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# Perceived Factors Associated with Measles of Under-five Children among Reproductive Age Mothers in Owerri West Local Government Area, Imo State, Nigeria

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## Abstract

The study investigated perceived factors associated with measles of under-five children among reproductive age mothers in Owerri West Local Government Area, Imo State, Nigeria. The cross-sectional research design was utilized. The study population consisted of 51,655 reproductive age mothers (15 – 49years) in the study area. A sample of 400 reproductive age mothers was drawn using simple random and convenience sampling techniques. Questionnaire was used for data collection. Mean, standard deviation and One-way Analysis of variance (ANOVA) were used for data analyses. Findings revealed that mothers agreed on all the listed perceived factors associated with measles of under-five children with a cluster ($\bar{x}$ = 3.49). Reproductive age mothers irrespective of their age agreed that all the listed items were the perceived factors associated with measles of under five children: 15 – 24 year ($\bar{x}$ = 3.53); 25 – 34 years ($\bar{x}$ = 3.49); 35 -44 years ($\bar{x}$ = 3.48); and those 45 years and above ($\bar{x}$ = 3.46). Also, mothers irrespective of their level of education agreed that the items were perceived factors associated with measles of under-five children: primary education ($\bar{x}$ = 3.48); secondary education ($\bar{x}$ = 3.44); and tertiary education ($\bar{x}$ = 3.51). Age was significantly associated with factors associated with measles of under-five children ($p <$ .05) while level of education was not ($p >$ .05). The authors recommend the need to ensure that preventive actions such as immunization, isolation of infected persons and exclusive breastfeeding should be regularly practiced

**Keywords**: Perceived, Measles, Underfive children, Reproductive age mother

## Introduction

Globally, measles infection remains a major public health issues especially among under-five children. Amidst, the steady increase in routine immunization coverage especially among countries with the greatest burden of measles, its morbidity and mortality still appears to be on the increase world over. Abdirahman (2024) reported that every year, an estimated 2.5 million child deaths are averted through immunization globally, yet millions (almost 20 %) born every year do not receive their complete immunization doses scheduled for their first year of life. Mani (2020) observed that globally an estimated 207, 500 measles death occur every year, most of which occur among children five years of age. The incidence of measles is 39.9 million cases 277.000 deaths and 28 million disability adjusted life years globally (Ahmad et al., 2017). Among the preventable childhood diseases, measles causes most of the deaths in children. The incidence of measles remains high in developing countries as it is the leading cause of death among young children, especially the non-immunized children. In Africa, about 125 million preschool-aged children have vitamin deficiency, thereby placing them at a higher risk of death as a result of measles (Ibrahim et al., 2019). In sub-Saharan

Africa, more than 95 per cent of measles deaths mostly occur in low-income countries with weak infrastructure (Abdirahman, 2024). Most of these deaths are attributed to unvaccinated children as measles vaccination coverage is used as an indicator to monitor progress. Center for Disease Control and Prevention (CDC, 2020) observed that about 30,000 children die annually in Indonesia from measles, which implies a child dies every minute from measles.

The burden of measles infection and death remains high in Nigeria, as Nigeria is among the 45 countries that account for 94 per cent of the global deaths due to measles. Measles is an endemic disease in Nigeria with recurrent outbreaks occurring at irregular interval (Ibrahim et al., 2019). The transmission of measles in Nigeria occurs through all months of the year but picks in the dry season (Ibrahim et al., 2016).

Measles is a highly acute viral disease. It is an acute highly communicable disease caused by RNA Ribo-nucleic acid virus of the genus morbillivirus in the family paramaxoviadia. Measles is transmitted to a susceptible individual through droplets from the nose, mouth or throat of an infected person or by direct contact (World Health Organization [WHO], 2017). The virus infects the mucous membranes of an exposed person and then spreads to other parts of the body (Ibrahim et al., 2019). The virus normally grows in the cells that line the back of the throat and lungs (Abdirahman, 2024). The incubation period for measles is about 10 days (with a range of 7-18 days). An infected person with measles is contagious four days after the rash appears and it has a short survival time of less than 2 hours in the air or on objects and surfaces (WHO, 2018).

