Elite Journal of Public Health. Volume 2 issue 4(2024), Pp. 15-21
https://epjournals.com/journals/EJPH

Investigation of Influences of Demographic Factors of Mothers on the Acceptance of COVID-19 Vaccine in Abia State, Nigeria

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Abstract

The study is a comparative study on attitudes and acceptance of Covid-19 vaccine by mothers in Urban communities of Umuahia North and Aba South Local Government Areas of Abia State. The study adopted a comparative survey. The sample size for the study was 421 respondents obtained using simple random and stratified random sampling techniques. Data collected were coded and the descriptive statistic of mean and standard deviation calculated using the SPSS package were used to analyze the research questions while the ANOVA and t-test statistic were used to analyze the null hypothesis for the study. Findings reveal that there is no significant impact of mothers' demographic factors on the acceptance of COVID-19 vaccine in Abia State, among others.

Keywords: *demographic factors, mothers, acceptance COVID-19 vaccine*

Introduction

COVID-19 has evolved into a global pandemic affecting the healthcare system all around the world.[1] Coronavirus disease 2019 (COVID-19) is a highly communicable disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and the first case of the disease was reported in Wuhan, Peoples Republic of China (PRC), in December 2019.[2-10] COVID-19 has remained a global threat with 356,955,803 confirmed cases and 5,610,291 deaths recorded as of 26th January, 2022 of which the African continent makes up 3.5% of cases and 4% mortality. As of the reference date Nigerian has recorded 252,750 confirmed cases and 3,134 deaths with Abia State accounting for 2,152 these cases and 34 deaths. The pandemic has impacted Nigerians in significantly negative ways such as health, economic, familial, and workforce challenges.[11-17] Hence, many citizens are physically and emotionally affected.[18-23] Far-reaching measures, such as extensive testing, nationwide lockdown, social distancing, and strict seclusion of infected persons, are necessary to prevent the further spread of SARS- CoV-2. Despite all these government efforts, a study from Nigeria has revealed that there is still low adherence to COVID-19 precautionary measures among citizens, while evidence abounds that the precautionary behavior is not strong enough to curtail the virus, the alternative mean of curtailing the virus was suggested to be a pharmacological method (vaccination) so that people could be immune to the disease

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Vaccines are biological agents that humanity usually count on to decrease the death tolls from infectious diseases and their agents.[24-25]
The study was done to investigate influences of demographic factors of mothers on the acceptance of COVID-19 vaccine in Abia state

Research Methods

Research Design

A descriptive cross-sectional survey design was adopted for this study.

Area of study

The study was carried out in Abia State of Nigeria.

Target Population

The target population for this study comprised of adult mothers 18 years and above in Abia state, Nigeria. These were generally made of people in the public who were willing and consented to be interviewed. The target population of the study is 1,900,947 females between the ages of 18 years and above.

Sample and Sampling Technique

Sample Size

The sample size was calculated using Taro Yamane's sample calculation formula for comparative research design. The state's population is 3,727,347 people with 1,900,947 females (NPC, 2006). The sample was deduced using Taro Yamane formula;

$$n = \frac{N}{1+N(e)^2}$$

Where:
n = Sample size to be determined
N = Population size
e = Confidence level or Significant level (applied at 0.05)

$$n = \frac{1,900,947}{1+1,900,947\ (0.05)^2} = \frac{1,900,947}{4753.37} \quad n = 399.9 = 400.$$

Adjustment for 5% non-response rate
Final sample size= minimum sample size/ (1- non response rate anticipated).
= 400/(1-0.05) = 400/0.95 = 421.05 = 421.
Therefore, adjustment for 5% non-response rate generated a total sample size of 421 respondents.

Sampling Technique

The study adopted a multistage sampling involving technique in the selection of mothers. In the first stage**,** Stratified Sampling Technique was used to break the target population down into three (3) strata which are the three senatorial zones in the state. Secondly, Simple Random Sampling (SRS) technique was used to select two LGA in each of the senatorial zones. The local governments were Ohafia and Isuikwuato for Abia North, Umuahia North and Ikwuano for Abia Central and Aba North and Ukwa East for Abia South senatorial zones. Thirdly, judgmental (purposive) sampling technique was involved in the selection of two communities from each of

the local government areas, giving a total of 12 communities. These communities will be Ania and Ohafor in Ohafia LGA; Eluama and Ovim in Isuikwuato LGA; Amuzukwu and Ekeoba in Umuahia North LGA; Ariam and Okwe in Ikwuano LGA; Eziama and Uratta in Aba North LGA; and Akwete and Azumini in Ukwa East LGA. From each of the chosen communities, Households will be further listed. This list served as the sampling frame. From the sampling frame, 35 eligible mothers were selected randomly in each community. This gave a total of 420 mothers which were sampled for the study. However, 421 respondents' questionnaire was found usable for this analysis.

