Original Research Article

Exploring the Impact of Socio-Demographic Variables on Maternal Healthcare Accessibility among Women of Reproductive Age in Zamfara State

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Abstract

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Nigeria's maternal mortality ratio (MMR) stands at 814 per 100,000 live births, highlighting a stark contrast with developed countries where the ratio is significantly lower at 1 in 4900. This places Nigerian women at a substantially higher risk, with a 1 in 22 chance of maternal death during pregnancy or childbirth. Access to quality maternal healthcare is severely hampered by various socio-demographic factors such as education, income, occupation, and geographical location. Zamfara State, in particular, ranks poorly on these indices, with the highest rates of out-of-school children and women lacking formal education, alongside a significant proportion of impoverished and vulnerable individuals. These socioeconomic challenges exacerbate barriers to maternal health services for women in Zamfara State. Addressing these underlying determinants is crucial for improving maternal health outcomes in the region. This study, focusing on women of reproductive age in Zamfara State, employed the Social Determinants of Health Theory to underscore that health outcomes are shaped by societal conditions and policies. The research involved 400 respondents, with 382 completed questionnaires analyzed using SPSS Version 20. Key findings emphasized that higher levels of education and income significantly enhance willingness and access to maternal healthcare services among women in Zamfara State. The study recommends targeted interventions including improvements in healthcare infrastructure, enhanced transportation networks, adequate staffing of facilities, and addressing security challenges in high-risk areas. Additionally, tailored educational and awareness programs are essential, particularly in communities with Quranic education, to dispel misconceptions about maternal healthcare and encourage service utilization. Government and NGOs are urged to create economic opportunities that promote financial independence and ensure affordable healthcare services for women, thereby contributing to improved maternal health outcomes in Zamfara State.

Keywords : Education ; Health care services; Maternal mortality ; Maternal Mortality Ratio; Sociodemographic indices.

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Introduction

The health and welfare of women play a vital role in the overall economic, social and cultural dynamics of families, communities, and society. The significance of women's health in society and its profound

impact extends beyond individuals to encompass the broader societal fabric [1]. This recognition stems from the pivotal roles women assume as mothers, nurturers, counselors, and sometimes breadwinners within families and communities [1]. Various studies have demonstrated that the well-being of women and their offspring leads to the emergence of more productive and educated communities [2]. The well-being of women and girls is a matter of particular concern due to the prevalence of discrimination stemming from certain obnoxious sociocultural factors in many societies [3]. Conversely, the passing of a mother leads to notable deteriorations in the health, nutrition, education, and economic well-being of both her family and community [4]. Given the widespread impact of these consequences, the health of women deserves urgent attention as a crucial public health imperative, necessitating prioritization by leaders across various sectors [1].

In spite of the importance of the health of women of reproductive age, it has be documented that close to 800 women die daily due to preventable factors linked to pregnancy and childbirth [3]. This figure translated to a maternal death occurring nearly every two minutes throughout the year. From 2000 to 2020, the global maternal mortality ratio (MMR), representing the number of maternal deaths per 100,000 live births, decreased by approximately 34% [3]. Nearly 95% of all maternal deaths in 2020 took place in low and lower middle-income countries [3]. In 2020, Sub-Saharan Africa and Southern Asia collectively represented approximately 87% (253,000) of the estimated global maternal deaths [3]. Specifically, Sub-Saharan Africa accounted for roughly 70% (202,000) of these deaths, while Southern Asia contributed around 16% (47,000) [3]. The implication of such data is that Sub-Saharan Africa and Southern Asia face disproportionate burdens of maternal mortality compared to other regions of the world. These two regions collectively account for the vast majority (87%) of global maternal deaths, highlighting significant challenges in maternal healthcare access, quality, and outcomes [3].

Available data indicate that as at 2019, Nigeria's maternal mortality ratio (MMR) stood at 814 per 100,000 live births [5]. When contrasted with developed countries, where the lifetime risk of maternal mortality is estimated at 1 in 4900, Nigerian women face a much higher risk, with a 1 in 22 chance of dying during pregnancy, childbirth, postpartum, or post-abortion [6]. These statistics signify significant disparities in maternal health between Nigeria and developed countries. The high MMR in Nigeria suggests challenges in access to quality maternal healthcare, contributing to a considerably higher risk of maternal mortality for Nigerian women as against those in developed nations.

In Zamfara State, data have shown that Maternal Mortality Ratio (MMR) stands at 1,100 deaths per 100,000 live births [7]. This statistics portends a high risk for mothers during childbirth or pregnancy-related complications. Several socio-demographic factors such as education, income, occupation and

geographical locations significantly contribute to maternal mortality. There is an intricate relationship between educational attainment and maternal health outcomes. Individuals with lower levels of education often face significant barriers to accessing vital information about reproductive health, resulting in a limited understanding of contraception, family planning, and the importance of prenatal care [8, 9]. Moreover, inadequate education can impede women's ability to effectively navigate the healthcare system, leading to reduced decision-making autonomy in matters related to their reproductive health [10]. Women employed in certain sectors, such as agriculture or informal work; confront unique obstacles that heighten their vulnerability to maternal health risks [11]. In agricultural settings, for instance, women may be exposed to harmful pesticides, heavy machinery, and strenuous physical labor, all of which can jeopardize their health during pregnancy [12].

