives and/or nurses, doctor, relatives/friends/peers, TV and/or radio programmes, internet, visitation by midwives and nurses (outreach) and newspaper and popular magazines.

Antenatal lessons were considered by most pregnant women as a highly important source of information during pregnancy. At TTH, 93(62.84%) reported that antenatal lessons were highly important source of information during pregnancy. Twenty-five (16.89%) at the TWH also reported such as highly important with all 4(2.70%) respondents at the SDA hospital also coming to the same conclusion. Seven (7), representing 4.73%, 6(4.05%) at the TWH and none at SDA rated the source as an important source of information during pregnancy. In all 13(8.78%) could not rate the source across all hospitals.

In respect of midwives/nurses, 67(45.27%) rated this source as highly important at TTH. A total of 20(13.51%) at TWH rated midwives/nurses also as highly important source of information with all respondents 4(2.70%) at SDA concluding same. Eighteen (18) pregnant women, representing 12.16% rated midwives/nurses as important at TTH, 4(2.70%) at TWH and zero (0) at the SDA hospital. Collectively, 91(61.48%) of the respondents rated midwives as a highly important source of information with 22(14.86%) rated the said source as important.

Regarding the measurement of information from doctors, 22(15.07%) at TTH, 7(4.79%) at the TWH and zero (0) at SDA hospital rated it as highly important. Majority rated this source as important. This consists of 73(50.00%) at TTH, 15(10.27%) at the TWH and no one (0) at the SDA hospital. Collectively, 88(60.27%) of the respondents rated the doctor as an important source of information rather than highly important reported for antenatal lessons and midwives/nurses.

The internet, outreach and newspapers and popular magazines were the least reported sources of information. At TTH, 81(54.73) could not measure the internet as a source of information probably because they hardly used this medium to seek information. At TWH, 26(17.57%) could not do same with 3(2.03%) at SDA. In all, 115(77.71%) reportedly considered and rated the internet as a not important source of information during pregnancy but the remaining less than 25% thought otherwise.

Majority of 136(91.89%) could not also measure visitations by midwives/nurses (outreach) as an information source during pregnancy. A probable reason could be that these respondents did not use this medium of information during pregnancy and therefore, they were unable to evaluate same. That breakdown of this statistic is as follows; Ninety-nine (99) respondents, representing 66.89% at the TTH came to this conclusion; 33(22.30%) at the West Hospital and 4(2.70%) at SDA. Newspapers and popular magazines also recorded low rating. Collectively, 135(90.55%) across all three (3) hospitals probably did not use this medium of information and therefore were unable to rate it.

Evaluating information sources by mean scores.

The table shows the various sources used by pregnant women which were ranked using mean score.

Table 5: Ranking of sources of information by pregnant women using mean score.

Sources	Highly important	Important	Not important	Don't know	Total	Mean Score	Rank
Antenatal lessons	122	13	0	13	148	2.09	**1st**
Midwives/ Nurses	90	22	1	35	148	2.91	**2nd**
Doctor	29	89	5	23	146	3.60	**3rd**
Relatives/friends /peers	24	94	2	28	148	3.83	**4th**
TV/Radio programmes	15	34	5	93	147	5.38	**5th**
Internet	15	18	5	110	148	5.61	**6th**
Visitations by midwives/nurses (Outreach)	4	5	3	136	148	6.27	**7th**
Newspapers and popular magazines	3	5	6	134	148	6.31	**8th**

The table examines how pregnant women evaluate the various sources of information during pregnancy. This was measured with the help of a 4-point Likert scale rating from highly important to don't know which represents people who are unable to rate the sources or having not used such sources. In this analysis mean ranks were generated and the least score/rank represents the source

which was ranked as the most important with the highest scored source being the least ranked in terms of importance. From the table, antenatal lessons with a mean rank of 2.09 was ranked as the highly or most important source of information by pregnant women. Out of the total of 148 respondents who ranked this source, 122 of them concluded that antenatal lessons were the most important with 13 of them reporting that it was important. Also, 13 could not rank this source with no pregnant woman reporting it as unimportant. The second most important ranked source of information was midwives and/or nurses; this source with a mean score of 2.91 was ranked by 90 pregnant women as highly important with only 1 woman ranking it as not important. The Doctor as a source was ranked third with highly important point of 29 and a mean score of 3.60. Relatives and friends with a mean score of 3.83 was reported as the fourth most important source. TV/Radio programmes was recorded as the fifth most important source with a mean score of 5.38.

