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Effect of Access to Immunization Information on Vaccine Acceptance amongst Parents/Caregivers Visiting Health Facilities in Wushishi Local Government Area, Niger State

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Abstract

Globally, vaccines are the most cost-effective medical intervention to prevent death and disease. The objectives of this study were to assess the effect of access to immunization information on vaccine acceptance amongst parents/caregivers visiting the major health facilities within Wushishi Local Government Area, Niger State. A semi-structured interviewer-administered questionnaire was used for this study. The result of the study showed a mean age of respondents was 26.88 years. 96.5% of the respondents were females, 45.5% had no formal education, 30.7% were unemployed, and 35.5% were of Hausa ethnicity. 65.1% of respondents obtain information on routine immunization within 12 months before the study. 54.5% had satisfactory knowledge of immunization, while 71.5% exhibited a favorable attitude toward immunization. The major source of information was health workers. Those who had access to information were more likely to have good knowledge of immunization (X^2=127.246, DF=1, p=0.001) and a more favorable attitude towards immunization (X^2=14.155, DF=1, p=0.001). This study has demonstrated that access to information on immunization greatly affects the knowledge and, consequently, the attitude of parents toward making a positive decision to accept vaccination. Efforts should be made to understand the content and effect of information sources on knowledge and attitudes toward vaccination by relevant stakeholders involved in the implementation of immunization programs.

Keywords: *Access to immunization, Access to immunization information, Vaccine acceptance.*

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Introduction

Globally, vaccines are the most cost-effective medical intervention to prevent death and disease [1]. Vaccines are estimated to prevent 2 to 3 million deaths per year. While ensuring equitable and efficient access to vaccination services is one key facet to increasing immunization rates, addressing vaccine hesitancy is another [2]. Vaccination rates have steadily increased in both developed and developing countries through the World Health Organization's Expanding Program on Immunization and various public-private partnerships [3]. The impact of vaccination on vaccine-preventable diseases cannot be overemphasized, especially as the incidence and prevalence of diseases such as cervical cancer, hepatitis, yellow fever, tuberculosis, cholera, and tetanus, among others, have been severely reduced due to vaccine availability [4].

Vaccine hesitancy has been a global trend these days and has been reported by approximately 90% of the countries in the world. Vaccine hesitancy refers to delayed acceptance or refusal of the vaccine despite its availability [5]. Despite the proven effectiveness and safety of vaccines, an increasing number of individuals perceive vaccines as unsafe and unnecessary [4]. WHO recently listed vaccine hesitancy as one of 10 threats to global health. Vaccine hesitancy is a complex phenomenon and is context-specific, varying across time, place, and vaccines [5].

A study on knowledge, attitude, and behaviour of Italian healthcare works towards vaccination saw it as a positive preventive healthcare tool [6]. In recent times, there has been a steady decline in vaccine coverage and an increase in the occurrence of vaccine-preventable diseases. For instance, there has been a 30% rise in measles cases globally. Vaccine hesitancy is believed to contribute greatly to this [4]. Reliable sources of information about immunizations vary by country. The effect of pro- and anti-vaccine news from developed countries on worldwide attitudes toward vaccination may significantly impact attitudes toward a vaccine [7]. The introduction of recombinant DNA and whole-genome sequencing techniques were major milestones in vaccine development, resulting in more vaccines to prevent more than 20 life-threatening diseases [8-10]

Childhood vaccination is an effective way to prevent serious childhood illnesses, but many children do not receive all the recommended vaccines. There are various reasons for this; some parents lack access because of poor quality health services, long distances, or lack of money. Other parents may not trust vaccines or the healthcare workers who provide them, or they may not see the need for vaccination due to a lack of information or misinformation about how vaccinations work and the diseases they can prevent [11]. All parents and patients should be informed about the risks and benefits of preventive and therapeutic procedures, including vaccination [12]. However, healthcare workers are considered the most trusted source of information on vaccines [13]. To improve vaccine uptake, we need to address the factors that drive negative vaccine concerns and understand what fosters vaccine acceptance or the intention to vaccinate [14].

This study aimed to assess the effect of access to immunization information on vaccine acceptance amongst parents/caregivers visiting the major health facilities within the Wushishi Local Government Area, Niger State.

Methodology

The study will be conducted in Wushishi Local Government Area (L.G.A) of Niger State, Nigeria, with the headquarters in wushishi town. It is located between longitude 9^0 43'N and 6^0 43'E. The Federal Medical Center/Comprehensive Health Center Zungeru-outpost in Zungeru town and General Hospital Wushishi in Wushishi town, both located within Wushishi L.G.A are the two major health facilities in Wushishi L.G.A (Obasohan

et al., 2018) Where this study will be undertaken.