Geographic barrier also plays a critical role in limiting access to maternal healthcare services, especially in rural or remote areas where healthcare infrastructure is often lacking. In rural or remote regions, the distance between communities and healthcare facilities can be substantial, making it difficult for pregnant women to access prenatal care and skilled birth attendants [13]. In many cases, the challenge of rugged terrains, lack of transportation infrastructure, and limited availability of public transportation options could be overwhelming [14]. As a result, pregnant women may face significant challenges in reaching healthcare facilities in a timely manner, particularly during emergencies or when labor begins unexpectedly [14].

Zamfara State is one of the states in Nigeria where women rank very low on major socio-economic indices. Available statistics indicates that Zamfara State has one of the highest rates of out-of-school children in Nigeria [15]. The State is further reputed as having the highest number of the poor and vulnerable people in Nigeria, with a record of 3,836,484 people from 825,337 households, according to data from the National Social Registry [16]. Therefore, the cumulative impact of these poor socio-economic indices undoubtedly hampers women's access to maternal health services in Zamfara State. For example, Bayelsa and Zamfara States had lowest percentage (25.9) of women who had 4 or more antenatal care in 2018 [17]. Addressing this issue requires a multi-faceted approach. It encompasses interventions to improve education infrastructure and enrollment, alleviate poverty through targeted social welfare programs, enhance healthcare infrastructure and services, and promote gender equality and women's empowerment. Only through concerted efforts to address the underlying socio-economic determinants can meaningful progress be made in advancing maternal health outcomes and reducing disparities in Zamfara State.

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Research Questions

i. What role does education play in influencing access to maternal healthcare services among women in Zamfara State?
ii. How does income level influence the accessibility of maternal healthcare services for women in Zamfara State?
iii. How does occupational status affect women's ability to access maternal healthcare services in Zamfara State?

Research Objectives

i. To examine the influence of education on access to maternal healthcare services among women in Zamfara State.
ii. To determine the effect of employment status on women's ability to access maternal healthcare services in Zamfara State.
iii. To assess the influence of income level on the accessibility of maternal healthcare services for women in Zamfara State.

Review of Literature on Socio-Demographic Factors and Access to Maternal Health Services

Understanding the intricate interplay of education, income, and employment is crucial in assessing their combined impact on access to maternal health services. These socio-economic factors collectively shape women's ability to seek and utilize maternal healthcare, thereby influencing maternal health outcomes. Education serves as a cornerstone in influencing access to maternal health services among women in developing nations, to the extent that it plays a pivotal role in improving maternal health outcomes [18]. Research consistently establishes a positive association between education levels and utilization of maternal health services, with educated women exhibiting a higher likelihood of seeking prenatal, delivery, and postnatal care [19]. Additionally, education enhances health-seeking behavior by augmenting awareness of maternal health risks and available healthcare services [19]. Conversely, women with lower educational attainment face formidable barriers to accessing maternal healthcare, including socioeconomic disadvantages such as poverty and lack of decision-making autonomy [20]. Addressing educational disparities is crucial for improving maternal health outcomes, necessitating policies promoting girls' education and integration of maternal health education into school curricula and community outreach programs [21].

Income plays a major role in determining access to maternal health services in developing countries, with lower-income households facing significant barriers in affording healthcare-related expenses [22] This often leads to delayed or forgone maternal healthcare seeking, thereby increasing the risk of adverse maternal outcomes [23]. Additionally, income level influences health-seeking behavior, with women from

higher-income households being more likely to access essential maternal health services compared to their lower-income counterparts [24].

Conversely, financial constraints may compel women from low-income households to seek care from informal or unskilled birth attendants, contributing to higher maternal morbidity and mortality rates [25]. Moreover, low-income women encounter multifaceted barriers to accessing maternal healthcare, including direct and indirect costs, as well as social determinants of health [26]. Income inequality further exacerbates disparities in maternal health outcomes, disproportionately affecting marginalized populations [27]. Addressing disparities in income in maternal health access necessitates comprehensive policy interventions, such as fee exemptions or conditional cash transfer programs, to mitigate financial barriers for low-income women [28]. Furthermore, investments in social protection programs, income-generation activities, and poverty alleviation measures are critical for improving access to maternal healthcare services among vulnerable populations [29].