The internet with a mean score of 5.61 was reported as the sixth most important source of information by the pregnant women. This is because most of the women (136) did not use this source or are indifferent about how to rank this source. Out of the total, 15, 18 and 5 ranked this source as highly important, important and not important respectively. Visitations by midwives and/or nurses was ranked after internet. Only 4, 5 and 3 women reported this source as highly important, important and not important respectively. Finally, the least important source of information per the assessment of the respondents was newspapers and popular magazines. This source with a mean score of 6.31 was ranked by 3 women as highly important, by 5 as important but with the majority (134) ranking it as don't know. Summarily, most of the respondents ranked antenatal lessons, midwives and/or nurses and doctors as the top three (3) important sources of information.

Evaluating the use of sources of information and education

There were a number of sources available to pregnant women and it is of importance to evaluate these sources to establish whether there was some relationship between the sources and the level of education by these pregnant women sampled for the study.

Table 6: Evaluating the use of sources of information and education.

Source of information	Education	No	Yes	Pooled	Sig.
Doctor	None	4	16	20	**2.87**
	Basic	6	26	32	
	SHS	10	29	39	
	Diploma	0	2	2	
	Tertiary	10	30	40	
	Others	2	2	4	
Antenatal lessons	None	3	17	20	**2.34**
	Basic	4	28	32	
	SHS	6	33	39	
	Diploma	1	1	2	
	Tertiary	6	34	40	
	Others	1	3	4	
Internet	None	19	1	20	**36.18*** **
	Basic	31	1	32	
	SHS	37	2	39	
	Diploma	1	1	2	
	Tertiary	21	19	40	
	Others	3	1	4	
Relatives/ friends/ peers	None	3	17	20	**12.81** **
	Basic	4	28	32	
	SHS	6	33	39	
	Diploma	2	0	2	
	Tertiary	8	32	40	
	Others	2	2	4	
Midwives/Nurses	None	5	15	20	**15.91*** **
	Basic	4	28	32	
	SHS	12	27	39	
	Diploma	0	2	2	
	Tertiary	14	26	40	
	Others	4	0	4	
Newspapers and popular magazines	None	19	1	20	**8.25**
	Basic	32	0	32	
	SHS	38	1	39	
	Diploma	2	0	2	
	Tertiary	39	1	40	
	Others	3	1	4	
TV/Radio programmes	None	11	9	20	**7.90**
	Basic	25	7	32	
	SHS	22	17	39	
	Diploma	2	0	2	
	Tertiary	25	15	40	

	Others	4	0	4	
Community visitations by midwives/nurses (outreach)	None	18	2	20	**17.94*** **
	Basic	32	0	32	
	SHS	39	0	39	
	Diploma	2	0	2	
	Tertiary	40	0	40	
	Others	3	1	4	

**** & ***** are significant levels of 5% and 1% respectively**

Table 4.6 represents the sources of information used by pregnant women and examines if any relationship exists between the use of these sources and the levels of education of the respondents. A total of one hundred and five (105) respondents representing about 77% of the total sample got their information on various issues during pregnancy from doctors with thirty-two (32) of them probably using other source(s). A chi-square analysis was conducted to see if there was any significant difference between the use of Doctors as a source of information and the educational levels of the respondents. This, however, was insignificant even at 5%, which implies that there are no differences in the use of the doctor as an information source regardless of the education of the pregnant women (**chi-square= 2.87; prob = 0.719**).

