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Factors influencing the survival of under-five children among women visiting government health care facility in semi-urban communities in Nigeria

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Abstract: Background: Child survival is low in Nigeria and often related to the poor health practices of mothers and other exogenous factors. The various factors affecting survival chance of under five children have not fully been studied. So there is need to enhance child survival in order to achieve the SDG 3. **Objective**: The study seeks to examine factors that have promoted child survival among mothers using institutional health facilities in Ado-Odo/Ota, Ogun State Nigeria. **Methods: S**tudy was based on a 2017 cross-sectional survey on determinants of child morbidity and survival in Ogun State by Covenant University Public Health and Wellbeing Research Cluster. Descriptive statistics and regression analyses were applied on 1350 respondents that constituted the sample size. All analysis was done on STATA Version 12. **Results**: Knowledge of child preventable diseases ($X^2 = 8.9978$; $P = 0.003$); birth spacing ($X^2 = 31.7293$; $P = 0.000$); duration of breast feeding ($X^2 = 14.3756$; $P = 0.002$) and immunization status ($X^2 = 18.8541$; $P = 0.000$) showed significant influence on child survival. **Conclusion and Recommendation**: Mothers'

ABOUT THE AUTHORS

Prof. Shalom Chinedu is an expert in the field Biochemistry. His research interests are in the areas of natural antimicrobials, body weights and health implications. A member of the sponsored research study.

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PUBLIC INTEREST STATEMENT

A Nation's healthcare services are crucial for the well-being of the citizens, including children. Incidentally, Nigeria is a country with a high U-5mortality rate, poor health status, high poverty level, low literacy rate, lack of potable water supply, poor sanitation, inadequate housing, traditional behaviors and harmful cultural practices. Numerous factors influence the survival of under five children in Nigeria and understanding the drivers of survival among children will lead to better insights and informed policy interventions that will improve their well-being and accelerate the achievement of SDG 3. The study was semi-urban based and examined the factors influencing child survival among 1350 women using public health facilities. The study unveiled that knowledge of child preventable diseases and maternal-child care practices (birth spacing, duration of breast feeding, and immunization) as the drivers of child survival and offer recommendations that will improve the survival rate of U-5 children.

knowledge of child preventable diseases and factors related to maternal child care practices were found to influence child survival. From the findings the study recommends women empowerment and health education for both mothers and their spouses.

Subjects: Cultural Studies; Sociology; Gender Studies - Soc Sci

Keywords: Child survival; government healthcare facility; under-five children; Nigeria; SDGs

1. Introduction

The increase knowledge and practice of mothers on child survival strategies will lead to improvement on child survival and realization of SDG 3 targets by 2030. Under 5 year Children have little or no resistance to sickness and diseases due to their low level of immunity (Adepoju, 1984; Adepoju, Akanni, & Falusi, 2012). Although, childhood diseases are reported to be preventable, if timely and adequate measures are taken, the rate of mortality among these groups is extremely high in most developing countries (UNICEF, 2015; USAID 2014). The health status of any nation to a great extent is directly related to the care given to both women and children, leading to their high level of survival. Globally 5.9 million children under the age 5 died in 2015 and most of these deaths were from preventable causes (UN Inter Agency Group for Child Mortality Estimation Report [UNIGME], 2017, 2018). Studies have shown that at least a child dies out of every 12 births before reaching age 5 years in sub-Saharan Africa countries unlike the loss of one child out of every 147 births in developed countries (United Nations [UN], 2015; UNICEF, 2017; UNIGME, 2018; United Nations Population Fund.According to NDHS 2013, the child mortality in Nigeria is 128 per 1,000 live births (National Population Commission [NPC], 2014), which is equally deplorable, despite health interventions that have been put in place. In addition, one out of the several Sustainable Development Goals (UN-SDG)—i.e., Goal 3, is to make sure that citizens of the member state countries are healthy and people of all ages are in good health (Samuel, 2017; UN, 2015). Incidentally, child survival in Nigeria is very low, perhaps due to poor use of government health facility. According to NPC (2014) the use of government health facility in Nigeria is low as 36% of women had their children delivered in government health facility.

In developing countries pregnancy-related complications (PRCs) cause great havoc with respect to the deaths of pregnant mothers and their babies. And most of these deaths could be prevented with access to institutional care before, during and after pregnancy or child birth. Countries in sub-Saharan Africa including Nigeria, have high child morbidity and mortality and consequentially the health care delivery services also poor, particularly in rural areas (Chol, Negin, Agho, & Cumming, 2019; Ghimire et al., 2019). Using government health facility by women during pregnancy and child birth ensures healthy mother and healthy child. It also promotes, protect and maintain the health of the mother during pregnancy, reduce maternal and child complications, morbidity, increases knowledge of personal hygiene, environmental sanitation, child care and mother craft education (Ghimire et al., 2019).