Employment status also significantly influences access to maternal health services in low-income countries. Research indicates that women employed in informal sectors often face challenges in accessing maternal healthcare due to irregular incomes and lack of employer-provided health benefits [30]. Furthermore, it has been established that employment status affects the decision-making process regarding seeking maternal healthcare [31]. Women with formal employment are more likely to have financial resources and social support networks, enabling them to afford and access maternal health services compared to those in informal employment or unemployed [32]. The pregnant woman's educational attainment is a key factor contributing to the observed differences in the utilization of modern health care services within and across regions of any given nation [33]. Education is known to influence a woman's worldview, readiness to accept modern obstetric care capacity to participate in the decision making process on issues relating to her health economic independence and her overall health cultural capital [34, 35]. Overall, addressing disparities in education, income, and employment is crucial for improving maternal health outcomes, requiring comprehensive policy interventions and investments in social protection and poverty alleviation measures.

Theoretical Framework

This study adopted the Social Determinants of Health (SDOH) theory to explain how an individual's personal circumstances such as socioeconomic and cultural factors impact their health and well-being.

One of the early exponents of this theory was Rudolf Virchow who examined the role of poverty in generating a disease that led to a plague outbreak in Prussia [36]. The World Health Organization described Social determinant of health as the circumstances under which individuals are born, raised, reside, work, and age [37]. Social determinants such as unemployment, housing insecurity, and poverty can all lead to unfavorable health consequences [38]. In Zamfara State; socio-demographic factors such as education and income greatly influence access to maternal health services. Majority of the women in the State have limited education. For instance, fewer than 3 women in every 10, are literate in Zamfara State [39]**.** This is worrisome because several studies have shown that there is a substantial correlation between education and morbidity and life expectancy [40]. In terms of poverty, Zamfara State ranks as the 6th poorest state in Nigeria with a poverty headcount rate of 73.98% [41]. With this high level of poverty in the State, there is no doubt that financial constraints will be a serious impediment to access to maternal healthcare. Little wonder that Bayelsa and Zamfara States had lowest percentage (25.9) of women who had 4 or more antenatal care in 2018 [42]. This means that addressing access to maternal health services in Zamfara State requires holistic interventions to improve education, alleviate poverty, address cultural barriers, and strengthen healthcare systems.

Materials and Method

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The research utilized a cross-sectional survey approach, employing questionnaire as the primary data collection tool, supplemented by secondary data. The study was conducted in Zamfara State, Nigeria, comprising 14 Local Government Areas (LGAs): Anka, Bakura, Birnin-Magaji, Bukkuyum, Bungudu, Gummi, Gusau, Kaura-Namoda, Maradun, Maru, Talata-Mafara, Shinkafi, Tsafe, and Zurmi. Purposive and accidental sampling techniques were utilized. The choice of purposive sampling was because most of the local government areas in the state are under the firm grip of bandits. Therefore, purposive sampling was proposed to enable the researchers collect data only in places that were safe for fear of being kidnapped by bandits. The local government areas purposively selected were Gusau, Bungudu, Talata-Mafara and Tsafe .Accidental sampling was also used because it is quick and easy to implement because researchers can simply sample individuals who are readily available and willing to participate. Accidental sampling was also adopted because it requires deployment of limited resources compared to other sampling methods, making it cost-effective, especially for studies with low budgets.

The study population comprised 400 women aged 15 to 35 years, selected based on the criterion of being women of reproductive age residing in the study area. Four hundred (400) questionnaire copies were distributed by trained Research Assistants with social science background and familiar with the language and culture of the respondents. To overcome literacy barriers, the research assistants read out

questionnaire items in Hausa language when necessary and marked respondents' choices. Subsequently, 382 copies, representing 95.5%, were collected. The questionnaire data were coded and processed using the Statistical Package for Social Sciences (SPSS) Version 20.

Secondary sources of data such as textbooks, peer-reviewed journals; newspapers and gazetted records published between 2018 and 2024 with focus on the research topic were utilized. The choice of this inclusion criterion was to ensure that only the most recent data on the topic were used. Data collected through the questionnaire instrument were analyzed quantitatively using tables and percentages while secondary data were analyzed using descriptive and content analysis techniques to identify recurring themes and patterns from the selected study findings.

Results and Discussion

Table1: Socio-Demographic Characteristics of Respondents

Variable		**Frequency (f)**	**Percent (%)**
Age	15-20	12	3.1
	21-25	144	37.7
	26-30	147	38.5
	31-35	79	20.7
	Total	**382**	**100**
Marital Status	Married	278	72.8
	Single	13	3.4
	Widowed	65	17.0
	Divorced	26	6.8
	Total	**382**	**100**
Level of Education	No formal education	89	23.3
	Quranic education	145	38.0
	Primary education	71	18.6
	Secondary	48	12.6
	Post-secondary	29	7.6
	Total	**382**	**100**
Occupation	Petty trading	47	12.3
	Farming	130	34.0
	Business	74	19.4
	Civil servant	21	5.5
	Housewife	110	28.8
	Total	**382**	**100**
Annual Income	20,000	255	66.8
	50,000	105	27.5
	100,000	21	5.5
	200,000 & above	1	0.3
	Total	**382**	**100**
No. of Children	1-3	73	19.1
	4-6	134	35.1