From the table, respondents who sought or received information from antenatal lessons/classes, one hundred and thirty-seven (137) respondents were considered in this category. One hundred and sixteen (166) representing about 85% attended antenatal lessons with 21 (15.33%) responding in the negative. But it is important to emphasize the fact that the majority of the people who frequented antenatal classes had been people who had had some form of formal education. Even though education was not a determining factor in their decisions to attend antenatal sessions, most of the respondents going to antenatal lessons had been to school with the highest of them (42) attending up to the tertiary level which could either be the Polytechnic or a University. However, there was no significant difference between education and antenatal source of information even at 5% (**chi-square = 2.34; prob = 0.800**).

The internet was one of the leading channels through which one can access information and due to information overload, pregnant women find it difficult to choose from the many options given online. To be able to effectively identify information which will be of importance, one needs some literacy skills and not all elites possess that. The results from the table indicated that there were significant differences between the uses of information by pregnant women with respect to the

internet. This is anticipated because to be able to use the internet you must possess some level of literacy. Out of the total of 25 educated pregnant women who use the internet during the various stages of pregnancy, 19 of them had tertiary education. The levels of education of pregnant women had significant influences in their decision to use the internet to seek information during the various stages of pregnancy (**chi-square= 36.18; prob = 0.000**).

Also, in the table, any relationship that could exist between education and information from relatives/friends/peers by women during pregnancy was tested. A total of one hundred and twelve women reported using relatives, friends, and peers as a source of information during pregnancy with 25 of them using other sources other than relatives. A chi-square analysis of these sources and education came out significant indicative of the fact that there were significant differences between using this source of information and education (**chi-square = 12.81; prob = 0.000**) This is probably because of the fact that the most available people we can talk to in times of needs are relatives and friends even before we seek professional advice. Majority of the people who used this medium of information have been to at least second cycle schools with 32 of the total number attending tertiary.

Midwives/nurses have more contact with pregnant women than any other health worker and therefore, their role in a pregnant woman's life cannot be over-emphasized. A total of one hundred and thirty-seven (137) respondents were in this category; 98 reported that this was their source of information during pregnancy with 39 saying they used other sources other than the midwives/nurses, 28 of the women who used or sought information from midwives had had basic education with 16 of them having had tertiary education. Equally 14 of the respondents who did not use this source were people who had tertiary education and may be using other sources in getting their information. A chi-square test was used to determine if there were any significant differences between education and midwives and it turned out positive which means that the levels of education by pregnant women had a role to play in their decisions to seek information from midwives and/or nurses (**chi-square = 15.91; prob = 0.007)**.

A total of one hundred and thirty-seven (137) respondents completed the questionnaire in this category. Four respondents 4(2.92%) reported using this medium to seek information. Nearly all (97.08%) the respondents reported using sources other than newspapers and popular magazines. This may be due to the fact that contents of newspapers and magazines are mostly on other social

and political events which sell quicker than news for pregnant women. In cases where there is even information for pregnant women, they are so inadequate that one is discouraged from using such sources. The chi-square analysis revealed that there are no significant differences between education and seeking information from newspapers and magazines. In other words, education does not play any significant role in a pregnant woman's decision to seek information from a newspaper or a popular magazine (**chi-square = 8.25; prob = 0.14**).

A comparison was made with respect to education of pregnant women and their decisions to seek information from television and radio programmes. From the total of 137 pregnant women, 89 (64.96%) reported that they did not seek information from these sources, with 48 (35.04) responding in the affirmative to these sources. Out of the 49 who used the medium to seek information, 17 had been to secondary school with 15 of them reportedly attaining education up to the tertiary level. Also, out of the 89 who did not use these sources; 18.25% of them had been to basic school with the same proportion going up to the tertiary level. There was, however, no significant differences between the education of pregnant who sought information from television and radio programmes. This is to say that, the decision to seek information from television and radio programmes was not dependent on whether one had been to school or not (**chi-square = 7.90; prob = 0.162)**.

The relationship between education and community visitations by midwives and/or nurses was examined as the last component. From table 3, only 3 people reported having used this medium to seek information during pregnancy. The remaining one hundred and thirty-four (134) reported using other sources than outreach to seek for information during pregnancy. Though there were only 3 women who reportedly used community outreach to seek information, there was a significant difference between respondents in terms of their decision to use this medium. This is to say that in their decisions to seek information from visitations by midwives and nurses, education was a major factor (**chi-square= 17.94; prob = 0.003)**.