However, women's access to health care services is constrained by several factors ranging from time spent on child care, domestic chores, job responsibilities, cultural tenets, behavior of health personnel, and quality of care, distance and cost of service. Despite many interventions on child mortality such as World Summit for Children 2000, Sustainable Development Goals 2015 among others, the level of child survival is still at undesirable rate and millions under five children die mostly from vaccine preventable diseases every year. While it is important to identify the medical or health factors that can lead to poor child survival, it is equally significant to identify those non-medical and behavioral factors that are associated with the survival chances of children. According to UNFPA (2018), despite major gains in child survival rates over the past two decades, child mortality persists. The objective of the study, therefore, was to examine the factors influencing

child survival in the study area. Thus, the study is imperative for designing health policies and breakthroughs on the health and wellbeing of under-five children.

2. Review of literature

The low rates of child survival are related to poor subscription of health facilities by nursing mothers, particularly the ones owned by the government, lack of access to health care services and inadequate knowledge about health services by mothers. The past few decades have witnesses increasing concern among developing countries including Nigeria with poor state of health and abysmal under-five mortality of children. A very important factor contributing to morbidity and mortality of the vulnerable groups in developing countries is restricted access to correct and appropriate utilization of institutional care services even when they are available. Some of the causes of deaths that claim the lives of mothers during pregnancy or delivery are avoidable (Ozumba & Nwogu-Ikojo, 2008). Some scholars have found that wide spread poverty, low level of education, inaccessibility of health care services, un-booked emergencies were among non-medical factors retarding maternal health and child survival in Nigeria apart from medical factors (Akokuwebe & Okafor, 2015; Azuh et al., 2017).

Furthermore it has been confirmed that low patronage of health facilities by pregnant women for antenatal and for delivery led to the high number of maternal deaths in Nigeria (Ayotunde, Martin, & Olusola, 2015) with ripple effects on child survival (Azuh, 1994). Findings from the 2013 Nigeria Demographic and health survey showed that, about 61% of pregnant women in Nigeria were attended to by professional and skilled healthcare providers during pregnancy, with close to 51% out of the number who reported that they were able to make at least four visits. It is therefore surprising to know that only 36% eventually delivered at these facilities, while 64% reported that they at home (Azuh & Azuh, 2015; NPC, Nigeria and ICF, 2014; World Health Organization [WHO], 2015).

According to Disu (2010), most births in Nigeria still occur in unorthodox facilities, because of low investment of government in public health care among other factors. Socio-economic and medical factors such as low maternal educational level, low proportion of deliveries attended by skilled personnel, poverty, lack of antenatal care, and delays in treatment of complications of pregnancy and adverse cultural practices were identified as factors influencing mortality among children in Nigeria (Awunyo, 2010; Disu, 2010).

Adejumo, Suleiman, Okagbue, Oguntunde and Odetunmibi (2017) recently revealed a scary statistics on still births and caesarean situation in Nigeria, reflecting low utilization of modern medical care among most households in the nation (Azuh et al., 2017). The situation is very poor in rural areas where poverty and lack of functional health care facilities exacerbate the already worse condition. Providing women with antenatal care (ANC) can improve prospects for safer pregnancy and child survival. It has been noted that ANC offers pregnant women access to relevant information about their health and that of their baby including a cordial relationship between them and the healthcare providers (Adedini, Odimegwu, Bamiwuye, Fadeyibi, & De Wet, 2014; Magoma, Requejo, Campbell, Cousens, & Filippi, 2010; Nikiema, Beninguisse, & Haggerty, 2009; Wablembo & Doctor, 2013). Studies have shown that, women with poor socio-economic status limit the achievements of the health and population intervention programs at the national level, hence, women in such category are unable to seek health care from qualified professionals (Furuta & Salway, 2006; Igbodekwe et al., 2014; Odewale, Oladosun, & Amoo, 2016; Unumeri, Babatunde, & Oginni, 2015). While a report by UNICEF (2017) showed that SSA countries have the highest rates of child mortality in the world, it has equally been estimated that by 2050, 60% of under-five deaths will take place in SSA (UNIGME, 2018).

Hence, to achieve the SDG Goal 3, in the fast approaching period of 2030, mothers' utilization of health care services at this stage is very crucial and such services which are often obtained in healthcare facilities include; timely child immunization, adequate knowledge and use of family planning, received adequate information on the right proportion and type of nutrition for their

children, and appropriate timing of antenatal and postnatal visits (Samuel, 2017; (NPC [Nigeria] and ICF, 2014). This study, therefore identify and evaluate those factors that has promoted child survival in Ado-odo/Ota local government area among nursing mothers utilizing government or public healthcare facility for the purpose of emphasis and policy implementation such that will help to achieve the target of reduction to 25 deaths per 1,000 live births.

3. Materials and methods

The study used a cross-sectional data from the 2017 Covenant University Public Health and Wellbeing Research Cluster survey on determinants of child morbidity and survival in Ogun State, Nigeria. The targeted audience was pregnant women who attended antenatal care and had at least one child in the last 3 years preceding the survey was included.

