
Effect of a Nurse-Led Interactive Education on Perception of Vaccine Safety Among Nurses in Lagos State University Teaching Hospital, Lagos

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ABSTRACT: *This study aims to assess the impact of a nurse-led interactive education on the perception of COVID-19 vaccine safety among nurses at Lagos State University Teaching Hospital (LASUTH) in Lagos, Nigeria. Utilizing a quasi-experimental, pre-/post-test one-group design, the study involved 527 nurses at LASUTH. The sample size of 250 was determined using the Yamane formula. Data was collected through a questionnaire with demographic and perception sections. Face and content validity were established, and a pilot study demonstrated instrument reliability (Cronbach alpha = 0.88). Participants were informed, and consent was obtained before administering pre-test questionnaires. Following the pre-test, a nurse-led interactive education session on COVID-19 vaccine safety occurred. Post-test questionnaires were distributed after the session. Statistical Package for the Social Sciences (SPSS) version 25 was employed for data analysis using descriptive and inferential statistics (independent sample t-test). The results, revealed a significant difference in COVID-19 vaccine safety perceptions among nurses pre- and post-intervention ($p < 0.05$). The pre-intervention mean score (8.4 ± 2.52) was lower than the post-intervention mean score (9.69 ± 1.82), indicating a notable increase in safety perceptions. The analysis showed a substantial mean difference (Mean diff. = 1.29, $t(235) = 24.26$, $p = .014$), rejecting the null hypothesis. In conclusion, the nurse-led interactive education program effectively influenced nurses' perceptions, enhancing their acceptance and confidence in COVID-19 vaccination. Recommendations include the development of comprehensive programs to address vaccine safety concerns and targeted surveys or focus group discussions to identify specific areas of concern among nurses.*

KEYWORDS: Nurse-Led Interactive Education, Perception, Vaccine Safety, Nurses

INTRODUCTION

The global landscape in the fight against COVID-19 has evolved substantially in many regions of the world. While the epidemic first wrecked devastation globally, the tireless efforts of scientists, healthcare professionals, and vaccine programmes have led to a drop in incidence, including in Nigeria. The country, previously badly hit, has experienced a decline in reported occurrences. However, the war against the virus is far from done. Vaccine reluctance and disinformation continue as important difficulties in the continuing fight against COVID-19.

The emergence of COVID-19 vaccinations constituted a critical milestone in the pandemic narrative. Vaccination initiatives, aiming for universal protection, have proven important in controlling the virus's spread. However, hesitation towards vaccinations, motivated by safety concerns and disinformation, remains an obstacle to obtaining universal vaccination coverage. This study derives from the urgent need to address these concerns, especially among healthcare personnel, who are both susceptible and vital in the battle against the infection.

Despite the global effectiveness of vaccination efforts, pockets of doubt and hesitation persist. The study of Estrela et al. (2022) underline the hesitant issues among health professionals, while study by Blanchard et al. (2018), Wang et al. (2020), and Jain et al. (2021) reveals comparable problems in other regions of the world. Even in Nigeria, Adejumo et al. (2021) revealed vaccination hesitation among healthcare personnel, highlighting an urgent need for tailored treatments. However, vaccine reluctance and misinformation regarding vaccine safety and efficacy have been key difficulties in ensuring a successful immunisation programme. (Estrela et. al., 2022) In a research, objective to investigate the variables related with vaccine hesitancy (VH) among health professionals (physicians, nurses, pharmacists, and dentists), Clinical trials are done to determine the safety and effectiveness of a vaccine before it can be brought to market. Prior to human trials, vaccines undergo first evaluation through laboratory and animal experimentation. Vaccines include a certain degree of risk for adverse effects, with the most prevalent ones being localised redness and discomfort at the injection site, as well as fever and allergic responses.

The COVID-19 pandemic has caused more than 700 million confirmed cases and over 6 million fatalities worldwide, establishing it as a major public health crisis in recent times (WHO, 2023). The emergence of COVID-19 vaccines has made vaccination campaigns a crucial approach in managing the transmission of the virus. Nevertheless, the efficacy of these efforts has been jeopardised by the reluctance to receive vaccinations, dissemination of false information, and lack of confidence in vaccination.

Lagos State, the most densely populated state in Nigeria with a population over 21 million, experienced significant repercussions as a result of the COVID-19 pandemic, resulting in a substantial number of cases and deaths (Osakinle et al., 2021). The Lagos State University Teaching Hospital (LASUTH), an essential healthcare institution, provided medical care to the impacted populace and frontline staff, including nurses who faced increased risks of exposure

(Osakinle et al., 2021). In the face of the worldwide challenge presented by the pandemic, vaccination has emerged as a crucial technique in mitigating its transmission (WHO, 2021). Nevertheless, the reluctance to receive vaccines and the dissemination of false or misleading information presented substantial obstacles. This study sought to assess the effects of a nurse-led interactive educational programme on the perceptions of COVID-19 vaccinations, safety, and disease risk among nurses at LASUTH. The study provides valuable insights into the perspectives of nurses in Nigeria.