Interview with a midwife at Seventh Day Adventist hospital

Midwife S from SDA hospitals was interviewed for the purpose of this research since midwives' form part of the sample. Seventh Day Adventist Hospital is a missionary hospital established to cater for the health needs of the people of the Tamale Metropolis.

An in-depth interview was conducted with midwife S at the Seventh Day Adventist Hospital using an interview guide. The same question distributed to the pregnant women were used together with a set of questions used as an interview guide. The researcher explained what the questionnaire entailed to the midwife. This helped in deepening the understanding of the whole process. The researcher began the interview by asking the midwife S of the SDA Hospital what the needs of pregnant women were, and she responded by saying.

… *"Some pregnant women are ignorant; they don't know that they have needs and some just listen to the lessons at antenatal but when they don't understand what is being taught and when you ask them if they understand they will say yes. We are able to tell when the understanding is not there especially when we ask them questions."*

The major needs of pregnant women were outlined for them to determine which ones they sought information on and as a result finds as pressing needs and these included healthy baby, diet, medication, how much chores a pregnant woman should do and sex relationship with their partner.

… 'All the needs stated above were essential and pregnant women were educated on each of them. There are a number of them that can be avoided if behavioural care is taken into consideration. For instance, if a pregnant woman eats well, there will be no need for medication, diseases such as anaemia and gestational diabetes will be avoided. Some cases also result in complication due to improper behavioural attitudes such as the indiscriminate taking of drugs, not eating a well-balanced meal, and not exercising enough'.

Midwife S was also asked about how these pregnant women seek information, and she responded by saying.

… *"Majority of pregnant women living in Tamale Metropolis get their health information from the antenatal. She said, most of them are taught here in ANC because if you leave them to practice what relatives say, we will always endanger their lives even though some teachings given them by relatives may be right*" Midwife S was again asked about sources of information for pregnant women, and she responded by saying.

… *"The main source of information for our pregnant women is the lessons they take at ANC. Even though there are other sources but what we provide them is current, relevant, and authentic. We*

always encourage them to take the lessons seriously since it will prevent complications thereby making our work less stressful.

Interview with a midwife at the West Hospital

West Hospital is one other big health facility that serves the health needs of people living in the Tamale Metropolis where pregnant women are not left out. The same questions were posed to the midwife at the West Hospital beginning with the health needs of pregnant women. Midwife W who doubles as the "in charge" meaning the head of ANC told me that,

…" the needs of pregnant women even go beyond what has been spelt out on the questionnaire. Some of their needs could be that their husbands should have been assisting in all aspects of their lives till they deliver but most of them do not get such assistance. More so, since it's a Muslim dominated jurisdiction husbands must be educated on how to pamper their wives if they are pregnant. This goes a long way to assure the pregnant woman of her husband's greatest support. Midwife W went ahead to say that "*we try as much as possible to pamper our patient because we have realised that when they come for ANC they are always timid, they are not able to express their feelings thereby making communication difficult*.

How do they seek for information, madam?

… "As for them, it is the antenatal lessons that help them. Most of them are punctual and are regular attendants of the antenatal so as for the seeking, it is not difficult at all, they are well educated".

What are some of the sources of information for pregnant women if I may ask?

… "*Apart from their relatives which I know forms part of their sources, the antenatal lessons and we the midwives here also contribute to their sources.*

How do pregnant women differentiate between information given to them from all sources?

… "*You know all hands are not the same. Even though some are educated, and some are not. Majority of them may not be able to tell whether this one is right or better than the other sources. However, they are made to understand that we are professionals, and we try to do everything*

possible to win their trust, hence the lessons given them are what they always use to confirm whatever information they get outside the antenatal."

Interview with a midwife at Tamale Teaching Hospital

The Tamale Teaching Hospital is the only teaching hospital in the three northern regions. The facility doubles as a referral centre which puts pressure on the staff working in the hospital.

What are the needs of your patients, or can you confirm all that has been spelt out as needs of your patient?