A descriptive study design with a purposive sampling technique to select parents visiting the major health facilities within Wushishi Local Government Area, Niger State. The study population comprised adult individuals, both male and female, who are permanently residing within Wushishi L.G.A, who is with a child that is five years and below, visiting the major health facilities in Wushishi L.G.A, Niger State.

Sample Size Determination

Cochran's formula that can be used for sample size determination is:

$$N = \frac{Z^2PQ}{D^2}$$

Where:

N = Minimum sample size.

Z = percentage point on a normal distribution curve equivalent to 95% confidence interval = 1.96.

P = Prevalence obtained from previous similar study = 83% = 0.83.

For this study, the p-value used was obtained from a study Evaluating the Reasons for Partial and Non-immunization of Children in Wushishi Local Government Area, Niger State, Nigeria: Methodological Comparison, which showed that about 83% of children had received full or Partial immunization [9].

Q = Complementary Probability of p (i.e., q = 1 – p) = 1 – 0.83 = 0.17.

D = Degree of precision or margin of error allowed at 95% confidence limit = 5% = 0.05

Therefore, inserting the above figures into Cochran's formula, which is,

$$N = \frac{Z^2PQ}{D^2}$$

Thus,

$$N = \frac{(1.96)^2 \times 0.83 \times 0.17}{(0.05)^2} = 216.81$$

= 217.

The 'N' was rounded up to 217. However, to cater for refusal and non-response and to increase the precision, ten percent (i.e., 21) of the calculated minimum sample size was added to 'N'. Thus, the minimum sample size to be used in this study will be 238. Data will be collected through a pretested, structured, and interviewer-administered questionnaire.

Having selected the study group, the parents/caregivers visiting the facilities of F.M.C. Zungeru-outpost and General Hospital Wushishi will be selected using the purposive sampling method, and the survey instrument will be pre-tested, and questions found to be unclear or unnecessary will be modified or deleted accordingly.

Data will be collected by research assistants who are fluent in the local language, recruited and trained to standardize data collection procedures for this study using a pre-tested, interviewer-administered questionnaire. Following this, the collected questionnaire will be checked for completeness and consistency of the data by the principal investigator daily.

The Cooperation of the respondents will be sought by explaining the aims and objectives of the study to them as well as the fact that their responses will be handled confidentially and will be used only for the study. Names and any form of identification of the respondents will not be requested to ensure that the respondents remained anonymous and hence ensure confidentiality.

The collected data will be entered and analyzed using computer software (IBM SPSS Statistics 20).

Results and Discussion

Socio Demographic Characteristics of Respondents

During this research, 231 respondents consented to participate in the study giving a response rate of 97%. The socio-demographic characteristics of the respondents are shown below.

Table 1. Respondents' Sociodemographic Distribution

Variable	Categories	Count	Percentage
Age Groups	19years and bellow	3	1.3%
	20-24years	53	22.9%
	25-29years	118	51.1%
	30-34years	30	13.0%
	35years and above	27	11.7%
Sex	Female	223	96.5%
	Male	8	3.5%
Level of Education	No formal education	105	45.5%
	Primary school	37	16.0%
	Secondary School	78	33.8%
	Tertiary	11	4.8%
Ethnicity	Fulani	5	2.2%
	Gwari	45	19.5%
	Hausa	82	35.5%
	Igbo	3	1.3%
	Nupe	26	11.3%
	Yoruba	4	1.7%
	Others	66	28.6%
Religion	Christianity	25	10.8%
	Islam	206	89.2%
Employment Status	Government employed	11	4.8%
	Self-employed	149	64.5%
	Unemployed	71	30.7%

The respondents' ages ranged from 19 – 41 years, with a mean of 26.88 years and an SD of 4.86 years. The highest proportion of respondents, 118 (51.1%), was within the age group of 25–29 years with a median age of 25 years. It showed that 223 (96.5%) of the parents who participated in this study were mothers of the children.

The majority of the respondents, 206 (89.2%) were Muslims, and 149 (64.5%) of the parents were self-employed. Regarding the educational status of the respondents, 105 (45.5%) had not attended formal education while the majority 82 (35.5%) of the respondents were of the Hausa ethnic group.