Inclusion criteria

1. Included mothers between the age of 18 and above, adequate literacy (at least a ninth-
    a. grade education)
2. Willingness to consider participation in future research studies, only clearly filled and legible questionnaires were included. Incompletely filled or illegible questionnaires were discarded.

Exclusion Criteria

3. Those below 18years of age
4. Those who refused to participate and those who will be unable to communicate effectively.

Method of Data Collection

Pre-validated questionnaires were used in this study. The questionnaires were distributed in-person randomly by the researchers by the help of three trained research assistants who are familiar with the research environments. Face-to-face administration was used. On the spot administration and retrieval was carried out. The researchers and the assistants helped those who could not read and understand.

Following self-introduction of researcher and establishment of rapport, consent to participate in the study, those who met the inclusion criteria will be given a copy of the instrument after the purpose of the study had been explained. They were asked to read the contents as carefully as possible and respond to each item as applicable.

Method of Data Analysis

The data obtained from completed questionnaires was collated, analyzed using the Statistical Package for the Social Sciences (SPSS) version 23 with descriptive statistics of mean, frequencies and percentages as the statistical tools answering descriptive such as demographics and research questions, while for inferential statistics, multiple regression analysis was used to test the stated hypotheses at a significance level of 0.05.

Results

Table 1: ANOVA analysis on mean square responses of the influence of mothers' demographic variables on the acceptance of COVID-19 vaccine.

S/N	Variables	Sum of squares	df	Mean square	F	Sig

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1	Between Groups	0.249	3	0.083	0.748	0.524
2	Within groups	46.227	417	0.111		
	Total	**46.476**	420			

Table 1 shows ANOVA analysis on Mean Square responses of the influence of mothers' demographic variables on the acceptance of COVID-19 vaccine in Abia state. Result from the analysis reveals that F-ration is 0.748 and sig. of 0.524 while the degree of freedom (df) is 420. Since it was observed that the calculated Sig. 0.524 is greater than the standard 0.05 level of significance, the hypothesis was therefore accepted implying that there is no significant influence of mothers' demographic factors on the acceptance of COVID-19 vaccine in Abia state, Nigeria.

Discussion

On the influence of mothers' demographic factor (variables) on the acceptance of COVID-19 vaccine, analysis of variance (ANOVA) result finding reveals that there is no significant influence of mother's demographic variables on the acceptance of COVID-19 vaccine in Abia State. In the study, the following demographic variables we are studying: level of education, occupation and age of respondents periods using the multiple comparisons method of finding means four groups in homogeneous subsets, an observed common means square (Error) of 3.058 and significant effects levels of 0.163 for level of education 0.6064 occupation and 1.00 and 0.785 for each subset all of which are above the standard 0.05 level of significance clearly showed there is no significant influence of mother's demographic variables on the acceptance of COVID-19 vaccine in Abia State but on tests of between subjects effects, it was observed that among the three variables compared, only age with a Sig. Value of 0.009 which is less than 0.05 level of significance showed a slight influence on acceptance of mothers to receiving COVID-19 vaccine. This implies that mother's age, level occupation or educational status does not determine or influence their level of acceptance to the COVID-19 vaccine immunization. They above finding corroborates with the finding of Al-Mustapha *et al* [26] who in their study on the Social-Demographic characteristics of COVID-19 vaccine recipients in Kwara state with 2,936 adults (18 years and above) found out that all respondents including those with minimal formal education showed high level of acceptability of the COVID-19 vaccine. According to them people mainly accepted the COVID-19 vaccine really because they needed to protect themselves from the fatal illness.

Conclusion

There is no significant influence of mothers' demographic variables on the acceptance of COVID-19 vaccine in the state. This states that while occupation and educational status of mothers does not influence their acceptance level of the vaccine immunization, younger mothers seem to accept the vaccine immunization more than the older ones;

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