…*Oh yes. Can I choose?* Said the midwife and I said you can pick one after the other and explain.

… "*Okay, we educate them on things that you can do to have a healthy baby. The diet too, we tell them to eat well especially the leafy foods, fruits and proportional intake of protein because these are the key issues they want. We also advise them to take their medication because no matter how well you advise them to eat some will not conform to the rules. Others would like to but the loss of appetite associated with pregnancy will not permit them to eat well. Complications and labour issues are also discussed so that if a pregnant woman sense danger she can quickly rush to the hospital and when in labour too signs that will prompt a pregnant woman that she's in labour are all taught".*

Madam please what do you have to say about how much sex to have?

…" *we always advise them that once you don't have any special case, you're at liberty to sex yourself, this even comes with easy delivery since it opens the uterus for the baby to come out without suffering"*.

Discussion of Findings

Information Needs of Pregnant Women

There were seven (7) needs rated by respondents; healthy baby, diet, sickness and/or complications during pregnancy, labour and delivery, medication, the amount of household chores to do during this pregnancy and sex relationships. Most -134(91.15%) of the respondents rated giving health to healthy babies as important across all three (3) hospitals. This was not surprising because the heartbeat of an expectant mother is to deliver safely. The safe delivering was not the only important thing to look out for, the health of the baby was also a major concern for these women. Rasheed and Al-Sowielems (2003) also conducted a study on the level of health awareness related to pregnancy and sources of information among pregnant women. Their study established that pregnant women had information need regarding nutrition, exercise in pregnancy, rest in pregnancy, antenatal visits, importance of antenatal, sex position during pregnancy. To conclude that information on giving birth to a healthy baby is highly important by most of the respondents is rightly in order. Another need rated by the majority 102(69.35%) as highly important was information on diet. Safe delivery and healthy babies are not achieved through eating just any kind of food. It is important for pregnant women/expectant mother to eat meals that are balanced. This would ensure that the babies are formed properly and would be well nourished before they are finally brought forth.

Another highly important information need during pregnancy was information on reducing sickness/complications during pregnancy. This need was rated by 97(66.44%) as highly important. This was reasonable because the effect of some sicknesses and/or complications during pregnancy could result in such cases as miscarriage and in some cases, stillbirths.

Other studies have also confirmed that, the most important health information women consider necessary were antenatal care, immunization, six childhood killer diseases, prevention of vascular Fistula, miscarriage, complication, headaches, fear of labor, lack of appetite, and how to safely deliver their babies (Nwangwu and Ajama, 2011; Uloma and Chinyere, 2013).

It is therefore important for pregnant women to have information on how to reduce some of these life-threatening situations, and hence, rating it among the top (3) information needs was highly commendable.

The least rated information needs by pregnant women were information on the amount of household chores to do during pregnancy and information on sex relationships. Information on the amount of household chores to do during pregnancy was rated by more than half of the respondents as being not important across all three (3) hospitals. A total of 88(60.27%) reportedly did not consider this as important information enough. This may probably be because this kind of information though important does not have any dire consequences for pregnant women in our part of the world. Therefore, more attention was given to other areas which when neglected could adversely affect the health of the pregnant woman and the unborn baby. Also, information on sex relations was considered not important by most of the women. This position is not different from the findings of Rasheed and Al-Sowielem, (2003) who established that most women were up to date with some pregnancy issues including sex positions during pregnancy.

In the case of household chores, the respondents did not think that this kind of information significantly affects giving birth safely. Across all three (3) hospitals, a total of 90(61.63%) respondents rated this information as not important. This comprised of respondents who did not know how to rate this and those who actually did rated it as not important. It is clear from the above analysis that, information on giving birth to a healthy baby, information on diet and information on reducing if not avoiding entirely sickness and/or complications during pregnancy are the three (3) most important information needs of pregnant women.

Evaluating information needs of pregnant women using mean score.