Knowledge of Parents about Infant Immunization

Based on the knowledge item assessed, around three-fifths of the study participants (61.5%) were aware of EPI target diseases, and 187 (81.0%) of respondents replied that vaccination prevents infectious disease. The majority of study participants 93.5% agreed that Infants should both start a vaccination program just after birth and that It is necessary to vaccinate a breastfeeding infant. About 83.1% of the participants agreed that Vaccination is not harmful. Around 90% of the parents agreed to immunize their baby at full dose. 166 (71.9%) of parents were knowledgeable about when they should return for vaccination. And only 45 (19.5%) of the parents understand the side effects of vaccination (Table 2). And, just a little more than half, 126 (54.5%) of the parents had good knowledge about vaccination (Figure 1).

Table 2. Knowledge of Respondent on Infants' Immunization in Wushishi L.G.A

Knowledge Factors	Respondents Categories	
	Yes (%)	No (%)
Have you heard of EPI target diseases?	142(61.5)	89(38.5)
Vaccination prevents infectious diseases	187(81)	44(19)
Infants should start a vaccination program just after birth	216(93.5)	15(6.5)
Is it necessary to vaccinate a breastfeeding infant?	216(93.5)	15(6.5)
Is Vaccination harmful?	39(16.9)	192(83.1)
Are you agreeing to/have you immunize your baby's full dose?	206(89.2)	25(10.8)
Do you know about the side effects of EPI vaccines?	45(19.5)	186(80.5)
Do you know when the next vaccination date is for your infant?	166(71.9)	65(28.1)

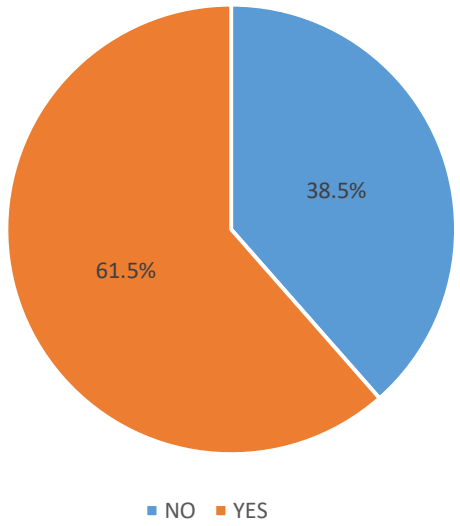

Figure 1. Information Obtained about Immunization to Parents in Wushishi L.G.A

Source of Immunization Information

In this study, 61.5% have obtained information about routine immunization within the last 1 year before this study.

Majority of respondents in the study source information about vaccination from two or more sources. Of the study participants, a cumulative 83.1% (192) of the parents utilized health workers as the major source of information, followed by 6.9% (16) from friends and family, while 6.1% (14) seek information from mass media (Radio/TV). Only 2.6% (6) use print media (posters/bulletins/newspaper), and 1.3% (3) use the Internet as their Major source of information. None of the study respondents use social media as a major source of information (Figure 1).

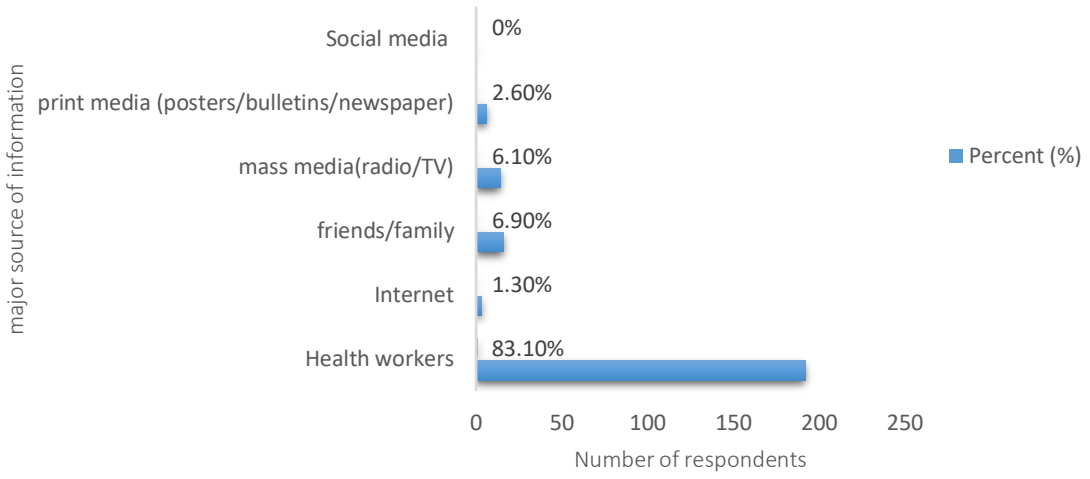

Figure 2. Major Source of Information about Immunization by Parents in Wushishi L.G.A

Attitude of Parents about Infant Immunization

Based on the items assessed on attitude, the majority of the respondents, 207 (89.6%) agreed that compliance with the immunization schedule is important and 190 (82.3%) agreed that all infants should be vaccinated. On the other hand, 50 (21.6%) of respondents believed that immunization makes infants sick, and 53 (22.9%) thought it could lead to death.