3.1. Study participants

The study was a cross-sectional study and multi-stage sampling technique was employed to select respondents from the study area. Ado-odo/Ota local government area was the study area and the selection of this LGA was purposively out other 20 LGAs in Ogun State. This was the first round of selection. In the second round of selection, all the 16 political wards were listed and 12 political wards (75%) were selected at random (Azuh et al., 2017). And from the selected political wards, again all the health facilities were listed and at random, 12 health facilities were selected at random, eventually one primary health care center was selected randomly through lottery method. Overall, 1350 respondents constituted the sample size, which is women who have met the inclusion criteria were interviewed through the instrumentation of the questionnaire. From the total sample of 1350 respondents, we re-selected a smaller sample of 545 pregnant women/nursing mothers who delivered their last child in a government healthcare facility.

3.2. Data measurements

The data collection instrument was pretested and questions modified to perfect its reliability, in addition to Cronbach Alpha index which yielded 0.65. The data collection instrument was pretested and questions modified to perfect its reliability, in addition to Cronbach Alpha index which yielded 0.75. The research instrument was validated by two experts, a demographer and healthcare personnel. The nominal, ordinal and ratio data measurements were adopted in the questionnaire design. Cross tabulation method was used to explain associations between the explanatory variables and child survival while binary logistic regression analysis was employed at the multivariate stage. The significance of the variables in the analyses was set at 0.05 or 5%. All analysis was done on STATA Version 12.

3.3. Data collection

Structured questionnaires were used to obtained information on socio-economic characteristics of mothers as well as health care and behavioral practice of respondents with respect to child care practices.

3.4. Ethical consideration

This study was conducted under the permission and guidance of the Covenant University Center for Innovation and Development (CUCRID). All information obtained were only for research purpose and does not have any negative implications on the population being studied. The study has no bearing with animal, human or related tissues. Informed consent of participants was properly obtained. Respondents were educated on the importance and relevance of the research before information were elicited. Participants were not only informed that they could withdraw at any point of their choice, they were also guaranteed of their anonymity, privacy and confidentiality of information supplied.

4. Results

4.1. Description of respondents socio-economic and community characteristics

Table 1 shows the percentage distribution of the socio-economic and community characteristics of the respondents, i.e., nursing mothers who had children below the age of 5 years as at the period of the survey. From the table, a larger representation of the mothers in the study had secondary (35.1%) and post-secondary education (25.5%). Also, about 28.8% of the mothers had primary education which implied that most the women are literate.

Similarly, most of the fathers of the under-five children were reported to be more educated as 29.4%, 26.4% and 29.4% had secondary, post-secondary and professional educational attainments, respectively. A larger percent of the mothers were reported to be within ages 25–30 years (39.8%) and 31–40 years (40.6%).

Further, 59.6% of the women mentioned that their main source of drinking water was from a borehole while 14.3% and 11.9% reported that their main source of drinking was tanker-truck and covered well, respectively. Similarly, 84.2% used flush toilet for their sanitation, while 9.9% used pit latrine and 4.6% used bucket toilet. Forty-five percent of the respondents reported that they were self-employed as at the time of the survey, 16.7%, 15.1% and 10.8% were civil servants, private sector employees and traders, respectively. In the same vein with the occupation of the mothers, the fathers' occupation was mainly self-employment (35.6%), private sector employees (22.0%), civil servants (21.5%) and trading (13.9%).

Fifty percent of the respondents reported that they have a family size of 3–4 persons, 23.9% and 16.2% have a family size of 5–6 persons and 1–2 persons, respectively. An appreciable number of the women delivered their last child under the care and supervision of a trained healthcare professional, i.e., 65% were assisted by nurses/midwives and 32.3% were assisted by a doctor. More than half of the women reported that they have a cordial relationship with their healthcare provider and that the cost of treatment at their center was moderate or cheap. Lastly, 84.6% reported that all the children they have ever had were alive as at the time of the survey, while 15.4 mentioned they have lost at least one child before the survey.

4.2. Association between respondents and community characteristics by the survival status of the child

Table 2 shows the bivariate result of the socioeconomic and health characteristics of mothers using government healthcare centers. The result revealed that out the total percent of mothers who had knowledge of child preventable diseases only 12% reported cases of child mortality unlike 22.6% cases reported by women who had no knowledge about child preventable diseases. There is a strong association between the knowledge about child preventable and experience of child mortality (Chi-square value = 8.998; P = 0.003). The proportion of deaths of under-age-five children was higher among those who had never received immunization (36.7%) at any point in time compared to their counterparts who had completed the required vaccines (13.0%) or at least received part of it (14.0%). Therefore, there is a strong relationship between the immunization status of a child and the chances of celebrating age 5 years (Chi-square value = 18.854; P = 0.000).

The duration of breastfeeding also showed a significant relationship with mortality experience. The result showed that children whose mothers breastfed for 6 months and above died less than children whose mothers breastfed for a period below 6 months (Chi-square value = 14.376; P = 0.002). Lastly, the number of years of birth spacing between the births of mothers had significant relationship with their chances of seeing their children celebrating fifth year birthday (Chi-square value = 31.729; P = 0.000).