	7 -9	124	32.5
	10 & above	51	13.4
	Total	**382**	**100**
Religion	Islam	370	96.9
	Christianity	12	3.1
	Total	**382**	**100**

Source: Field Survey, 2023

Data in table 1 reveal that the largest portion of participants, constituting 76.2% (291), fell within the age range of 21 to 30 years. Those aged 31 years and above comprised 20.7% (79) of the sample, while individuals aged 15 to 20 years made up 3.1% (12) of the group. This suggests that the majority of respondents were of reproductive age and likely in need of maternal health services. In terms of marital status, the majority, accounting for 72.8% (278), were married, contrasting with the smallest category, which consisted of 3.4% (13) who were single. This aligns with the National Demographic Health Survey (NDHS, 2019) findings indicating that 75% of women in Nigeria are either married or cohabiting.

Regarding education, the majority of respondents, comprising 38% (145), had Quranic education, while the smallest proportion of 7.6% (29), had post-secondary education. This suggests a prevalent lack of formal education among women in Zamfara State, and is also consistent with the National Bureau of Statistics' (NBS, 2019) report, which noted that 75.0% of women aged 15 to 49 in the State have no formal education. Occupationally, the majority, representing 34% (130) of respondents, were engaged in farming, while the smallest group, at 5.5% (21), were civil servants. The dominance of women in farming likely stems from the State's agricultural focus, as reflected in its motto, "Farming is our Pride."

Income distribution revealed that most women, comprising 66.8% (255), earned less than N20, 000 annually, with only 0.3% (1) earning N200, 000 or more. This coheres with data showing that the majority of Zamfara State's population falls within the lowest wealth quintiles. Also, the State ranks as the 6th poorest in Nigeria, with over 73% living below the global poverty line of less than 1 dollar a day. In terms of family size, the majority of women had between 4 and 9 children (67.3%), reflecting the high total fertility rate (TFR) of 6.6 in North West Nigeria, to which Zamfara State belongs. With regards to religious affiliation, an overwhelming majority,

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accounting for 96.9% (370), practiced Islam, with only 3.1% (12) being Christians. This reflects the predominance of adherents of the Islamic faith in Zamfara State

Table 2: Effect of Educational Level and Access to Maternal Healthcare Services

Level of education and barriers to utilization of maternal health facility

Level of Education	**Lack of medical facilities for ANC and PNC**	**Lack of means of transportation**	**Absence of medical personnel**	**Security threats posed by kidnappers/abductors**	**Total**
No formal education	8(10.5%)	24(31.6%)	18(23.7%)	26(34.2%)	76(21.9%)
Quranic education	17(12.1%)	8(5.7%)	46(32.9%)	69(49.3%)	140(40.3%)
Primary education	1(1.5%)	33(49.2%)	22(32.8%)	11(16.4%)	67(19.3%)
Secondary	4(10.3%)	17(43.6%)	3(7.7%)	15(38.5%)	39(11.2%)
Post-secondary	2(8.0%)	7(28.0%)	9(36.0%)	7(28.0%)	25(7.2%)
Total	**32(9.2%)**	**89(25.6%)**	**98(28.2%)**	**128(36.9%)**	**347(100.0%)**

Source: Field Survey, 2023

Data in table 2 categorize respondents based on their level of education into five groups: No formal education, Quranic education, Primary education, Secondary education, and Post-secondary education. From the elicited data the highest percentage of respondents who lacked access to Medical Facilities for ANC and PNC were those with Quranic education (12.1%), followed by those with no formal education (10.5%) while the least category were those with primary education (1.5%). In the area of Lack of Means of Transportation, Primary education respondents reported the highest percentage (49.2%), followed by Quranic education respondents (5.7%) while post-secondary education had the least (28.0%).

For the Absence of Medical Personnel, Quranic education respondents reported the highest percentage (32.9%), followed by primary education respondents (32.8%) while those with secondary education had the lowest with 7.7%. Lastly, on Security Threats Posed by Kidnappers/Abductors, Quranic education respondents reported the highest percentage (49.3%), followed by secondary education respondents (38.5%). These data suggest that educational level play a significant role in accessing maternal healthcare services, with lower educational levels

often associated with higher barriers. Addressing these barriers, especially for those with lower educational attainment, could be crucial in improving maternal healthcare access and outcomes.

