

## Determinants of Maternal and Child Health Outcomes in Rural Oyo State, Nigeria: A Quantitative Analysis

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### Abstract

#### Background and Objective:

High maternal and child mortality remains a significant public health concern, particularly in rural areas. This study sought to understand the determinants of maternal and child health (MCH) outcomes in rural areas of Oyo State, Nigeria, focusing on factors influencing these outcomes and identifying strategies for improvement.

#### Materials and Methods:

The study used a descriptive cross-sectional survey design. A sample of 500 mothers with children under five living in diverse rural areas in Oyo State was selected using purposive sampling and administered structured questionnaires, including demographic data and research questions, in order to collect data. Their responses gathered were analysed using descriptive statistics.

#### Results:

The results showed that the majority of the respondents aged 30-39, or 45%, responded more to the questionnaire. 178 or 36% of respondents had no formal education, 80 or 16% were highly educated. The employment status revealed that 180 or 37% of the respondents were unemployed. 36% of the sample had access to antenatal and postnatal care referral, skilled health workers and emergency obstetric care, 42% to treated water supply, and good sanitation, 36% to communication and transportation services, and 32% used mosquito-treated nets for malaria prophylaxis. 66% rely on traditional healers or birth attendants for their delivery and basic health care needs, 62% refuse to vaccinate their children due to concerns that vaccinations are unsafe, and 40% care or make much provision for adequate infant child feeding and balanced diets.

#### Conclusion and Recommendation:

The study concluded that the findings significantly influence MCH outcomes in the rural areas of Oyo State. This study suggests the need for improved MCH in rural areas of Oyo State. Targeted interventions addressing socio-economic and basic amenities needs are recommended to improve outcomes, reducing the morbidity and mortality rates.

**Keywords:** Determinants, healthcare access, maternal and child health, Nigeria, Oyo State

### 1.0 Introduction

In Nigeria, maternal and child health (MCH) issues continue to be major public health concerns, especially in rural areas. Rural areas still suffer the most from avoidable MCH mortality in spite of multiple efforts [1].

Throughout the world, pregnancy-related problems claimed the lives of almost 810 women per day [2]. An estimated 6.9 million children under the age of 15 died in 2020, primarily from avoidable causes [3]. It has been reported that 99% of maternal deaths occur in low-income nations [4], with 462 deaths for every 100,000

live births, Sub-Saharan Africa has the highest maternal mortality ratio [1].

With an estimated population of 232,679,478 (233 million) people at midyear 2024, Nigeria is the most populous of the 46 Sub-Saharan African nations [5]. With roughly 2.85% of the world's population, the country is now the sixth most populated nation in the world [6: & 7]. In Nigeria, at least 7 million newborns are born annually, with around 40 million women between the ages of 15 and 49 and 41 million children under the age of five [8]. This means that a sizable portion of the population of the country is made up of both women of reproductive age and children under the age of five. The country has an infant mortality rate of 69 deaths per 1,000 live births [9] and an under-five mortality rate of 117 deaths per 1,000 live births. At these mortality levels, one Nigerian child of every 13 born dies before reaching age 1, and one in every eight does not survive to their fifth birthday [7]. Malaria, pneumonia, and diarrhoea are apparently the leading causes [8]. This demonstrates that maternal mortality is still unacceptably high in Nigeria.

It is appalling that preventable disease contributes to mother and infant mortality in Nigeria, when practically all maternal fatalities might be readily avoided. Several factors reportedly contribute to this issue, including poverty. Approximately 129 million Nigerians now live in poverty [10]. This indicates that about two-thirds of Nigerians face various deprivations, including a lack of access to basic necessities such as healthcare, sanitation, and clean energy [11]. Oyo State has one of Nigeria's highest maternal and child death rates, with a maternal mortality rate of 555 deaths per 100,000 live births and an under-five mortality rate of 121 deaths per 1,000 live births [12]. Despite significant attempts to control and reduce MCH health issues, Oyo State continues to have poor outcomes.