The result further revealed that background variables such as the educational status of the father, the educational attainment of the mother, her occupation, marital status, religious

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Table 1. Percent distribution of respondents' socioeconomic and community characteristics

Variables	n = 545	%	Variables	n = 545	%
Mother's Educational Attainment			**Type of Dwelling**		
No education	6	1.1	Mud/Grass/Hut	10	1.8
Primary	157	28.8	One room	99	18.2
Secondary	191	35.1	Room and Parlor	157	28.8
Post-secondary	139	25.5	2/3-bedroom flat	258	47.3
Professional	52	9.54	Detached house/Mansion	21	3.9
Father's Educational Attainment			**No. of Persons living in the house**		
No education	33	6.1	1–2	88	16.2
Primary	48	8.8	3–4	273	50.1
Secondary	160	29.4	5–6	130	23.9
Post-secondary	144	26.4	7 and above	54	9.9
Professional	160	29.4	**Toilet facility**		
Mother's current age			Field/bush	7	1.3
20–24 years	83	15.2	Bucket toilet	25	4.6
25–30 years	217	39.8	Pit latrine	54	9.9
31–40 years	221	40.6	Flush toilet	459	84.2
41–44years	18	3.3	**Source of Water Supply**		
45 and above years	6	1.1	Tap	49	9.0
Religious Affiliation			Borehole	325	59.6
Christianity	375	68.8	Covered-well	65	11.9
Islam	158	28.9	River/Stream	28	5.1
Traditional worshippers	12	2.2	Tanker-truck	78	14.3
Marital Status			**Distance to Healthcare facility**		

(Continued)

Table 1. (Continued)

Variables	n = 545	%	Variables	n = 545	%
Single	16	2.9	Not far/Trekable	151	27.7
Married	507	93.0	Far but trekable	152	27.9
Divorced/Separated	11	2.0	Very far	226	41.5
Widow	11	2.0	Don't know	16	2.9
Mother's Occupation			**Assistance during the last birth**		
Not working	54	9.9	Doctor	176	32.3
Self employed	247	45.3	Nurses/Midwives	354	65.0
Civil/Public Servant	91	16.7	Traditional birth attendants	8	1.5
Private sector employee	82	15.1	Relatives	6	1.1
Farming	4	0.7	Other	1	0.2
Trading	59	10.8	**Cost of treatment at HC facility**		
Artisan	8	1.5	Very expensive	77	14.1
Father's Occupation			Expensive	164	30.1
Not working	25	4.6	Moderate	219	40.2
Self employed	194	35.6	Cheap	48	8.8
Civil/Public Servant	117	21.5	Very cheap	37	6.8
Private sector employee	120	22.0	**Behavior of workers at the HCF**		
Farming	5	0.9	Very cordial	158	29.0
Trading	76	13.9	Cordial	209	38.4
Artisan	8	1.5	Indifferent	55	10.1
Child is alive			Not cordial	85	15.6
Yes	461	84.6	Not very cordial	38	7.0

(Continued)

Table 1. (Continued)

Variables	n = 545	%	Variables	n = 545	%
No	84	15.4	**Immunization Status**		
Duration of Breastfeeding			Complete	346	63.5
Below 6 months	132	24.2	Not complete	150	27.5
6–9 months	245	45.0	No immunization	49	9.0
10–12 months	74	13.6			
Above 12 months	94	17.3			

HC: Healthcare; HCF: Healthcare facility

Table 2. Percent distribution of respondents' characteristics by child survival in Ado-odo/Ota			
	Child is Alive		
Variables	**Yes**	**No**	**Chi-square/P-value**
Knowledge about child preventable diseases			
Yes	338 (87.6%)	48 (12.4%)	8.998; $P = 0.003$
No	123 (77.4%)	36 (22.6%)	
Distance to Healthcare Facility			
Not far/trekable	124 (82.1%)	27 (17.9%)	2.403; $P = 0.493$
Far but trekable	131 (86.2%)	21 (13.8%)	
Very far	194 (85.8%)	32 (14.2%)	
I don't know	12 (75.0%)	4 (25.0%)	
Mother's Educational Attainment			
No education	6 (100%)	0 (0%)	6.094; $P = 0.192$
Primary	136 (86.6%)	21 (13.4%)	
Secondary	154 (80.6%)	37 (19.4%)	
Post-secondary	123 (88.5%)	16 (11.5%)	
Professional	42 (80.8%)	10 (19.2%)	
Mother's Occupation			
Not working	44 (81.5%)	10 (18.5%)	9.702; $P = 0.138$
Self employed	204 (82.6%)	43 (17.4%)	
Civil/Public Servant	80 (87.9%)	11 (12.1%)	
Private Sector employee	77 (93.9%)	5 (6.1%)	
Farming	3 (75.0%)	1 (25.0%)	
Trading	46 (78.0%)	13 (22.0%)	
Artisan	7 (87.5%)	1 (12.5%)	
Religious Affiliation			
Christianity	326 (86.9%)	49 (13.1%)	6.563; $P = 0.038$
Islam	124 (78.5%)	34 (21.5%)	
Traditional worshippers	11 (91.7%)	1 (8.3%)	
Father's Educational Attainments			
No education	24 (72.7%)	9 (27.3%)	7.783; $P = 0.100$
Primary	40 (83.3%)	8 (16.7%)	
Secondary	132 (82.5%)	28 (17.5%)	
Post-secondary	121 (84.0%)	23 (16.0%)	
Professional	144 (90.0%)	16 (10.0%)	
Mother's Marital Status			
Single	15 (93.8%)	1 (6.3%)	5.990; $P = 0.112$
Married	431 (85.0%)	76 (15.0%)	
Divorced/Separated	8 (72.7%)	3 (27.3%)	
Widowed	7 (63.6%)	4 (36.4%)	
Current Age of Mother			
20–24	69 (83.1%)	14 (16.9%)	2.789; $P = 0.594$
25–30	179 (82.49%)	38 (17.5%)	
31–40	191 (86.4%)	30 (13.6%)	