The issue of vaccine hesitancy, which is a worldwide obstacle in the fight against COVID-19, requires a more profound comprehension of its underlying factors. These factors include disinformation, fear, distrust, and complacency (Bartolo et al., 2019). Research has shown a connection between vaccination intentions and characteristics such as beliefs of disease length, media representation, age, and ethnicity (Cooper et al., 2021).

The study's findings emphasised the efficacy of nurse-led interactive education in tackling vaccination reluctance among nurses (Xixi et al., 2022). The strategies encompassed intervention methods that provided precise information, facilitated interactive sessions, addressed safety concerns, and addressed issues of distrust and complacency. The need of tackling vaccination hesitancy, particularly among Nurses, was emphasised, leading to the suggestion of nurse-led interactive education as a successful solution (Yusra et al., 2022). Providing precise information, ensuring safety, creating confidence, and promoting immunisation were crucial in debunking misconceptions and promoting acceptance of vaccines.

The study's objective to fill the information vacuum regarding the efficacy of nurse-led interactive education programmes in increasing vaccination use among nurses was crucial. The study aimed to give healthcare practitioners and policymakers with valuable insights on effective measures to increase vaccination acceptance and reduce hesitation, which is particularly common among healthcare workers, especially nurses (Rongjian et al., 2022). Moreover, these results might provide valuable insights for the execution of comparable initiatives in various healthcare environments, therefore supporting worldwide endeavours to combat vaccination reluctance and enhance readiness for pandemics.

The main objective of the study is to assess the effect of a nurse-lead interactive education on perception of covid-19 vaccine safety among Nurses in Lagos state university teaching hospital, Lagos, Nigeria. The study specifically assessed the pre and post intervention of perceptions of vaccine safety among Nurses

Research Hypothesis

H₀1: There is no significant difference between the pre and post intervention of perceptions of vaccine safety among Nurse

METHODOLOGY

The study used a quasi-experimental, pre-/post-test one-group design to assess the effect of nurse-led interactive education on perception of COVID-19 vaccine safety among nurses in Lagos State University Teaching Hospital, Lagos, Nigeria. The study population consists of 527 nurses in LASUTH, Lagos state. Being nurses who were available during data collection in LASUTH. The sample size used was calculated using Yamane sample size formula which yielded sample size of 250.

The instrument for data collection was a questionnaire consisting of two sections. Section A assessed the demographic profile of respondents while section B assessed the perception towards vaccine safety, consisting of 6 questions. The validity of the instrument was determined through face and content validity. A pilot test of the instrument was carried out with 10% of the calculated sample size, it was used to conduct and determine the reliability of the instrument which was ascertained using Cronbach alpha coefficient after administration of the instrument. The results of pilot study indicated an internal consistency as it has a coefficient value of 0.88.

Participants were informed about the pre-test/post-test questionnaire and how to complete it. Informed consent was obtained from the participants before they participated in the research. The pre-test questionnaire was distributed to the participants. The research assistants explained the instructions for completing the questionnaire and answered any questions that the participants had. Participants were given enough time to complete the questionnaire independently. Once the pre-test questionnaire had been completed, the research assistants collected it. After the pre-test questionnaire had been completed, the nurse-led interactive education session took place. The nurse provided information about COVID-19 vaccine safety. Once the nurse-led interactive education session had been completed, the post-test questionnaire was distributed to the participants. The collected data was analyzed using statistical package for social sciences (SPSS) version 25. Descriptive statistics and inferential statistics (independent sample t-test) were used to analyse the data at 0.05 level of significance.

RESULTS**Table 1: Socio demographic distribution of Participants**

Variable		F(%)
Age	Less than 20yrs	-
	20-39yrs	164(69.5)
	40-59yrs	68(28.8)
	60yrs and above	4(1.7)
	Total	236(100)
	Mean age	30yrs \pm 0.503
Gender	Male	52(22)
	Female	184(78)
	Total	236(100)
Ethnicity	Hausa	16(6.8)
	Igbo	48(20.3)
	Yoruba	172(72.9)
	Total	236(100)
Religion	Christianity	176(74.6)
	Islam	60(25.4)
	Total	236(100)
Highest level of Education	RN only	60(25.4)
	BSC	172(72.9)
	MSC	-
	PhD	4(1.7)
	Total	236(100)

Table 1 delineates the socio-demographic profile of the respondents. A majority (69.5%) fell within the 20-39 age bracket, with females constituting 78% of the sample. Furthermore, over half (74%) identified as Yoruba, while a significant portion (74.6%) practiced Christianity. Moreover, the study revealed that the majority (72.9%) of respondents held a degree.

Table 2: Summary of Respondents Perceptions towards COVID-19 Vaccine safety

Scores	Level of perception	Pre- intervention	Post -intervention
		F(%)	F(%)
Less than 5	Poor	20(8.5%)	4(1.7)
5-9	Fair	132(55.9%)	112(47.5)
10-15	Good	84(35.6%)	120(50.8)
Total		236(100%)	236(100)
Mean		=8.41\pm2.52	9.69\pm1.82

Table 2 presents participants' perceptions of COVID-19 vaccine safety pre- and post-intervention. Before the intervention, respondents had a mean safety perception score of 8.41 ± 2.52 , which increased to 9.69 ± 1.82 post-intervention. The Table indicates a notable rise in participants holding positive perceptions of COVID-19 vaccine safety following the intervention. This suggests an increase in favorable perceptions and a decrease in neutral perceptions, indicating the intervention's effectiveness.