The main objective of this study was to access determinants of MCH outcomes in rural areas of Oyo State, Nigeria. This study will significantly provide valuable insights into MCH outcomes in rural areas of Oyo State, informing policy, intervention strategies and contributing to achieving national health goals.

## 2.0 Materials and Methods

### 2.1 Study Area

This study was carried out in some rural areas in Oyo State, Nigeria. Eruwa, Ido, Fiditi, Ikoyi-Ile, and Kishi are among the areas selected through the five administrative zones that make up Oyo State: Ibarapa, Ibadan, Oyo, Ogbomoso, and Oke-Ogun. With an estimated population of 7,976,100 in 2022, Oyo State occupies 28,454 square kilometres and is bordered by the Republic of Benin [13], Osun State (east), Ogun State (south), Ondo State (southeast), Ekiti State (east), Kwara State (north), and Niger State (northwest). With rain forests in the south and guinea savannah in the north, the state has an equatorial climate with dry and wet seasons and high humidity. The Yoruba ethnic group, who are mostly farmers and traders, make up the majority of the homogeneous state of Oyo. Other professions include craft and artisans [14].

### 2.2 Research Design

This study used a descriptive cross-sectional survey design.

### 2.3 Population and Sample

The target population was mothers with at least one child under five-year old living in selected rural areas of Oyo State. 500 samples in all were chosen through the use of purposive sampling. The kind of information needed influenced the procedure selection.

### 2.4 Instrumentation and Validation

The instrument of data collection was a pre-tested, structured questionnaire. The demographic data (A) and the research questions (B) comprise the two sections of the questionnaire. The information on the questionnaire is written in English. However, to make them easy to understand and respond to by the participants, informal discussion with participants was done in Yoruba, the official language in the rural areas. The research questions were addressed using binary scaling, sometimes referred to as yes/no or dichotomous scaling. Because binary scaling is simple to understand, respond to, and analyse, it was chosen. The questionnaire was tested using expert review to confirm its validity. The

reliability was confirmed through a test-retest and a reliability result of  $r=0.84$  was obtained via Cronbach Alpha coefficient.

## 2.5 Data Collection and Analysis

The copies of the questionnaire were administered to the participants through the researchers themselves to collect data from a sample of participants at one particular point in time. Respondents were asked to tick the boxes that match their responses to each question. The responses of participants were retrieved on the same day for each rural area visited to collect data. The study did not include mothers with children under five who lived outside the study area. Data collected on the study were analysed using descriptive statistics (frequencies, cumulative frequencies and percentages).

## 2.6 Ethical Considerations

Participation in the study was voluntary, and responses were anonymous. Prior to data collection, informed consent was obtained from all participants, ensuring they understood the purpose of the study and their rights to confidentiality. The mothers with under-five year old children who declined were left out of the study. For the protection of participant confidentiality and anonymity, we assured participants that we would keep all responses

confidential and would not link personal identifiers to the published results. We also took cognisance of traditional, religious, cultural practices and compliance with standard regulations.

## 2.7 Limitations and Delimitations

Causal conclusions are limited by the cross-sectional survey. Recall bias may also affect questionnaire results, particularly when it comes to health-related behaviours or habits. Furthermore, this study's delimitation of specific rural areas could limit the implications of the results to other regions of Nigeria. The researchers are convinced that the results of this study did not have negatively impacted in any manner, notwithstanding these limitations and delimitations.

## 3.0 Results

### 3.1 Data Presentation and Analysis of Questionnaire

The results in Table 3.1 showed that the majority of the respondents aged 30-39, or 45%, responded more to the questionnaire. 178 or 36% of respondents had no formal education, while 80 or 16% were highly educated. The employment status revealed that 180 or 37% of the respondents were unemployed.