Measles can be presented with different signs and symptoms. The common symptoms include high fever, runny rose, cough, red-watery eye (conjunctivitis), tiredness, tiny white sports (Koplick's spot) which may appear inside the mouth 2-3 days after symptoms begin as well as sore throat (Biesbroeck, & Sidbury, 2013). The skin rashes are made up of large flat blotches that often flow into one another. These rashes appear as grains of salt on a reddish background (Sterchen, & Dautheritte, 2009). These measles rash appears 2 -4 days after the initial symptoms and lasts for eight days. Mani (2020) in his study reported that the most common symptoms of measles among children were fever, cough, rash, koplick sports and diarrhoea. Measles carries severe health consequences both for the patient and others around him.

Ahmad et al. (2014) submitted that common health consequences of measles are pneumonia, diarrhea, inability to feed, stomatitis, otitis media (ear infection) and encephalitis (swelling of the brain). The commonest complication is pneumonia. Less commonly seizures, blindness or inflammation of the brain may occur (WHO, 2015). The WHO (2006) opined that children do not die directly from measles but from its complications.

Measles have been adduced to be associated with numerous risk factors. A study carried out by Ahmad, et al. (2014) highlighted the risk factors to include: malnutrition, non-vaccination, immune deficiency, young age less than five years and vitamin deficiency. Mani (2020) in his study identified the following factors: vaccination status and having contact with measles infected person. Children who did not receive the recommended number of doses of the measles vaccine were at a higher risk of contracting the disease. Also, those who have contact with a measles infected person were at a higher risk too. A study carried out by Abdirahman (2024) reported that many deaths of children were attributed to unvaccination of children with measles vaccine which is used as an indicator to monitor progress. Silfiana and Azizah (2017) highlighted the factors as unvaccination, poor exclusive breastfeeding practices, poor housing condition, malnutrition, lack of understanding of measles among others. Other factors include contaminated droplets that spread through the air when someone coughs and

sneezes or talks, kissing someone who has measles, sharing food or drink with someone with measles, shaking, holding hands or hugging someone with measles. Demographic variables of the mother are also perceived factors that are associated with measles of under-five children. Such variables include age and level of education. Age of the mother is an important factor regarding her knowledge and perception of the factors that are associated with measles of children under five years of age. That is to say that the age at which a woman starts bearing children and her level of education determine her understanding and knowledge of factors that can predispose her baby to diseases such as measles. Measles is an endemic disease that can cause the death of millions of people including children in the developing countries where more than 20 percent of them do not receive the complete immunization doses scheduled for their first year of life. The high rate of death and disability caused by measles infection call for serious concern. The need to get mothers intimated on the perceived factors that are associated with this disease becomes paramount since Nigeria is one of the ten countries with measles vaccine coverage of less than 50 percent, hence, the need to ascertain the perceived factors associated with measles of under five children among reproductive age mothers in Owerri West LGA,Imo State.

## Purpose of the Study

The purpose of the study was to investigate the perceived factors associated with measles of under-five children among reproductive age mothers in Owerri West Local Government Area, Imo State, Nigeria. Specifically the study aimed to determine the:
1. perceived factors associated with measles of under five children among reproductive age mothers in Owerri West LGA;
2. perceived factors associated with measles of under five children among reproductive age mothers in Owerri West LGA based on age;  and
3. perceived factors associated with measles of under five children among reproductive age mothers in Owerri West LGA based on level of education.

## Research Questions
1. What are the perceived factors associated with measles of under five children among reproductive age mothers in Owerri West LGA?
2. What are the perceived factors associated with measles of under five children among reproductive age mothers in Owerri West LGA based on age?
3. What are the perceived factors associated with measles of under five children among reproductive age mothers in Owerri West LGA based on level of education?