Table 3: Income and Barriers to Utilizing Maternal Health care Facilities

Monthly income	Lack of medical facilities for ANC and PNC	Lack of means of transportation	Absence of medical personnel	Security threats posed by kidnappers/abductors	Total
N20,000	16(6.8%)	77(32.9%)	76(46.6%)	65(27.8%)	234(67.4%)
N50,000	16(16.7%)	13(13.5%)	17(17.7%)	50(52.1%)	96(27.7%)
N100,000	0(0.0%)	1(6.3%)	5(31.3%)	10(62.4%)	16(4.6%)
N200, 000 and above	0(0.0%)	0(0.0%)	0(0.0%)	1(100.0%)	1(0.3%)
Total	**32(9.2%)**	**91(26.2%)**	**98(28.2%)**	**126(36.3%)**	**347(100.0%)**

Sources: Field Survey, 2024

Table 3 presents data on the relationship between monthly income levels and barriers to utilizing maternal health care facilities among women of reproductive age in Zamfara State. Data elicited indicated that the lack of Medical Facilities for ANC and PNC cut cross all income levels, the percentage of respondents facing this barrier ranges from 0.0% to 16.7%. The highest percentage is observed among those with a monthly income of N50, 000 (16.7%). Overall, 9.2% of respondents reported facing such barrier. On the issues of Lack of Means of Transportation, this barrier was more prevalent among lower-income individuals, with percentages ranging from 13.5% to 32.9%. The highest percentage is reported by those with a monthly income of N20, 000 (32.9%). Across all income levels, 26.2% of respondents cited lack of transportation as a barrier.

The absence of medical personnel is a significant barrier across all income levels, with percentages ranging from 17.7% to 46.6%. The highest percentage is reported by those with a monthly income of N20, 000 (46.6%). Overall, 28.2% of respondents cited this barrier.

The Security Threats Posed by Kidnappers/Abductors affected higher-income individuals less compared to lower-income ones. The percentage of respondents facing security threats ranges from 27.8% to 100.0%, with the highest percentage among those earning N100, 000 (62.4%). Across all income levels, 36.3% of respondents reported security threats as a barrier. This

discovery underscores the multifaceted nature of barriers to utilizing maternal health care facilities and suggests targeted interventions to address these challenges across income strata.

Table 4: Type of occupation and barriers to utilizing maternal health care facility

Type of occupation	Lack of medical facilities for ANC and PNC	Lack of means of transportation	Absence of medical personnel	Security threats posed by kidnappers/abductors	Total
Petty trading	0(0.0%)	15(33.3%)	13(28.9%)	17(37.8%)	45(12.9%)
Farming	21(17.4%)	18(20.7%)	14(11.6%)	68(56.2%)	121(34.9%)
Business	10(16.9%)	29(49.2%)	11(18.6%)	9(15.3%)	59(17.0%)
Civil servant	0(0.0%)	5(29.4%)	9(52.9%)	3(17.6%)	17(4.9%)
Housewife	1(0.9%)	20(19.0%)	47(44.8%)	37(35.2%)	105(30.3%)
Total	**32(9.2%)**	**87(25.1%)**	**94(27.1%)**	**134(38.6%)**	**347(100.0%)**

Source: Field survey, 2024

Data in table 4 indicate that petty traders reported barriers in the area of Medical Facilities for ANC and PNC, while petty trading and civil servant occupations reported no instances of this barrier. Housewives had the lowest percentage (0.9%) while the highest percentage was reported by the farming population (17.4%). In the area of Lack of Means of Transportation, petty trading and civil servant occupations reported the lowest percentages (33.3% and 29.4% respectively) while business occupation indicated the highest percentage (49.2%). On the Absence of Medical Personnel, petty trading and civil servant occupations reported the lowest percentages (28.9% and 52.9%) while farming occupation reported the lowest percentage (11.6%). In the area of security threats posed by kidnappers/abductors, petty trading and civil servant occupations reported 37.8% and 17.6%. However, those in the farming occupation reported the highest percentage (56.2%). Overall, the data underscore the importance of considering occupation-specific barriers in designing interventions to improve maternal healthcare accessibility and highlight the necessity for targeted strategies to address the myriad of challenges faced by different occupational groups.

Discussion of Findings

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Findings from the study with regards to the relationship between education and access to maternal health services by women of reproductive age in Zamfara State, showed that

respondents with Quranic education constituted the highest percentage (40.3%) facing this barrier. This is followed by those with no formal education (21.9%). The implication of this is that individuals with lower levels of formal education levels or religious education might encounter challenges in accessing medical facilities for antenatal and postnatal care. The outcome of this study is coterminous with several other studies which provided ample evidence supporting this relationship [43]. This suggests that higher levels of education among women are associated with better maternal health outcomes.

On the relationship between income and access to maternal health services by women of reproductive age in Zamfara State, the absence of medical personnel was discovered to be the most consistent and prevalent barrier across all income levels, thus highlighting a systemic issue in healthcare infrastructure. Lack of transportation was more pronounced among lower-income individuals, emphasizing the need for improved accessibility to healthcare facilities. In the area of security threats, it was established that while security challenges vary across income levels, such threats however, remain a concern, particularly among lower-income groups. As income levels increase, the percentage of respondents facing barriers generally decreases, indicating a potential correlation between income and access to maternal healthcare.