Table 3. Respondents Perceptions towards COVID-19 Vaccine safety

Items	Options	Intervention	
		Pre	Post
It is legally mandatory to take COVID-19 vaccine	Yes	108(45.8%)	120(50.8)
	No	104(44.1%)	96(40.7)
	I don't know	24(10.2%)	20(8.5)
It is safe for immunocompromised people to take the COVID-19 vaccine	I dont know	64(28.8%)	28(11.9)
	No	68(28.8%)	36(15.3)
	Yes	100(42.4%)	172(72.9)
Protective immunity against the COVID-19 infection will be achieved after	first dose of vaccination	28{11.9% }	60(25.4)
	second dose of vaccination	156(66.1%)	144(61)
	fourteen days after first dose of vaccination	28(11.9%)	12(5.1)
	I dont know	24(10.2%)	20(8.5)
When my turn for vaccine comes, I am willing to take the COVID-19 vaccine	strongly disagree	36(15.3%)	-
	Disagree	20(8.5%)	8(3.4)
	Strongly agree	180(76.3%)	228(96.6)
I will prefer to acquire immunity against COVID-19 naturally instead of through vaccination	Strongly disagree	84(35.6%)	120(50.8)
	Disagree	44(18.6%)	48(20.3)
	Strongly agree	108(45.8%)	68(28.8)
I am willing to take the vaccine even if I have to pay for it	Strongly disagree	48(20.3%)	16(6.8)
	Disagree	48(20.3%)	16(6.8)
	Strongly agree	140(59.3%)	204(86.4)

Table 3 displays participants' responses toward COVID-19 vaccine safety. Pre-intervention, 50.8% believed in the legal mandate for COVID-19 vaccination, while post-intervention, 73.9% regarded it as safe for immuno-compromised individuals. Additionally, there was a notable 20% increase in the willingness to receive the vaccine post-intervention.

Test of Hypothesis

H₀1: There is no significant difference between the pre and post intervention of perceptions of vaccine safety among intervention group.

Table 4: t-test analysis for mean score Comparison between pre and post intervention of nurses perception towards COVID-19 vaccines Safety in LASUTH, Lagos state, Nigeria

	Test	N	Mean±SD	Mean difference	Std. error mean	t.value (df)	P	Dec.
Vaccines Safety	Pre intervention	236	8.4±2.52	1.29	0.045	24.265 {235}	0.014	Sig
	Post intervention		9.69±1.82					

Table 4 presents the results for hypothesis two in this study, indicating a significant difference in COVID-19 vaccine safety perceptions among nurses pre- and post-intervention ($p < 0.05$). The pre-intervention mean score (8.4 ± 2.52) was lower than the post-intervention mean score (9.69 ± 1.82), indicating a notable increase in safety perceptions. Moreover, the analysis showed a substantial mean difference between pre- and post-intervention for COVID-19 vaccine safety (Mean diff. = 1.29, $t(235) = 24.26$, $p = .014$). This difference suggests that the intervention significantly influenced perceptions, rejecting the null hypothesis based on these findings.

DISCUSSION

The intervention group demonstrated a significant improvement in their perception of vaccine safety. This finding highlights the effectiveness of the nurse-led interactive education program in addressing concerns and misconceptions related to vaccine safety. It indicates that providing accurate and evidence-based information can positively impact nurses' perceptions, leading to increased confidence in vaccine safety. These results align with the studies by Blanchard et al. (2018) and Jayagobi et al. (2021), which also emphasized the importance of educational interventions in promoting trust and confidence in vaccine safety among healthcare professionals. The findings of this study contribute to the existing literature by specifically focusing on the perceptions of vaccine safety among nurses in LASUTH. By addressing nurses' concerns and providing them with accurate information about vaccine safety, the nurse-led interactive education program has the potential to enhance vaccine uptake and promote a safe healthcare environment.

CONCLUSION

The findings indicate that the intervention program effectively influenced nurses' perceptions, enhancing their acceptance and confidence in COVID-19 vaccination.

Recommendations

1. There is need to develop comprehensive programs, workshops, or training to address concerns and misconceptions related to vaccine safety among nurses, building on the success of the nurse-led interactive education program.
2. The hospital management should conduct surveys or focus group discussions to identify and target specific areas of concern among nurses, ensuring a more focused and effective educational approach
3. The hospital management should facilitate forums or platforms for nurses to share experiences, discuss concerns, and exchange information, fostering a supportive and informed healthcare community.
4. The hospital management should implement mechanisms for long-term sustainability, including periodic reinforcement of educational initiatives, continuous monitoring of vaccine safety perceptions, and adaptation of interventions based on evolving concerns or new information.

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