### Hypotheses

1. There is no significant difference in the perceived factors associated with measles of under five children among reproductive age mothers in Owerri West LGA, Imo State based on age ($p \leq 0.05$).
2. There is no significant difference in the perceived factors associated with measles of under five children among reproductive age mothers in Owerri West LGA, Imo State based on level of education ($p \leq 0.05$)

## Materials and Methods

The study adopted a descriptive cross-sectional survey research design. The design was used in this study to determine perceived factors associated with measles of under five children in Owerri West LGA, Imo State. The population of the study consisted of 51,655 reproductive

age mothers. A sample size of 400 mothers was drawn for the study with the aid of Cohen, et al. (2011) standardized table for sample size, confidence levels and confidence intervals for random samples. Simple random and convenience sampling techniques were used to draw the sample size. Simple random sampling technique of balloting without replacement was used to draw five out of the fifteen existing communities in the local government area while convenience sampling technique was used to select 80 mothers who were experienced enough to supply the needed information in the study area from each of the five selected communities. This procedure yielded a total of 400 reproductive age mothers used for the study.

The instrument used to collect data was self-developed "Perceived Factors Associated with Measles of Under-Five Children Questionnaire (PFAMUFCQ). The PFAMUFCQ consisted of 10 items grouped into two selections A and B. Section 'A' elicited information on respondents' bio data (age and level of education) while section B elicited information on respondents' perceived factors associated with measles of under five children. The instrument was face validated by three experts from the Department of Health Education, Alvan Ikoku Federal University of Education, Owerri. The instrument was further subjected to reliability testing using Cronbach's alpha. A reliability index of .75 was obtained and adjudged reliable for use in the study. Mean and standard deviation were used to answer the research questions while one-way analysis of variance (ANOVA was used to test the null hypotheses at (p<0.05) level of significance.

## Results

Table 1: **Mean Responses of Reproductive Age Mothers' Perceived Factors Associated with Measles of Under five Children in Owerri West LGA (n = 387)**

| S/n | Item | Mean | SD. | Decision |
|-----|------|------|-----|----------|
| 1. | Non-vaccination | 4.00 | 0.000 | Agreed |
| 2. | Lack of vitamin A | 3.74 | 0,433 | Agreed |
| 3. | Incomplete doses of immunization | 3.74 | 0.433 | Agreed |
| 4. | Malnourishment | 3.21 | 0.407 | Agreed |
| 5. | Poor exclusive breastfeeding practices | 3.33 | 0.472 | Agreed |
| 6. | Overcrowded room condition | 3.28 | 0.451 | Agreed |
| 7. | Exposure to an infected person | 3.75 | 0.432 | Agreed |
| 8. | Immune system deficiency | 3.36 | 0.482 | Agreed |
| 9. | Poor room ventilation | 3.27 | 0.447 | Agreed |
| 10. | Age of the child less than 12 months | 3.49 | 0.482 | Agreed |
| | **Cluster mean** | **3.49** | **0.397** | **Agreed** |

**Key – criterion mean of 2.50 and above will be termed agree. SD=Standard Deviation**
**Mean less than 2.50 will be termed disagree**

Table 1 shows that reproductive age mothers in Owerri West Local Government Area agree that the enlisted items are perceived factors associated with measles of under-five children because all the items scored above 2.50 which is the criterion mean. The factors include non-vaccination ($x$ = 4.00), lack of vitamin A ($x$ = 3.74); incomplete doses of immunization ($x$ = 3.74); malnutrition ($x$ = 3.21); poor exclusive breastfeeding practice (x = 3.33); overcrowded room condition ($x$ = 3.28), exposure to an infected person ($x$ = 3.75); immune system deficiency ($x$ = 3.36); poor room ventilation ($x$ = 3.27); and age of children less than 12 months ($x$ = 3.49).