Lastly, data from the study suggest that barriers to utilizing maternal health care facilities vary across different occupations. Farmers appear to have the highest percentage of respondents facing security threats (56.2%), while civil servants had the lowest (17.6%). Regarding the absence of Medical Personnel, housewives seem to encounter this barrier most frequently (44.8%), while in the area of Lack of Transportation; Business owners reported the highest percentage of this barrier (49.2%). Lack of Medical Facilities for ANC and PNC also varies across occupations, with petty traders reporting the lowest percentage (0.0%). Overall, the data suggest that barriers to utilizing maternal health care facilities differ across different occupations, indicating the need for tailored interventions to address specific challenges within each occupational group.

Conclusion

This study explored the impact of Socio-Demographic Variables on Maternal Healthcare Accessibility among Women of Reproductive Age in Zamfara State. This was with a view to examining the influence of education on access to maternal healthcare services among women in Zamfara State; determine the effect of employment status on women's ability to access maternal healthcare services in Zamfara State and assess the influence of income level on the accessibility of maternal healthcare services for women in Zamfara State.

The study population consisted of 400 women of reproductive age aged 15 to 35 years, on whom 400 questionnaire copies were administered out of which 382 copies, representing 95.5%, were retrieved and analyzed. The study established that women with lower levels of formal education or religious education are more likely to encounter challenges in accessing medical facilities for antenatal and postnatal care than their better educated counterparts. Similarly there is a correlation between low-income levels and access to maternal health care. Evidence from the study indicates that as income levels increase, the percentage of respondents facing such barriers decreases, thereby increasing access to maternal healthcare.

Recommendations

(i) Policymakers should prioritize interventions targeting vulnerable populations, such as those with lower educational attainment, to effectively address the identified barriers. This could involve initiatives to improve healthcare infrastructure, enhance transportation networks, ensure adequate staffing in healthcare facilities, and address security concerns in high-risk areas.

(ii) Tailored educational and awareness programs, especially within communities with Quranic education, can help dispel myths, raise awareness about the importance of maternal healthcare, and promote utilization of available services.

(iii) Government and Non-governmental organizations should collaborate to provide transportation subsidies to pregnant women who may face logistical challenges, to facilitate access to maternal health care facilities.

(iv) Government and NGOs should conduct safety awareness campaigns to educate women, particularly farmers who are at higher risk, about safety measures they can take while accessing maternal health services.

(v) Government and NGOs should implement programs aimed at improving economic opportunities for women, such as skills training, microfinance initiatives, and entrepreneurship development, to increase their financial independence and ability to afford healthcare services.

(vi) Government and NGOs should conduct campaigns to promote financial literacy and empower women to make informed decisions about their health and well-being, including accessing maternal health service.

References

[1] Delloite (2021).The future of health is female: The impact of women's health on our society.https://www2.deloitte.com/content/dam/Deloitte/us/Documents/life-sciences-health-care/us-lshc-womens-health.pdf

[2] Onarheim, K. H., Iversen, J. H., & Bloom, D. E. (2016). Economic Benefits of Investing in Women's Health: A Systematic Review. *PloS one*, *11*(3), e0150120. https://doi.org/10.1371/journal.pone.0150120

[3] World Health Organization (2024).Maternal mortality. https://www.who.int/news-room/fact-sheets/detail/maternalmortality#:~:text=Key%20facts,dropped%20by%20about%2034%25%20worldwide.

[4] Davidson, P. M., McGrath, S. J., Meleis, A. I., etal (2011). The health of women and girls determines the health and well-being of our modern world: A white paper from the International Council on Women's Health Issues. *Health care for women international*, *32*(10), 870–886. https://doi.org/10.1080/07399332.2011.603872

[5] World Health Organization. *Trends in Maternal Mortality (2019) 1990 to 2015: Estimates Developed by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division*. Accessed December 19, 2019. https://reliefweb.int/report/world/trends-maternal-mortality-1990-2015-estimates-who-unicef-unfpa-world-bank-group-and

[6] World Health Organization, 2024. Maternal mortality. https://www.who.int/news-room/fact-sheets/detail/maternalmortality/?gad_source=1&gclid=Cj0KCQjw97SzBhDaARIsAFHXUWDmCHIb71jfVpbOvZbjzVSFwcS93J1K1fKcvzWiyKuJM29WExEH78aAiexEALw_wcB

[7] Maternal, Newborn & Child Health Programme, 2016, Our work in Zamfara.

[8] Weitzman A. The effects of women's education on maternal health: Evidence from Peru. Soc Sci Med. 2017 May; 180:1-9. Doi: 10.1016/j.socscimed.2017.03.004. Epub 2017 Mar 6. PMID: 28301806; PMCID: PMC5423409.

[9] Osamor P, Grady C. Factors associated with women's health care decision-making autonomy: Empirical evidence from Nigeria. j Biosoc Sci. 2018 Jan;50(1):70-85. Doi: 10.1017/S0021932017000037. Epub 2017 Feb 10. PMID: 28183370; PMCID: PMC6010313.