(Continued)

Table 2. (*Continued*)			
	Child is Alive		
41–44	16 (88.9%)	2 (11.1%)	
45 and above	6 (100.0%)	0 (0.0%)	
Immunization status of the last child			
Complete	301 (87.0%)	45 (13.0%)	18.854; *P* = 0.000
Not complete	129 (86.0%)	21 (14.0%)	
No immunization	31 (63.3%)	18 (36.7%)	
Duration of breastfeeding			
Below 6 months	106 (80.3%)	26 (19.7%)	14.376; *P* = 0.002
6 – 9 months	216 (88.2%)	29 (11.8%)	
10 – 12 months	54 (73.0%)	20 (27.0%)	
Above 12 months	85 (90.4%)	9 (9.6%)	
			3.660; *P* = 0.454
Cost of treatment at the health facility			
Very expensive	67 (87.0%)	10 (13.0%)	
Expensive	135 (82.3%)	29 (17.7%)	
Moderate	191 (87.2%)	28 (12.8%)	
Cheap	39 (81.3%)	9 (18.8%)	
Very cheap	29 (78.4%)	8 (21.6%)	
Birth spacing between the previous and last child			
Below 6 months	183 (88.0%)	25 (12.0%)	31.729; *P* = 0.000
6 – 12 months	57 (64.8%)	31 (35.2%)	
13 – 18 months	81 (88.0%)	11 (12.0%)	
19–24 months	55 (88.7%)	7 (11.3%)	
25 months and above	85 (89.5%)	10 (10.5%)	

affiliation and her current age as at the time of the survey had no significant association with the survival of the under-five children in the study area. Hence, only the independent variables that has significant association with the dependent variable at the bivariate stage as presented in the cross tabulation Table 2 above was included in the binary logistic regression analysis in Table 3.

4.3. Factors determining the survival status of under-five children in Ado-Odo/Ota

Table 3 presents the binary logistic regression analysis results of the independent variables that hold significant association with the survival status of under-five children at the bivariate stage. Findings from the table shows that the immunization status of the child is a strong determinants of his/her survival status (*P*-value = 0.006). The result showed that children who were not immunized as at the time of the survey were 0.34 times less likely to survive when compared with their counterparts who had complete immunization and had the odds ratio of 1.00 to survive.

Similarly, children raised by mothers who had no knowledge of preventable diseases were less likely to live to see fifth year birthday unlike those raised by mothers who had knowledge about child preventable diseases (OR = 0.58; *P*-value = 0.048). Further, Children who were breastfed up till 6–9 months lived to celebrate their fifth year birthday than their counterparts who were breastfed for a duration of period that was less than 6 months (OR = 2.03; *P*-value = 0.031).

Table 3. Determinants of child survival among mothers using government/public health facility in Ado-Odo/Ota		
Variables	**Odds ratio**	***P*-value**
Duration of breastfeeding		
Below 6 months	RC	
6 − 9 months	2.03	0.031
10 − 12 months	0.91	0.795
Above 12 months	2.08	0.094
Immunization of the last child		
Complete	RC	
Not complete	1.02	0.939
No immunization	0.34	0.006
Knowledge about child preventable diseases		
Yes	RC	
No	0.58	0.048
Birth spacing between the previous and last child		
Below 6 months	1.12	0.779
6 − 12 months	0.26	0.001
13 − 18 months	0.92	0.858
19–24 months	0.85	0.757
25 months and above	RC	
Religious Affiliation		
Christianity	RC	
Islam	0.40	0.001
Traditional worshippers	3.00	0.350
Constant	10.48	0.000

Children of mothers who practiced shorter birth spacing of 6–12 months reported to had lesser chances of survival status compared to children who mothers waited for 25 months or more before getting pregnant of them (OR = 0.26; *P*-value = 0.001). Lastly, the affiliation of the respondents was found to be a strong determinant of the survival status of their children (OR = 0.40; *P*-value = 0.001).