**Table 3.1: Demographic information of the respondents**

Variables	Frequency	Cumulative Frequency	Percentage (%)
<b>Age Range</b>			
Below 19	40	40.0	8
20-29	124	164.0	25
30-39	221	385.0	45
40 and above	105	490.0	21
<b>Total</b>	<b>490</b>		<b>100</b>
<b>Level of Education</b>			
None	178	178.0	36
Primary School	128	306.0	26
Post-Primary School	104	410.0	21
Diploma and above	80	490.0	16
<b>Total</b>	<b>490</b>		<b>100</b>
<b>Employment Status</b>			
Employed	60	60.0	12
Unemployed	180	240.0	37
Underemployed	120	360.0	24
Self-Employed	130	490.0	26
<b>Total</b>	<b>490</b>		<b>100</b>

Source: Authors' Research Survey (2024).

The responses in Table 3.2 showed that 36% of the sample had access to antenatal and postnatal care referral, skilled health workers and emergency obstetric care, 42% to treated water supply, and good sanitation, and approximately 36% to communication and transportation services, and 32% used mosquito-treated nets for malaria prophylaxis. And approximately 66%

rely on traditional healers or birth attendants for their delivery and basic health care needs, while 62% refuse to vaccinate their children due to concerns that vaccinations are unsafe. Approximately 40% care or make much provision for adequate infant child feeding and balanced diets.

**Table 3.2: Factors that influence maternal and health care (MCH) outcomes in rural areas in Oyo State**

Questions	Response Column (Y/N)	EI Z	IIZ	FOZ	IO Z	KO Z	SF	CF	%
Did you have access to antenatal or postnatal care, skilled health workers, referral system and emergency care during your last pregnancy?	Y	29	55	40	30	20	174	174	36
	N	71	55	60	50	80	316	490	64
Do you have access to both treated water supply and sanitation in your house?	Y	30	55	45	40	35	205	205	42
	N	60	45	55	60	65	285	490	58
Do you have access to effective communication and transportation services?	Y	30	55	35	30	25	175	175	36
	N	70	45	55	70	65	315	490	64
Do you and your children always use insecticide-treated nets for sleeping?	Y	40	35	30	25	28	158	158	32
	N	60	65	70	65	72	332	490	68
Do cultural traditions, religious beliefs, traditional healers, or birth attendants ever influence your childbirth decisions?	Y	70	65	50	65	75	325	325	66
	N	30	35	30	35	25	165	490	34
Have you ever refused vaccination for your children due to safety concerns?	Y	60	56	60	55	71	302	302	62
	N	30	44	40	45	29	188	490	38
Does your child consume a variety of foods daily?	Y	40	50	30	35	40	195	195	40
	N	60	50	70	65	50	295	490	60

Source: Authors' Research Survey (2024).

Where Y-Yes, N-No, EIZ-Eruwa/Ibarapa zone, IIZ-Ido/Ibadan zone, FOZ-Fiditi/Oyo zone, IOZ-Ikoyi-Ile/Ogbomoso zone, KOZ-Kishi/Oke-Ogun zone, SF-State Frequency, CF-Cumulative Frequency, and %-Percentage.

#### 4.0 Discussion

We estimated the MCH outcomes using data from a representative sample of mothers whose children were under five years old. 490 (98%) of the questionnaires were completed and collected back for analysis. More questions were answered by the sizable portion of mothers, 45% who were in the 30-39-year-old age range. This is in contrast to [8], which states that 30.3% of girls marry or start dating before turning 18. Oyo State does, however, have far lower rates of child marriage than the rest of the nation. The rate of child marriage in Oyo State is 16.0% [15]. This is comparatively low,

compared to states like Bauchi, where 73.8% of women between the ages of 20 and 24 got married before turning eighteen [8]. The Oyo State Child Rights Law's Sections 23 and 24 forbid child marriage and engagement. A person under the age of eighteen who "is incapable of contracting a valid marriage" is considered a child under the law [16]. It is commendable because young mothers may face unique challenges, such as limited access to healthcare and ability to make informed decisions about their health status.