However, 159 (68.8%) of the parents agreed to recommend vaccines to others. Over one-third of the parents, 86 (48.9%), believed that vaccination is important only for commonly serious diseases. Similarly, just a little over one-fourth, 58 (25.1) of the parents believed that infants usually took too many vaccines (Table 2). and 71.5% of the parents had a favorable attitude (Figure 3)

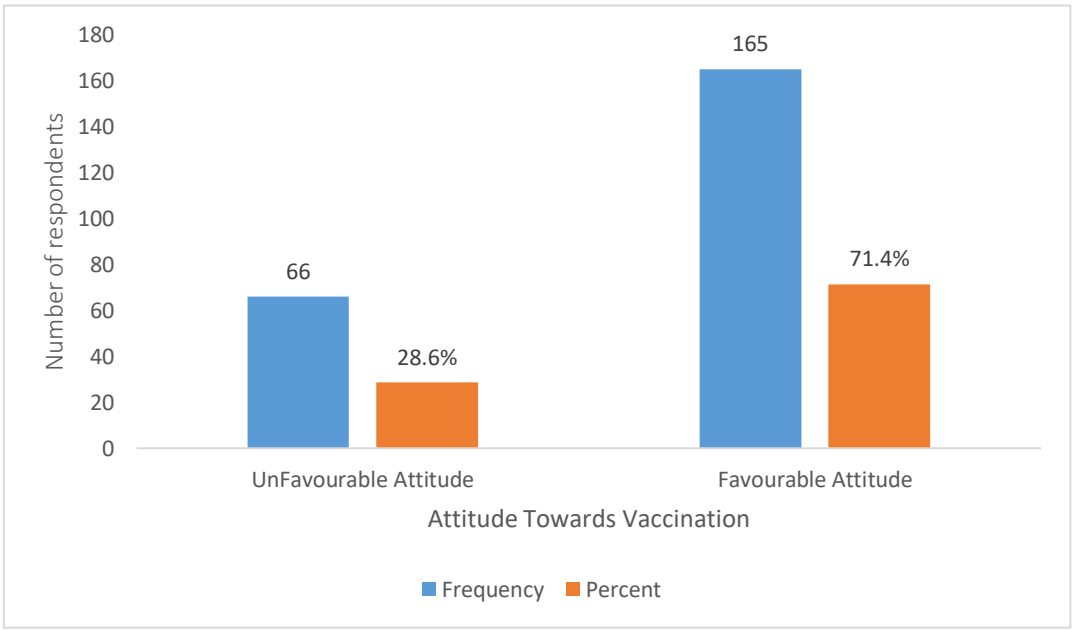

Figure 3. Attitude of Parents towards Immunization in Wushishi L.G.A

Associations with Variables

To test associations of different variables with knowledge and attitude towards immunization in this study, the chi-square(x^2) test of significance was used. Some variables, such as age distribution, employment status, and the major sources of immunization information, were regrouped to allow for the testing criteria to be met.

An association tested to have a p-value of <0.05 is described to be significantly associated with the variables being tested and vise-versa.

Associations with Knowledge of Immunization

From this study, the sex (X^2=0.069, DF=1, p=0.793), age distribution (X^2=0.002, DF=1, p=0.962), educational level (X^2=6.508, DF=3, p=0.089), employment status (X^2=1.139, DF=1, p=0.286) and of the respondents were all not significantly associated with the knowledge of immunization. However, there is a strong association between the attitude of the respondents and their knowledge of immunization (X^2=24.726, DF=1, p=0.001) (Table 3).