Table 2: **Mean Responses of Reproductive Age Mother's Perceived Predisposing Factors Associated with Measles of Under Five Children Based on Age (n =387)**

| Variables | N | Mean | SD. | Decision |
|---|---|---|---|---|
| 15 – 24years | 99 | 3.53 | 0.424 | Agreed |
| 25 – 34years | 71 | 3.49 | 0.276 | Agreed |
| 35 – 44years | 79 | 3.48 | 0.343 | Agreed |
| 45years and above | 138 | 3.46 | 0.340 | Agreed |

Table 2 shows that reproductive age mothers in Owerri West local government area irrespective of their age agreed on perceived factors associated with measles of under five children. Their mean response showed that mothers within the age bracket 15 -24years had a mean response of ($x$ = 3.53), those aged 25 -34 years had a mean response of ($x$ – 3.49), those aged 35 -44 years ($x$ = 3.48) and mothers 45 years and above had a mean response of ($x$ = 3.46). The table further showed that reproductive age mothers aged 25 – 34years had the highest scores.

Table 3: **Mean Responses of Reproductive Age Mother's Perceived Factors Associated with Measles of Under five Children based on Level of Education (n = 387)**

| Variables | N | Mean | SD. | Decision |
|---|---|---|---|---|
| Primary Education | 81 | 3.48 | 0.323 | Agreed |
| Secondary Education | 69 | 3.44 | 0.164 | Agreed |
| Tertiary Education | 237 | 3.51 | 0.418 | Agreed |

Table 3 shows that reproductive age mothers in Owerri West local government area irrespective of their level of education agreed on perceived factors associated with measles of under five children. Their mean response showed that mothers with primary education had a mean response of ($\overline{x}$ = 3.48); those with primary education had a mean response of ($\overline{x}$ = 3.44), while those with tertiary education had a mean response of ($x$ = 3.51). The table further showed that reproductive age mothers with tertiary education scored higher than their counterparts.

Table 4: **Summary of One-Way ANOVA on Perceived Factors Associated with Measles of Under Five Children among Mothers of Different Age Group (n = 387)**

| Source of Variation | Sum of Squares | Df | Mean | F | p | Decision |
|---|---|---|---|---|---|---|
| Between groups | 7.037 | 3 | 2.345 | | | |
| | | | | 15.916 | 0.022 | Rejected |
| Within groups | 60.790 | 383 | 0.158 | | | |
| **Cluster** | **67.827** | **386** | | | | |

One-way ANOVA in Table 4 revealed a significant difference (p < 0.5) on perceived factors associated with measles of under-five children among mothers of different age groups in Owerri West Local Government Area. The null hypothesis was therefore rejected (F = 15.916, df = 3, p = 0.022). This implied that there was significant difference in the perceived factors associated with measles of under five children among reproductive age mothers of different age groups in Owerri West Local Government Area.

Table 5: **Summary of One-Way ANOVA on Perceived Factors Associated with Measles of Under Five Children among Reproductive Age Mothers of Different Levels of Education (n = 387)**

| Source of Variation | Sum of Squares | Df | $\overline{X}$ | F | P | Decision |
|---|---|---|---|---|---|---|
| Between groups | 5.237 | 2 | 2.618 | | | |
| | | | | 17.803 | 0.069 | Not Rejected |
| Within groups | 62.591 | 3.84 | 0.163 | | | |
| **Total** | **67.827** | **386** | | | | |

The One-way ANOVA in Table 5 showed no significant difference (p > 0.5) on perceived factors associated with measles of under five children among mothers of different levels of education (F=17.803, df = 2, p = 0.069 > .05). The null hypothesis was therefore not rejected. This implies that there was no significant difference on the perceived factors associated with measles of under- five children among mothers of different of level in Owerri West LGA.