According to this study, 16% mothers with high levels of education are low, while the remaining

mothers are more likely to be illiterate or semi-literate. This is typical, especially among Nigerian women. Factors contributing to this may include cultural norms, early marriage, poverty, and limited educational opportunities. Since mothers are reportedly responsible for raising their children during their formative years, maternal literacy is essential to the development of society. Education has a positive effect on mothers' overall health and health-related behaviours. More informed health decisions for themselves and their children are also possible. Mothers who receive an education significantly have better overall health and healthier habits. More so, widespread illiteracy has a negative impact on women's overall health [8]. Similarly, a previous report indicates that apart from seeking medical care, educated mothers are more likely to understand the importance of proper nutrition, breastfeeding, immunisation schedules, and hygiene [17].

The study reveals that employment status, which is one of the major socioeconomic determinants, is alarmingly poor at 12% of respondents' positive responses. This may adversely affect the mother's health. It is consistent with a study in Lagos, Nigeria, which found that women from lower socioeconomic backgrounds are more likely to suffer maternal mortality and receive less prenatal care than those from higher socioeconomic backgrounds [18]. A family with employment status tends to have better access to healthcare and nutrition coupled with greater autonomy and decision-making power. Unemployment or low socioeconomic status often leads to issues such as lack of access to healthcare services, unclean water, and inadequately balanced diets.

According to reports, Nigeria has one of the lowest coverage rates for antenatal and postnatal care in Sub-Saharan Africa, with only 61% of pregnant women attending at least four antenatal care visits and 37% receiving postnatal care within two days of delivery [12]. This lags behind global standards, as these cares are crucial [2 & 3]. In Oyo State, delayed or inaccessible emergency care is the cause of 71.1% of maternal deaths [19]. Limited access to emergency obstetric care and the referral system further exacerbates the issue. Additionally, referral systems are absent from 56.2% of primary healthcare facilities in Oyo State [20]. The Nigerian health system faces numerous issues, including insufficient infrastructure, funding, skills, and an ineffective healthcare delivery system [20 & 21]. This study on referral and emergency obstetric care access of 36% supports

these findings, highlighting the lack of utilisation of health facilities in Oyo State. Previous reports indicate that regular antenatal and prenatal cares significantly improve MCH. Despite the abundance of health facilities in urban centers, many people do not utilise them [22]. Inadequate facilities and understaffing may restrict access to healthcare personnel and facilities in rural areas, further highlighting the need for improved healthcare delivery systems.

The study found that 42% of respondents in Oyo State lack access to treated water and adequate sanitation facilities, leading to health issues such as high maternal and infant mortality rates and waterborne illnesses [23 & 24]. Despite government initiatives, these issues persist. The Ibadan North Local Government Area has favourable opinions about environmental sanitation but unfavorable opinions about solid waste management [21]. Poor sanitation areas are sources of infection and disease, and the implications of this cannot be ignored. Limited access to reliable communication and transportation services also hinder MCH outcomes in rural areas of Oyo State as shown by this study report of 36%. This is statistically comparable with the observation of [25], who reported that 27.5% of healthcare facilities lack functional communication systems, and it was identified as one of a major challenge facing primary healthcare delivery in Oyo State. This is worrisome as it can adversely affect mothers and children's healthcare.

The study found that only 32% of respondents used mosquito-treated nets for malaria prophylaxis, despite the disease being a significant public health concern in Nigeria, especially among vulnerable populations like mothers and children under five [26 & 27]. This lack of interest as earlier reported is consistent with a significant geographic, urban-rural, and socioeconomic gap in malaria prevalence and preventive treatment usage. Despite these disparities, malaria transmission continues to pose risks to many Nigerians, particularly children under five and pregnant women [28]. Malaria kills 95,000 children under five in Nigeria annually, contributing to global child mortality [29]. The World Health Organization recommends the use of insecticide-treated nets, intermittent preventive treatment, and effective malaria management [27]. The introduction of the innovative malaria vaccine (RTS, S/AS01, and R21/Matrix-M) in Ghana, Kenya, and Malawi can help prevent malaria in at-risk children. Both vaccines have been reported to

reduce malaria cases by 75% [30], marking a significant milestone in the fight against malaria.