A more statistical and robust approach to determining the evaluation of the information needs by pregnant women is the use of mean scores. This ranks the needs in order of importance; where the least ranked (the need with the least score is considered the most important and the need with the highest score is considered the least important) is the most important. With a mean score of 2.80, information on a healthy baby was ranked as the highly important of the seven (7) needs assessed. This was ranked by the majority (134) out of the total of 148 expectant mothers. Following this highly important needs was the information on diet. It is a very crucial information need as the

outcome of pregnancy is heavily dependent on it. It was not surprising that it was ranked second with 102 out of the total of 148 respondents ranking it as highly important. Lincetto et al (2006) affirmed in their study that, the information pregnant women require during antenatal care include information on healthy pregnancy, nutrition, and safe delivery of their babies.

The least ranked information need was the information on sex relationship. This has an overall mean score of 5.49 ranking 7th among the needs assessed by the pregnant women. This goes to say that information on sex relationships rarely have any direct effect on the outcomes of pregnancy, therefore, it is not so much considered as important by most (90) respondents (considered as not important). Information on sickness and/or complication during pregnancy, labour and delivery rated third and fourth respectively, with means scores of 3.66 and 3.67. These two were followed in fifth and sixth by information on medication, and information on the amount of household chores to do with mean scores of 3.68 and 5.42 respectively.

Information seeking

Information at every stage of pregnancy is important to ensure that the general wellbeing of the pregnant woman is maintained. A total of eight (8) information sources across three (3) trimesters of pregnancy were assessed by pregnant women. The simple case here was to examine at which trimester of pregnancy did respondents used the various information sources. Antenatal lessons, midwives/nurses, doctor, relatives/friends/peers and TV/Radio programmes were the most used sources during the first, second and third trimester of pregnancy.

Several studies in agreement with this study have established that pregnant women with different conditions and backgrounds have different ways of seeking health information to address health challenges during pregnancy and they include access to the media, access to healthcare professional, cost and women's status in the society. Pregnant women who are more exposed to the media, for instance, television, radio, internet and the likes are more likely to attend antenatal care than women who are less exposed (Navaneetham and Dharmalingam, 2002; Tsawe et al, 2015). Kabir and Khan (2013) in their study examined the use of antenatal care amongst pregnant women in urban slums in Bangladesh. It was proven that the health-related information was better among pregnant women who regularly used antenatal care than women who did not. They further established that information seeking depended on whether pregnant women accessed antenatal care or not; women who patronized antenatal were considered to have good information seeking

capability while women who did not attend antenatal care did not have broad knowledge on information seeking. Also, midwives were rated quite high with most of the respondents admitting to using this medium during the first trimester of pregnancy.

In furtherance, this study established that a total of 111 respondents sought information from a doctor at the different stages of pregnancy. Out of the number, 71% of them did so during the first stage whereas 6% did so in the second stage of pregnancy with less than one per cent (0.70) doing so in the third stage. In connection with the above, Mpembeni et al, (2007) established that the factors that propel women to seek skilled maternal care is the fear of the unknown and inexperience especially on the part of younger women who have just begun childbearing.

From the above, all the three trimesters were important trimesters during which pregnant women sought information from different sources such as antenatal lessons, relatives or friends, mass media etc.

Sources of information

The source of information available to pregnant women was as important as the information itself. According to Anasi (2012), information sources could include media (print and electronic), personal experience, journals and magazines, blogs, opinions, family and peers, brochures and flyers, expert and the web. The sources of information identified in this study relate to Anasi, (2012) definition of information sources. This study assessed the sources of information across the 3 hospitals. Antenatal lessons, relatives/friends/peers, and doctors were the top three (3) sources of information across the three hospitals. At the other end, newspaper and popular magazine source, visitations by midwives/nurses and the internet were the bottom three which were the less used sources of information across the three hospitals.

The frequently used media in accessing information included magazines, newspapers, coupled with printed materials like pamphlets, books, flyers and leaflets (Andreassen et al, 2005). This study is in contrast with the findings of Andreassen et al, (2005). Newspaper and popular magazines sources were rarely used in all three hospitals. Only 4(2.70%) of the respondents used this medium. The larger or nearly the entire population used other means to seek information. In our part of the world, newspapers and popular magazines are expensive and are mostly loaded with stories of celebrities and other entertainment, political or business-related issues which then

becomes irrelevant information for pregnant women. It comes as no surprise that this medium was rated amongst the bottom three.