**Discussion**

The findings of the study in table 1 revealed that reproductive age mothers in Owerri West LGA agreed that non-vaccination, lack of vitamin A, incomplete doses of immunization, malnourishment, poor exclusive breastfeeding practices, overcrowded room condition, exposure to an infected person, poor immune system, poor room ventilation and age of children less than five years are factors associated with anaemia of under five children. The findings were expected and therefore not surprising because studies have consistently shown that the aforementioned factors are associated with measles of under-five children. The findings lends support with the finding of Ahmad et al., (2014) who stated that malnutrition, non-vaccination, young age less than 5 years, immune system deficiency and vitamin A deficiency were risk factors associated with measles of children. The findings were in line with the finding of Silfiana and Azizah (2017) who reported that the level of knowledge of the mothers, measles immunization status, pattern of giving exclusive breastfeeding and density of occupancy were risk factors associated with measles among infants. Furthermore, the findings agreed with the finding of Mani (2020), who stated that having contact with measles infected person was a risk factors associated with measles among children. Children who had contact with a measles infected person were at a higher risk of contracting the disease. The finding underscores the importance of timely identification and isolation of individuals with measles to prevent the spread of disease. It also highlights the need for perceived effective communication and health education about measles to the public to promote early recognition of the diseases and prompt health care seeking behaviour.

Findings in table 2 revealed that reproductive age mothers irrespective of their age agreed on the factors associated with measles of under-five children. Table 3 showed that there was a significant difference in the perceived factors associated with measles of under-five children among mothers in Owerri West LGA, Imo State based on age. The findings were expected and therefore not surprising. It is expected that the older a woman becomes the more experienced she will have about child upbringing. The significant mean difference in the perceived factors associated with measles of under-five children suggests that there are variations on how different age group of mother perceive and possibly prioritize these factors. The difference may be attributed to various factors such as changes in health education campaign overtime, evolving societal norms or difference to health information (Umoke et al., 2021; Madubueze et al., 2022). It is possible that younger mothers may have been exposed to more recent health education campaigns or may have different perspective shaped by contemporary health knowledge. Also, older mothers might have relied on traditional beliefs or practices. Understanding the specific factors that show significant difference in perception among different age groups is crucial. Afoke et al. (2023) explained that the aforementioned information can guide the development of targeted educational campaigns and interventions to address the varying needs and beliefs within the community considering, the diverse age groups. Furthermore, the significant mean difference based on age highlights the importance of tailoring health interventions to the specific needs and perspective of different age groups within the community. This nuance understanding can contribute to more effective public health strategies aimed at preventing and controlling measles in the region.

Findings in table 3 showed that reproductive age mothers irrespective of their level of education agreed on factors associated with measles of under-five children. Table 5 showed that there was no significant difference in the perceived factors associated measles of under-five children among reproductive age mothers in Owerri Municipal Council based on level of education. The findings were not expected and therefore surprising because education increases health awareness and knowledge. The higher one grows in education the higher knowledge the person acquires about health issues. This suggested that there is a collective awareness of factors that contribute to the vulnerability of children to measles that transcends educational differences (Uchendu, 2019; Omole et al., 2019). The findings may suggest that existing health education efforts have been effective in reaching out to mothers across different educational background.

**Conclusion**

The findings of this study showed that reproductive age mothers agreed on the perceived factors associated with measles of under-five children. Age of the mothers was an important factor that is associated with their perception of factors associated with of measles among their children while level of education was not. However, Government and policy makers in the country should make policies that mandate nursing mothers to breastfeed their babies at least up to one year of age. Government, health care workers and mothers should ensure that every child complete the full doses of measles immunization scheduled for their first year of life. Parents should make sure they separate their infected babies from other infants/ babies to avoid the transmission of the disease. Government, philanthropist and others can help to reduce the risk of measles on infants by helping parents provide healthy house facilities with proper ventilation. In developing a health programme for reproductive age mothers in Imo State, the demographic variables of age and level of education considered.

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