The study 66% respondents' reveals that access to traditional healers and cultural and religious beliefs significantly influence maternal and child health outcomes in Oyo State. These factors may limit women's autonomy in making life decisions, including seeking appropriate medical care. Traditional Birth Attendants (TBAs) are a useful resource in rural areas due to their affordability and accessibility [31]. However, these beliefs can jeopardise the safety of the mother and child. The Islamic community and Christianity share similar beliefs and concerns about healthcare, especially for women and children [32: 33: & 34]. Therefore, raising awareness of safe motherhood is possible, even in tense situations, such as rural areas where cultural and religious beliefs may conflict with evidence-based health recommendations.

The lack of vaccination for children under five in Oyo State is a significant concern, according to this study, with 62% of mothers not making their children receiving all their vaccinations due to groundless reasons. This is despite vaccinations being known to protect against life-threatening diseases and prevent 25% of under-five deaths in Sub-Saharan Africa. Factors contributing to this include lack of maternal education, wealth, socioeconomic status, and access to healthcare. A report by [35] found that 71.4% of children under five in Oyo State do not receive all their vaccinations, with women citing lack of healthcare access as a reason.

A balanced diet and adequate breastfeeding are crucial for children's healthy growth and development. According to previous studies, Oyo State has one of the highest rates of stunting among children under five, with 34.5% affected and two out of three suffering from anaemia [36]. This is linked to the lack of variety in daily food consumption, which constitutes adequate feeding and balanced diets in this study's report of 40%. Economic shocks, conflict, and climate crises contribute to high rates of severe malnutrition among children under five in many countries [37]. Rising poor nutrition can lead to malnutrition, a leading cause of child mortality [38]. According to a latest report about food security in Nigeria; there has been a 28% increase in the number of food-insecure people in Nigeria between August 2023 and September 2024. The report referenced the latest Cadre Harmonise analysis, highlighting that a combination of factors-including deteriorating

security conditions, low agricultural production, soaring food prices, disrupted markets, and more frequent and extreme weather-resulted in nearly 55 million people facing food insecurity [39]. Rising fuel prices in Nigeria could further exacerbate the situation by grossly affecting transportation and food prices, thereby impacting supplemental feeding from 6 to 12 months after exclusive breastfeeding.

## 5.0 Conclusion and Recommendations

The findings of this study, while not comprehensive of all potential factors influencing MCH outcomes in Oyo State, adequately addressed the research questions posed, aligning with the research objective. MCH outcomes in rural areas in Oyo State were found to be significantly influenced by a number of factors, including lack of access to prenatal, postnatal, skilled health workers, health facilities, treated water, sanitation facilities, communication and transportation services, failure to use insecticide-treated nets, cultural and religious beliefs, the influence of traditional birth attendants, false information regarding vaccines, and poor nutrition. However, targeted interventions have the potential to significantly improve the health outcomes in rural areas of Oyo State.

The government should prioritise the preservation of maternal and infant lives, as numerous issues are preventable. Enhance the socio-economic status of mothers and ensure the availability of essential amenities in rural areas, including water supply, transportation infrastructure, healthcare facilities, educational institutions, waste management systems, and emergency services. The State Ministry of Health should involve community and religious leaders in intervention and prevention programs, particularly in the area of vaccination, and enhance monitoring and assessment of healthcare facilities. Health education is essential for improving breastfeeding and proper nutrition, as well as for overcoming superstition, the influence of traditional birth attendants, cultural and religious beliefs, and ignorance. It is also crucial to strengthen the existing health systems to provide high-quality prenatal and postnatal care as well as immunisation and vaccination programs for children and improve accessibility to healthcare through mobile clinics and remote consultations via telemedicine, also known as telehealth or e-medicine.

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### Author Contributions

The authors N.A.B., O.M.O., A.M.T., and O.E.D. contributed equally to the study. All authors have read and agreed to the final manuscript.

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