



Nutrition Education as a Determinant of Safe Delivery among Pregnant Women in Ijebu-Ode Local Government Area of Ogun State

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Abstract

This research investigates the influence of nutrition education on safe delivery outcomes among pregnant women in Ijebu Ode Local Government Area of Ogun State. Using a quantitative approach, data were collected from pregnant women attending antenatal care clinics, with a sample size of 500 participants. Multiple regression analysis was employed to examine the relationship between nutrition education interventions and safe delivery outcomes, maternal nutrition knowledge, dietary practices, and neonatal health indicators. The results revealed a significant association between nutrition education interventions and improved safe delivery outcomes, with a correlation coefficient (R) of 0.571 and a statistically significant F-value of 142.7 ($p < 0.05$). Furthermore, maternal nutrition knowledge and dietary practices were found to significantly impact the likelihood of experiencing a safe delivery, with an R-value of 0.726 and a statistically significant F-value of 330.675 ($p < 0.05$). Neonates born to mothers who received nutrition education during pregnancy exhibited higher birth weights and a lower incidence of preterm births, with an R-value of 0.697 and a statistically significant F-value of 256.965 ($p < 0.05$). These findings underscore the importance of integrating comprehensive nutrition education initiatives into maternal healthcare programmes to improve safe delivery outcomes and enhance maternal and neonatal health in the study area. This study contributes to the existing literature by providing empirical evidence of the positive impact of nutrition education on maternal and neonatal health outcomes, thereby informing policy-makers and healthcare providers about the importance of prioritising nutrition education interventions in maternal healthcare programmes.

Keywords: Maternal nutrition, knowledge, Nutrition education, Safe delivery, Pregnant women

INTRODUCTION

Pregnancy represents a transformative period in a woman's life, marked by profound physiological changes and heightened nutritional demands. Adequate nutrition during pregnancy supports the foetus's health and development and significantly influences maternal well-being and pregnancy outcomes. Among the myriad factors that contribute to safe and successful delivery, nutrition education emerges as a pivotal determinant, playing a crucial role in promoting optimal maternal health and ensuring favourable birth outcomes (Purba & Sitepu, 2023). Nutrition education encompasses a multifaceted approach aimed at enhancing individuals' knowledge, attitudes, and practices related to dietary intake and nutritional requirements. Nutrition education during pregnancy has emerged as a crucial component of maternal healthcare interventions, with increasing recognition of its potential to influence safe delivery outcomes among pregnant women (Marshall et al., 2022). Maternal nutrition during pregnancy is a crucial determinant of maternal and neonatal health outcomes. Adequate nutrition plays a vital role in supporting maternal physiological changes, promoting foetal growth and development, and reducing the risk of adverse pregnancy outcomes such as preterm birth, low birth weight, and maternal complications during labour and delivery (Mate et al., 2021; Moreno-Fernandez et al., 2020).

Nutrition education interventions during pregnancy have emerged as a key strategy for improving maternal dietary practices and promoting optimal pregnancy outcomes. These interventions typically involve the provision of information, guidance, and support regarding essential nutrients, recommended dietary guidelines, and healthy eating habits tailored to the specific needs of pregnant women (Beulen et al., 2020). Studies have shown that nutrition education programmes can lead to improvements

in maternal nutrition knowledge, dietary diversity, and nutrient intake during pregnancy (Katenga-Kaunda et al., 2021; Prasetyo et al., 2023). Several studies have investigated the impact of nutrition education interventions on safe delivery outcomes among pregnant women. A study conducted by Nyamasege et al. (2019) in Kenya found that participation in a nutrition education programme was associated with a significant reduction in the incidence of preterm birth and low birth weight among pregnant women. Similarly, a systematic review by Lin et al. (2020), concluded that nutrition education interventions during pregnancy were associated with improved birth weight, gestational age at delivery, and reduced risk of pregnancy complications such as preeclampsia and gestational diabetes. In addition to nutrition education interventions, maternal nutrition knowledge and dietary practices have been extensively studied to safe delivery outcomes. Research has consistently shown that pregnant women with higher levels of nutrition knowledge are more likely to adhere to recommended dietary guidelines, leading to improved pregnancy outcomes (Caut et al., 2020; Katenga-Kaunda et al., 2021). Similarly, adherence to healthy dietary practices during pregnancy, including consumption of nutrient-rich foods and avoidance of harmful substances, has been associated with reduced risk of preterm birth and low birth weight (Chakona & Shackleton, 2019; Ramulondi et al., 2021)

However, despite the growing body of evidence supporting the importance of maternal nutrition education and dietary practices during pregnancy, there are still gaps in our understanding of the effectiveness of these interventions in specific geographic regions, such as Ijebu Ode Local Government Area of Ogun State, Nigeria. Furthermore, conflicting findings exist regarding the impact of nutrition education on safe delivery outcomes, highlighting the need for further research to elucidate the complex relationships between maternal nutrition, education, and pregnancy outcomes in diverse populations.