Table 3. Associations with Knowledge of Immunization

Variables	**Knowledge of Immunization**	
	Poor Knowledge	**Good Knowledge**
Sex		
Female	101(96.2%)	122(96.8%)0
Male	4(3.8%)	4(3.2%)
X^2=0.069, DF=1, p=0.793		
Age Groups		
25 years and bellow	53(50.5%)	64(50.8%)
26 years and above	52(49.5%)	62(49.2%)
X^2=0.002, DF=1, p=0.962		
Highest Educational Status		
No Formal Education	52(49.5%)	53(42.1%)
Primary School	11(10.5%)	26(20.6%)
Secondary School	39(37.1%)	39(31.0%)
Tertiary level	3(2.9%)	8(6.3%)
X^2=6.508, DF=3, p=0.089		
Employment Status		
Unemployed	36(34.3%)	35(27.8%)
Employed	69(65.7%)	91(72.2%)
X^2=1.139, DF=1, p=0.286		
Attitude towards Immunization		
Unfavorable Attitude	47(44.8%)	19(15.1%)
Favorable Attitude	58(55.2%)	107(84.9%)
X^2=24.726, DF=1, p=0.001		

Discussion

This study was designed to understand how access to immunization information influences the decisions or choices regarding vaccine acceptance among the parents in Wushishi L.G.A.

In this study, a significant proportion of the participants 61.5% have access to information on routine infant immunization within the last year. This is similar to the study by [15] but

contradicts a study by [16] were the majority of mothers had not obtained information on and possessed poor knowledge on routine immunization in Kaduna State, Nigeria [17]. Increased access to information on routine immunization could have been the reason for the good knowledge and favorable attitude of the parents observed towards immunization. This could lead to improved vaccination coverage and a reduction in the dropout rate as we found that mothers who received information on routine immunization and Vaccine Preventable Diseases (VPD) were likely to have vaccinated their children.

This study showed that there is significant influence of the educational level and employment status of parents in influencing their access to immunization information. This is comparable to separate studies by [18-20].

The majority of the parents in this study 83.1% source information about infant immunization from health workers, follow by Friends, Family, and neighbors 6.9%, then closely followed by sourcing from mass media (radio and TV channels) 6.1%, then from print media (posters/bulletins/newspaper), and only 1.3% source from the internet. Nobody sourced from the social media platform. These findings are similar to studies carried out in Nigeria [19], [20], and Ethiopia [20] but differ from a study that showed that awareness through the radio and television has increased the vaccination rate in Mexico and Bangladesh, where mass media is accessible and widely accessed [16], [20]. This might be due to the socio-demographic variability [19].

This is similar to a study by [20] carried out in Ethiopia, which showed that 65.1% of the parents at 95% CI (60.8–69.4%) had good knowledge about infant vaccination but contradicted a study by [16] carried out in Kaduna state, Nigeria where the majority of the mother had poor knowledge of immunization. Although higher educational levels, no doubt, allows a good understanding of children's health and an understanding of the educational messages and vaccination policy much more easily [20], Our study showed that literate parents were not more knowledgeable than non-literate ones about infant immunization. Thus the educational level of parents did not influence their knowledge of immunization.

The educational level of the respondents was found to be significantly associated with their attitude toward immunization. The reason behind this association might be that educated parents may have more opportunities to understand vaccination and its benefit than none literate parents, and this may create a favorable attitude towards infant immunization than none literate ones. Besides this, education level has an impact on parents' beliefs and, consequently, their attitudes. The higher the educational level, the higher the acceptance levels among the parents, and the more positive their attitude toward the acceptance of vaccination.

Conclusion

This study has demonstrated that access to information on routine immunization greatly affects the knowledge and, consequently the attitude of parents toward making a positive decision to accept vaccination.

Acknowledgment

We acknowledged the participation of the laboratory staff, and the secretary that participated in it seem that this work was successfully completed.

Conflict of Interest

The authors declare there is no conflict of interest while producing this article.

Recommendations

Based on the findings of this study, the following policy recommendations are therefore proffered.

All Interventions developed to improve immunization uptake should take into consideration the individual, community, and other socio-demographic characteristics. This

will be of great benefit when all these factors are properly incorporated during the planning, formulation, and implementation of policies by governmental and non-governmental organizations. Thus, leading to the improvement of childhood immunization coverage in the communities and Nigeria at large.

Efforts should be made to understand the content and effect of information sources on knowledge and attitudes toward vaccination by relevant stakeholders involved in the implementation of immunization programs.

There is a need to intensify massive public health sensitization and education of caregivers, including fathers and mothers, through the provision of Information, Education, and Communication materials to enhance the knowledge, attitude, and practice of parents about immunization and vaccine-preventable diseases. The use of print media should also be improved to provide parents with basic health information on routine immunization by distributing printed materials such as brochures, pamphlets, and leaflets in local languages. There should also be the erection of billboards on immunization in strategic places around the communities with inscriptions translated into local dialects.

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