Finally, visitations by midwives in all three hospitals was considered as the sources with the highest non-use ratio. Nearly all (97.97%) of the respondents used other sources rather than waiting to be visited by a midwife or a nurse. This could have been a very useful opportunity for pregnant women to interact more with midwives. This is because, at these outreach programmes, midwives would have more time to attend to most individual and issues confronting them as pregnant women. However, waiting for information only at antenatal sessions would mean that the midwife has lesser time and would only attend to the general needs of her class. In connection with the study, some parts of Africa particularly in the rural communities, information is usually conveyed through songs, drama, role play, stories, town criers and women leaders (Anasi, 2012). For instance, in some parts of Nigeria, health workers use songs and dances to pass on health information to pregnant women as well as nursing mothers on maternal health during the antenatal clinic visits (Anasi, 2004).

Use of Source of information and level of education

This section discusses any relationships that exist between education of respondents and the various sources of information used. Education was in five (5) categories as; none, basic, senior high, tertiary and others. The sources considered were eight (8) as listed in the above section. It is believed that the decisions of people to look for information at certain places/sources is influenced by the level of education the individual has gotten. This was put to test in this section in order to provide proof for this assertion.

Several studies have established that women who are well educated are more likely to utilize skilled maternal services than their counterparts who never had the benefit of education (Kamal, 2009; Mpembeni et al, 2007; Fotso et al, 2009; Tsawe e al, 2015).

This study, however, is at variance with the position earlier researchers hold regarding the level of education of women and how it impacts the use of skilled maternal services. In terms of the doctor as source of information, it was concluded that there were no significant differences between education of respondents and the decision to seek information from a doctor. This simply means that one does not need to be educated in order to seek information from a doctor during pregnancy.

This is proven by the chi-square value of 2.87 which is insignificant at 1%, 5% and even at 10% significant levels. The same explanation goes for antenatal lessons to seek for information. The revelation from the chi-square analysis is that there was no significant difference between respondents' level of education and the decision to seek information from antenatal lessons. A simple interpretation was that the decision to use antennal lessons as a source of information was not dependent on whether one has been to school or not and that information that was provided for respondents was not determined by the level of education of the respondent.

Newspapers and popular magazines likewise, TV/Radio programmes also had no significant difference between them and the decision by respondents to use such sources. Overall, four (4) out of the eight (8) sources of information used by respondents were not used based on their levels of education.

In terms of those with education playing a role in the use of such sources, the internet, relatives/friends/peers; midwives/nurses and community visitations by midwives and/or nurses were significant. With a chi-squared value of 36.18, significant at 1%, the findings from the study established that there are significant differences between the level of education of pregnant women and the decision to use the internet as an information source. This has been established in earlier studies that, women who have higher education tend to utilize health information because they are able to read and understand the benefits of skilled maternal services and may also be exposed to the media which provides them with sufficient knowledge on the significance of skilled maternal services as well as where to get health information (Raghupathy, 1996; Mpembeni et al, 2007).

Another source that was tested and was reported to influence the decisions of pregnant women was relatives/friends/peers. A chi-squared value of 12.81 significance at 5% is indicative of the fact that there are significant differences between education and the choice of relatives/friends/peers as a source of information. For instance, a study done by Raghupathy, (1996) established that women who have attained higher levels of education have greater decision-making power when it comes to their health information utilisation which increases their level of confidence when it comes to making decisions that affect their health and that of their child.

The choice of midwives/nurses as a source of information was found to be influenced by education of respondents. The chi-squared test established that a significant difference existed between

education and midwives/nurses with a test value of 15.91 significant at the 1% level. It was also established that there is a relationship between community visitations by midwives/nurses and the levels of education of pregnant women. The general conclusion from this analysis is that two (2) of the top three (3) sources of information have some relationship with the levels of education of the pregnant women interviewed at all the hospitals.