[10] Idris, I. B., Hamis, A. A., Bukhori, A. B. M., Hoong, D. C. C., Yusop, H., Shaharuddin, M. A., Fauzi, N. A. F. A., & Kandayah, T. (2023). Women's autonomy in healthcare decision making: a systematic review. *BMC women's health*, *23*(1), 643. https://doi.org/10.1186/s12905-023-02792-4

[11] Martin-Reina J, Casanova AG, Dahiri B, Fernández I, Fernández-Palacín A, Bautista J, Morales AI, Moreno I. Adverse Health Effects in Women Farmers Indirectly Exposed to Pesticides. Int J Environ Res Public Health. 2021 May 31; 18 (11):5909. Doi: 10.3390/ijerph18115909. PMID: 34072924; PMCID: PMC8198255.

[12] Gawora-Ziółek M, Jurewicz J, Hanke W. Ekspozycja na pestycydy kobiet w ciazy pracujacych w rolnictwie [Exposure to pesticides among pregnant women working in agriculture]. Med Pr. 2005; 56 (3):197-204. Polish. PMID: 16218133.

[13] Steinbrook E, Min MC, Kajeechiwa L, Wiladphaingern J, Paw MK, Pimanpanarak MPJ, Hiranloetthanyakit W, Min AM, Tun NW, Gilder ME, Nosten F, McGready R, Parker DM. Distance matters: barriers to antenatal care and safe childbirth in a migrant population on the Thailand-Myanmar border from 2007 to 2015, a pregnancy cohort study. BMC Pregnancy Childbirth. 2021 Dec 2; 21(1):802. Doi: 10.1186/s12884-021-04276-5. PMID: 34856954; PMCID: PMC8638435.

[14] Banke-Thomas A, Balogun M, Wright O, Ajayi B, Abejirinde IO, Olaniran A, Giwa-Ayedun RO, Odusanya B, Afolabi BB. Reaching health facilities in situations of emergency: qualitative study capturing experiences of pregnant women in Africa's largest megacity. Reprod Health. 2020 Sep 25; 17(1):145. Doi: 10.1186/s12978-020-00996-7. PMID: 32977812; PMCID: PMC7519554.

[15] United Nations Children Education Fund (2019). 39% of children in North-west, except Kaduna, are out of school. Available at https://www.premiumtimesng.com/regional/nwest/348897-39-of-children-innorth-west-except-kaduna-are-out-of-school-unicef.html

[16] Tunji, S, 2021. Zamfara home to highest number of poor Nigerians – NSR. Punch Newspaper.https://punchng.com/zamfara-home-to-highest-number-of-poor-nigerians-nsr/

Commented [is8]: Please follow the referencing style of the journal.

[17] National Bureau of Statistics (2020) Statistical report on women and men in Nigeria https://nigerianstat.gov.ng/elibrary/read/1241062

[18] Dahab, R., & Sakellariou, D. (2020). Barriers to Accessing Maternal Care in Low Income Countries in Africa: A Systematic Review. *International journal of environmental research and public health*, *17*(12), 4292. https://doi.org/10.3390/ijerph17124292

[19] Babalola S., Fatusi A. Determinants of use of maternal health services in Nigeria- looking beyond individual and household factors. *BMC Pregnancy Childbirth.* 2009;9:43. [PMC free article] [PubMed] [Google Scholar]

[20] Dahab, R., & Sakellariou, D. (2020). Barriers to Accessing Maternal Care in Low Income Countries in Africa: A Systematic Review. *International journal of environmental research and public health*, *17*(12), 4292. https://doi.org/10.3390/ijerph17124292

[21] Herval, Á. M., Oliveira, D. P. D., Gomes, V. E., & Vargas, A. M. D. (2019). Health education strategies targeting maternal and child health: A scoping review of educational methodologies. *Medicine*, *98*(26), e16174. https://doi.org/10.1097/MD.0000000000016174

[22] Shanto, H. H., Al-Zubayer, M. A., Ahammed, B., Sarder, M. A., Keramat, S. A., Hashmi, R., Haque, R., & Alam, K. (2023). Maternal Healthcare Services Utilisation and Its Associated Risk Factors: A Pooled Study of 37 Low- and Middle-Income Countries. *International journal of public health*, *68*, 1606288. https://doi.org/10.3389/ijph.2023.1606288

[23] Kifle, D., Azale, T., Gelaw, Y.A. *et al.* Maternal health care service seeking behaviors and associated factors among women in rural Haramaya District, Eastern Ethiopia: a triangulated community-based cross-sectional study. *Reprod Health* **14**, 6 (2017). https://doi.org/10.1186/s12978-016-0270-5

[24] Latunji, O. O., & Akinyemi, O. O. (2018). Factors influencing health-seeking behaviour among civil servants in Ibadan, Nigeria. *Annals of Ibadan postgraduate medicine*, *16*(1), 52–60.