5. Discussion

The findings of the study will accelerate the knowledge base of mothers on the importance of health care practices which holds great potential for improvement of child survival leading to the achievement of SDG 3 by 2030. It can be established from the study that factors such as immunization status of the child, the duration of period in which the child was breastfed, the birth spacing between the previous child and the current child, the knowledge of the mother about preventable diseases and her religious affiliation were found to be strong determinants of the survival status of children under-age-five whose mothers uses government healthcare facilities in Ado-odo/Ota. The findings from this study revealed that socio-economic factors such as; father's educational attainments, his occupation, maternal education status, her occupation, marital status and her current age have little or no effects on the survival status of under-five children in Ado-odo/Ota.

From the frequency table a tangible number of the mothers (i.e., 461 out of 545 women—84.6%) reported that they have never lost any child before the time of the survey. This can be linked to the high percentage of women (63.5%) who mentioned that their children had completed the

immunization procedures as at the time of the survey. Hence, it can be established here that, mothers in Ado-odo/Ota usually ensures that their children take all the complete immunization doses and injections as recommended for children within ages 0–4 years by WHO.

Also, the authors of this paper assumed that since about 64% of the women reported complete immunization of their children and thereby must have been privy to listen to health talks by the matrons, nurses, community health workers, etc., on immunization days, so therefore they are at advantage to have knowledge of preventable diseases of under-five children.

Similarly, as shown in Table 1, more than 80% of the women reported that they delivered their last child under the supervision of a trained medical doctor, nurses or midwives. This implied that they must have had a regular antenatal classes or visits during pregnancy and hence, must have been informed about the benefits of breastfeeding their babies. The impact of this was observed in the results all through the stages of analyses, as about 45% of the women in Table 1, reported that they breastfed their children for a period of 6–9 months, also at the bivariate and multivariate stages it was found that children who were breastfed for minimum of 6 months had higher chances of survival than their counterparts who were breastfed for a period that was less than 6 months. Further, among other variables that had significant impact on under-five survival in the study area was birth spacing. Most of the women got pregnant to their current child within a period of less than a year after the delivery of their previous child, which put both the child and the mother at high risk of morbidity or mortality. Hence, this contributed to the current rate of low survival of children in Ado-odo/Ota.

Although, results from this study established some of the findings from other researchers such as Adedini (2013), Antai (2011), Samuel (2017), Oni (1996), Uddin, Hossain, and Ullah (2009), Ojewunmi and Ojewunmi (2012), Ogunjuyigbe (2004), Samuel and Oni (2018), Black and Liu (2012), Caldwell, (1979), Mondal, Hossain, and Ali (2009), Adetoro and Amoo (2014), Akombi, Agho, Renzaho, Hall, and Merom (2019), Agho et al. (2018), Omuemu and Adamu (2019), on the significance of immunization, duration of breastfeeding, birth spacing, etc., on the survival of under-five children, the authors will therefore, like to submit here that the factors identified as significant in the results of the analyses can be leverage upon by the government of Ogun State and the Local Government Management for more improvement in the survival status of children in Ado-odo/Ota Local Government Area. Hence, the general goal of reducing under-five mortality to 25 deaths per 1000 per live births by 2030 which is fast approaching for the country of Nigeria has a whole is gradually been achieved as policy makers in this area focus attention or intensify more efforts on these factors.

6. Conclusions and recommendations

The findings from this study may help government and stakeholders to design comprehensive and integrated interventions towards improving the level of child survival in the study area and by extension the entire country. The authors hereby conclude that attention should be placed on factors that have been found to have contributed to the increase in the survival status of under-five children as observed in the results. Government should subsidize the cost of health care services at the grassroots to increase patronage, create more awareness on the benefits of immunization, encourage longer period of breastfeeding and birth spacing, sensitize women more on the safety and importance of delivering their babies under the supervision of a trained healthcare professional, particularly for nursing mothers. The authors are of the opinion that if government can look at that direction, this will aid the achievement of the SDG Goal 3 in no time in the study area, in Ogun State and Nigeria at large.

7. Limitations of the study

Mothers do not like to talk about negative things about their children either dead or alive because their culture or religion discourage it. Since the study drew on primary data, as a result, there might be a tendency for underreported cases of morbidity or even death which might affect quality of the data.

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Citation information
Cite this article as: Factors influencing the survival of under-five children among women visiting government health care facility in semi-urban communities in Nigeria, Dominic E. Azuh, Shalom Chinedu, Olugbemisola W. Samuel, Akunna Azuh, Grace Joshua & Emmanuel O. Amoo, *Cogent Arts & Humanities* (2019), 6: 1686800.