Rating sources of information

This was done to examine how respondents rated the sources of information in the three hospitals. The scale for this measurement was a 4-point Likert scale from highly important to don't know. At the Tamale Teaching Hospital, the majority 93(62.84%) of the respondents who attended antenatal lessons rated it as highly important, with 25(16.89%) giving it same ratings at the Tamale West Hospital. As stated earlier, the importance of information to a pregnant woman is crucial if they have to deliver safely and also to deliver healthy babies. Information from midwives/nurses was rated by 91(61.48%) of pregnant women. This was expected because the source of information during pregnancy is equally as important as the information that was given. The above two sources were rated as highly important sources of information. Some of the respondents across the hospitals rated the two sources as important with very few ratings it as not important. The argument can be made for these two that any information that authorities want to pass to pregnant women should be through these two media.

In terms of those sources rated as not important in all three (3) hospitals, visitations by midwives and newspapers and popular magazines were the two most ranked. More than 90% of the respondents rated visitations by midwives/nurses as not important or simply could not rate it at all. This was observed at all the three hospitals with rates at 68.92% at TTH, 22.30% at TWH and 2.70% at the SDA hospital. Also, newspapers and popular magazines were rated the same with more than 90% rating it as not important.

Evaluating the sources of information by pregnant women

Antenatal lessons were reported as highly important information source. With the least overall mean score of 2.09, 122 pregnant women considered this source as a highly important source of information during pregnancy. Midwives and/or nurses was the second source reported as highly important. As stated earlier, the information that was given at antenatal lessons is as important as

the person who is delivering the information. Thus, the midwives are equally important as the lessons taught even though per the evaluation of sources the antenatal lesson was the topmost source of health information for the pregnant women. Medical doctors who come into play when complications arise during antenatal sessions or at any trimester of pregnancy were rated as the third most important information source. This was expected, as it would have been surprising had they been rated higher than antenatal lessons and midwives, taking into account their relatively fewer encounters with the respondents. The least important of the sources was seeking information from newspapers and popular magazines. It is impossible or not so common to purchase newspapers and magazines on a daily or weekly basis. This is with the assumption that relevant information for pregnant women was scarcely or not contained in it. Thus, this source in our part of the world is mostly loaded with celebrity news and other social matters that would sell quicker than would contain information for pregnant women. This source had the least mean score of 6.31 the 8th ranked source.

Conclusion

The importance of information behaviour of pregnant women cannot be overlooked. Despite the numerous challenges faced by pregnant women in Tamale metropolis, the findings of the research revealed that if there is sufficient budgetary allocation in place and there is adequate staff to cater for the health needs of pregnant women, then the issue of inadequate health information provision will be minimised or halted. It is important that critical attention be paid to the behaviour of pregnant women with respect to their information behaviour.

It was realized that the limited number of midwives and nurses at the three hospitals contributed to the poor dissemination of health information to the pregnant women. The existing staff were not able to discharge their duties effectively due to the patient to midwife and doctor ratio. The patients or pregnant women outnumber the staff (health professionals); therefore, it is important that government recruit more midwives to address the problem of inadequate staff and where staff are overpopulated, Ghana Health Service can transfer or reshuffle some of these staff to facilities where their services are most needed.

A section of pregnant women suggested that the issue of information provision or access to certain issues was a problem. Whom to go to and where to access health information was a problem. It is recommended that authorities of the various hospitals set aside an office(reception) occupied by a

health professional at the entrance of all antenatal clinics and this staff will solely be in charge of guiding patients as to where to go to when they need information. This when done would encourage pregnant women to interact without fear and can as well boost the confidence level of some pregnant women who feel intimidated upon seeing these midwives and nurses.

Also, health professionals should explore the potential of mobile technologies, including apps, SMS, and voice-based systems, as platforms for delivering targeted and timely pregnancy-related information to women, considering their accessibility and usability.

In future in-depth studies should be conducted in diverse geographical, cultural, and socioeconomic contexts to identify region-specific information needs and preferences among pregnant women. This approach will yield nuanced insights for tailored interventions. Also, investigate the digital health literacy of pregnant women, focusing on their ability to critically assess online health information. This research could help design educational programs to enhance their digital health literacy skills.

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