[25] Amutah-Onukagha, N., Rodriguez, M., Opara, I., Gardner, M., Assan, M. A., Hammond, R., Plata, J., Pierre, K., & Farag, E. (2017). Progresses and challenges of utilizing traditional birth attendants in maternal and child health in Nigeria. *International journal of MCH and AIDS*, *6*(2), 130–138. https://doi.org/10.21106/ijma.204

[26] Dahab, R., & Sakellariou, D. (2020). Barriers to Accessing Maternal Care in Low Income Countries in Africa: A Systematic Review. *International journal of environmental research and public health*, *17*(12), 4292. https://doi.org/10.3390/ijerph17124292

[27] Vilda, D., Wallace, M., Dyer, L., Harville, E., & Theall, K. (2019). Income inequality and racial disparities in pregnancy-related mortality in the US. *SSM - population health*, *9*, 100477. https://doi.org/10.1016/j.ssmph.2019.100477

[28] Asefa, A., Gebremedhin, S., Marthias, T., Nababan, H., Christou, A., Semaan, A., etal (2023). Wealth-based inequality in the continuum of maternal health service utilisation in 16 sub-Saharan African countries. *International journal for equity in health*, *22*(1), 203. https://doi.org/10.1186/s12939-023-02015-0

[29] Okobori, Y., Kiyohara, H., Mulati, N., Lwin, K. S., Bao, T. Q. Q., Aung, M. N., Yuasa, M., & Fujita, M. (2023). Roles of Social Protection to Promote Health Service Coverage among Vulnerable People toward Achieving Universal Health Coverage: A Literature Review of International Organizations. *International journal of environmental research and public health*, *20*(9), 5754. https://doi.org/10.3390/ijerph20095754

[30] Methun, M. I. H., Ahinkorah, B. O., Roy, S., Okyere, J., Hossain, M. I., Haq, I., Ume, S. S., & Kamrul Hasan, M. (2023). Inequalities in adequate maternal healthcare opportunities: evidence from Bangladesh Demographic and Health Survey 2017-2018. *BMJ open*, *13*(10), e070111. https://doi.org/10.1136/bmjopen-2022-070111

[31] Vizheh, M., Rapport, F., Braithwaite, J., & Zurynski, Y. (2023). The Impact of Women's Agency on Accessing and Using Maternal Healthcare Services: A Systematic Review and Meta-Analysis. *International journal of environmental research and public health*, *20*(5), 3966. https://doi.org/10.3390/ijerph20053966

[32] Sui, Y., Ahuru, R. R., Huang, K., Anser, M. K., & Osabohien, R. (2021). Household Socioeconomic Status and Antenatal Care Utilization among Women in the Reproductive-Age. *Frontiers in public health*, *9*, 724337. https://doi.org/10.3389/fpubh.2021.724337

[33] Umar A. S. (2017). Does female education explain the disparity in the use of antenatal and natal services in Nigeria? Evidence from demographic and health survey data. *African health sciences*, *17*(2), 391–399. https://doi.org/10.4314/ahs.v17i2.13

[34] World Health Organization, author. *World Health Statistics 2016*. Geneva, Switzerland: World Health Organization; 2016. Retrieved from http://www.who.int/gho/publications/world_health_statistics/2016/en/ [Google Scholar]

[35] Babalola S. Factors associated with use of maternal health services in Haiti: a multilevel analysis. *Revista Panamericana de Salud Pública.* 2014;36(1):1–14. Retrieved from http://www.scielosp.org/scielo.php?script=sci_arttext&pid=S1020-49892014000600001. [PubMed] [Google Scholar]

[36] Sherrel, Z (2021) What are social determinants of health? Medical News Today. https://www.medicalnewstoday.com/articles/health-inequity#causes

[37] World Health Organization (nd) Social determinants of health. https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1

[38] Chelak, K., & Chakole, S. (2023). The Role of Social Determinants of Health in Promoting Health Equality: A Narrative Review. *Cureus*, *15*(1), e33425. https://doi.org/10.7759/cureus.33425

[39]UNICEF (nd) Education: Literacy among young women. https://www.unicef.org/nigeria/media/1631/file

[40] Hayes, T., O & Delk, R , 2018, Understanding the Social Determinants of Health. American Action Forum. https://www.americanactionforum.org/research/understanding-the-social-determinants-of-health/

[41] Statistica, 2019, Poverty headcount rate in Nigeria as of 2019, by state. https://www.statista.com/statistics/1121438/poverty-headcount-rate-in-nigeria-by-state/

[42] National Bureau of Statistics, 2021. Statistical report on women and men in Nigeria. https://www.nigerianstat.gov.ng/pdfuploads/2020_ReportWomenMen_August2021.pdf

[43] Ikeako, L. C., Onah, H. E., & Iloabachie, G. C. (2006). Influence of formal maternal education on the use of maternity services in Enugu, Nigeria. *Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology*, *26*(1), 30–34. https://doi.org/10.1080/01443610500364004