References
Adedini, S. A., Odimegwu, C. O., Bamiwuye, S. O., Fadeyibi, O., & De Wet, N. (2014). Barriers to accessing health care in Nigeria: Implications for child survival. *Global Health Action*, 7(23499), 1–18. doi:10.3402/gha.v7.23499
Adedini, S.A., (2013). Contextual Determinants of Infant and Child Mortality in Nigeria.Doctoral Thesis submitted to the Faculty of Humanities, University of the Witwatersrand, Johannesburg, South Africa; In fulfillment of the requirements for the award of PhD in Demography and Population Studies September 2013.
Adejumo, A. O., Suleiman, E. A., Okagbue, H. I., Oguntunde, P. E., & Odetunmibi, O. A. (2017). Quantitative evaluation of pregnant women delivery status' records in Akure Nigeria. *Data in Brief*, 16, 127–134. doi:10.1016/j.dib.2017.11.041
Adepoju, A. (1984). Population dynamics and health in relation to primary health care. In J. C. J. O. Igene (Ed.), *Primary health care* (pp. pp. 61–68). Maiduguri: Ibadan University Press.
Adepoju, A. O., Akanni, O., & Falusi, A. O. (2012). Determinants of child mortality in rural Nigeria. *World Rural Observations*, 4(2), 38–45. Retrieved from http://www.sciencepub.net/rural
Adetoro, G. W., & Amoo, E. O. (2014). A statistical analysis of child mortality: Evidence from Nigeria. *Journal of*

Demography and Social Statistics, 1, 110–120. Obafemi Awolowo University Press.
Agho, K. E., Mukabutera, C., Mukazi, M., Ntambara, M., Mbugua, I., Dowling, M., & Kamara, J. K. (2018). Moderate and severe household food insecurity predicts stunting and severe stunting among Rwanda children aged 6–59 months residing in Gicumbi district. *Maternal & Child Nutrition*. doi:10.1111/mcn.12767
Akokuwebe, M. E., & Okafor, E. E. (2015). Maternal health and the implications for sustainable transformation in Nigeria. *Research on Humanities and Social Sciences*, 5(6), 1–13.
Akombi, B. J., Agho, K. E., Renzaho, A. M., Hall, J. J., & Merom, D. R. (2019). Trends in socioeconomic inequalities in child undernutrition: Evidence from Nigeria demographic and health survey (2003 – 2013). *PloS One*, 14(2), e021183. doi:10.1371/journal.pone.0211883
Antai, D. (2011). Regional inequalities in under-5 mortality in Nigeria: A population-based analysis of individual- and community-level determinants. *Population Health Metrics*, 9, 6. doi:10.1186/1478-7954-9-6
Awunyo, M. (2010). *Household practices that influence neonatal survival in the Asante- Akim North district of the Ashanti Region*. Kwame Nkrumah University of Science and Technology.
Ayotunde, T., Martin, E. P., & Olusola, O. (2015). Knowledge of causes of maternal deaths and maternal health seeking behaviour in Nigeria. *African Population Studies*, 29(2, Supplement), pp. 2101–2119.
Azuh, D. (1994). *Child survival under threat* (pp. 1–165). Delhi, India: B. R. Publishing Corporation.
Azuh, D., & Azuh, A. E. (2015). Gender influence on health care utilization among antenatal care women in Nigeria. *Case Studies Journal*, 4(5), 1–6.
Azuh, D. E., Azuh, A. E., Iweala, E. J., Adeloye, D., Akanbi, M., & Mordi, R. C. (2017). Factors influencing maternal mortality among rural communities in Southwestern Nigeria. *International Journal of Women's Health*, 9, 179–188. doi:10.2147/IJWH.S120184
Black, R. E., & Liu, L. (2012). *Global under five mortality: Where do we stand today?* Johns Hopkins, Bloomberg School of Public Health for the Child Health Epidemiology Reference Group of WHO and UNICEF.
Caldwell, J.C. (1979). "Education as a factor in Mortality decline: An examination of Nigerian data" *Population Studies*, 33(3), 395–414.
Chol, C., Negin, J., Agho, K. E., & Cumming, R. G. (2019). Women's autonomy and utilisation of maternal healthcare services in 31 Sub-Saharan African countries: Results from the demographic and health surveys, 2010–2016. *BMJ Open, 2019*, 9:e023128. doi:10.1136/bmjopen-2018-023128.
Disu, E. (2010). *Challenges of neonatal care in Nigeria: What solutions for child survival? Save the children, 2010*.
Furuta, M., & Salway, S. (2006). Women's position within the household as a determinant of maternal health care use in Nepal. In *International family planning perspectives* (Vol. 32, Number 1). New York, NY: The Guttmacher Institute.
Ghimire, P. R., Agho, K. E., Renzaho, A. M. N., Nisha, M. K., Dibley, M., & Raynes- Greenow, C. (2019). Factors associated with perinatal mortality in Nepal: Evidence from Nepal demographic and health survey 2001–2016. *BMC Pregnancy and Childbirth 2019, 19*, 88. doi:10.1186/s12884-019-2234-6

Igbodekwe, C. F., Oladimeji, O., Oladimeji, K. E., Adeoye, I. A., Akpa, O. M., & Lawson, L. (2014). Utilisation of modern contraceptive among women of childbearing age in resource constraint setting: Evidence from 2008 national demographic and health survey in Nigeria. *The Journal of Health Sciences*, 4(3), 72–78.

Magoma, M., Requejo, J., Campbell, O., Cousens, S., & Filippi, V. (2010). High ANC coverage and low skilled attendance in a rural Tanzania District: A case for implementing a birth plan intervention. *BMC Pregnancy Child Birth*, 10, 13. doi:10.1016/j.puhe.2007.04.018

Mondal, N. I., Hossain, K., & Ali, K. (2009). Factors influencing infant and child mortality: A case study of Rajshahi District, Bangladesh. *International Journal of Psychology and Behavioral Sciences 2013*, 3(1), 34–39.

National Population Commission [Nigeria] and ICF Macro. (2014). *Nigeria demographic and health survey 2013*. Abuja, Nigeria and Rockville, Maryland, USA: National Population Commission and ICF Macro.

Nikiema, B., Beninguisse, G., & Haggerty, J. L. (2009). Providing information on pregnancy complications during antenatal visits: Unmet educational needs in sub-Saharan African. *Health Policy and Planning, 24*, 367–376. doi:10.1093/heapol/czp017

Odewale, J. B., Oladosun, M., & Amoo, E. O. (2016). Fertility desire and contraceptive use among women in Nigeria. *3rd International conference on African development issues*. ISSN: 2449-075X.

Ogunjuyigbe, P. O. (2004). Under-five mortality in Nigeria: Perception and attitudes of the yorubas towards the existence of "*Abiku*". *Demographic Research, 11*(2), 43–56. doi:10.4054/DemRes.2004.11.2

Ojewunmi, T. K., & Ojewunmi, J. S. (2012). *Trends in infant and child mortality in Nigeria: A wake-up call assessment for intervention towards achieving the 2015 MDGs*.

Olumide, Y. M., & Odubanjo, M. O., (2009). Reducing child mortality in Nigeria. *Workshop summary. The Nigerian academy of science forum on evidence-based health policy making*.

Omuemu, V. O., & Adamu, S. A. (2019). Assessment of breastfeeding knowledge and practices among working mothers in the federal capital territory Nigeria. *International Journal of Community Medicine and Public Health, 6*(1), 20–29. doi:10.18203/2394-6040.ijcmph20185222

Oni, G. A. (1996). Infant feeding practices, socio-economic conditions and diarrhoeal disease in a traditional area of Urban Ilorin, Nigeria. *East African Medical Journal, 73*(5), 283–288.

Ozumba, B. C., & Nwogu-Ikojo, E. E. (2008). Avoidable maternal mortality in Enugu, Nigeria. *Public Health, 122*, 354–360.

Samuel, G. W., (2017). *Proximate determinants: The pathways of influence of underlying factors on under-five mortality in Nigeria* (A Doctoral Thesis submitted to demography and social statistics department). Covenant University, Ota, Nigeria.

Samuel, G. W., & Oni, G. A. (2018). Changing levels and patterns of under-five mortality: Empirical evidence from Nigeria demographic and health survey. *Covenant University Journal of Psychology, 2*(1), 1–9.

Uddin, M., Hossain, M., & Ullah, M. O. (2009). Child mortality in a developing country: A statistical analysis. *Journal of Applied Quantitative Method*, 4, 3.

UN Inter Agency Group for Child Mortality Estimation Report. (2017). *Levels and trends in child mortality*. New York, NY: UNICEF.

UN Inter Agency Group for Child Mortality Estimation Report. (2018). *Levels and trends in child mortality*. New York, NY: UNICEF.

UNICEF. (2015). Levels and trends in child mortality: Report 2015. *Estimates developed by the UN Inter-agency Group for Child Mortality Estimation*.

UNICEF. (2017). *Levels and trends in child mortality. Report 2017, estimates developed by the UN Inter-agency Group for Child Mortality Estimation*. New York, NY: Author.

United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. Author. Retrieved from http://www.un.org/ga/search/view_doc.asp?symbol-A/RES/70/1&Lang = E

Unumeri, G. S., Babatunde, I., & Oginni, A. A. (2015). Contraceptive use and its socio-economic determinants among women in North-East and North-West regions of Nigeria: A comparative analysis. *African Population Studies., 29*, 2.

USAID. (2014). Acting on the call: Ending preventable child and maternal deaths. Retrieved from https://www.usaid.gov/ActingOn The Call/acting-call2014.

Wablembo, S. M., & Doctor, H. V. (2013). The influence of age cohort differentials on antenatal care attendance and supervised deliveries in Uganda. *Journal of Nursing Education and Practice*, 101–110. doi:10.5430/jnep.v3n11p101.

World Health Organization. (2015). Trends in maternal mortality: 1990 to 2015. In *Estimates developed by WHO, UNICEF, UNFPA, World Bank and UN population division*. Geneva: Author.

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