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HYPOTHESES

1. Nutrition education interventions during pregnancy will not be significantly associated with improved safe delivery outcomes among pregnant women in Ijebu Ode Local Government area of Ogun State
2. Maternal nutrition knowledge and dietary practices will not significantly impact the likelihood of experiencing a safe delivery among pregnant women in Ijebu Ode Local Government area of Ogun State
3. Neonates born to mothers who received nutrition education during pregnancy will not significantly have higher birth weights and low incidence of preterm births compared to neonates born to mothers who did not receive such education among pregnant women in Ijebu Ode Local Government area of Ogun State

MATERIALS AND METHODS

Design, sample, and procedure

This cross-sectional study was carried out among 500 randomly selected pregnant women of reproductive age in Ijebu Ode Local Government Area of Ogun State, Nigeria from July 2023 to December 2023. Eligibility criteria were being a pregnant woman or new mother of 0-5 years old attending antenatal and postnatal clinics in State Hospital, in Ijebu Ode, and 10 primary health centres across the Ijebu Ode local

government. Each participant was given a questionnaire package to be filled out within the selected Primary Health centres and Hospitals in the area, after seeking their consent, with the help of research and assistance.

Survey instrument

A questionnaire package comprising three sections: Section A Contains the demographic data of the respondents While Section B comprises a self-report measure in 45 items that elicits information on participant's responses on nutrition education.

Section C inquired about participants' engagement with nutrition education intervention during pregnancy, the frequency and duration of attendees, as well as the perception of the effectiveness of the perception of the effectiveness of these interviews.

Statistical analysis

Data were analysed using inferential statistics involving multiple regression analysis and Analysis of variance (ANOVA) to test the hypotheses at a 0.05 level of significance

Testing of the Hypotheses

Hypothesis one: Nutrition education interventions during pregnancy will not be significantly associated with improved safe delivery outcomes among pregnant women, in Ijebu Ode Local Government area of Ogun state.

Table 1. Summary of the multiple regression of Nutrition education interventions Model Summary

Model	R	R-Square	Adjusted R Square	Std Error of the Estimate
Nutrition education interventions	0.571	0.326	0.323	0.384

Analysis of ANOVA

Model	Sum of square	Df	Mean Square	F	Sig.
Regression	21.068	1	21.068	142.76	0.00
Residual	43.647	296	0.147		
Total	64.715	297			

The result in Table 1.2 reveals that Nutrition education interventions are significantly associated with improved safe delivery outcomes among pregnant women in Ijebu Ode Local Government Area of Ogun State. (R=0.571, F=142.7. P<0.05). The table further revealed that the R square value of 0.326, and adjusted R square of 0.323 were obtained. This implies that the independent variable (Nutrition education interventions) accounted for 32.6%. Since 0.00<0.05, the null hypothesis is rejected, and it is concluded Nutrition education interventions

are significantly associated with improved safe delivery among pregnant women in Ijebu Ode Local Government Area of Ogun State.

Hypothesis Two: Maternal nutrition knowledge and dietary practices will not significantly impact the likelihood of experiencing a safe delivery among pregnant women in Ijebu Ode Local Government area of Ogun State.

Table 2. Summary of the regression of Maternal nutrition knowledge and dietary practices
Model Summary

Model	R	R-Square	Adjusted R	Std. Error of the Estimate
Maternal nutrition knowledge and dietary practices	0.726	0.527	0.525	0.345

Analysis of ANOVA

Model	Sum of square	Df	Mean Square	F	Sig.
Regression	39.375	1	39.375	330.657	0.00
Residual	35.367	297	0.119		
Total	74.742	298			

The result in Table 2.2 reveals that Maternal nutrition knowledge and dietary practices will significantly impact the likelihood of experiencing a safe delivery among pregnant women in Ijebu Ode Local Government Area of Ogun State. (R=0.726, F=330.675, p<0.05). The table further revealed that the R square value of 0.527, and adjusted R square of 0.525 were obtained. This implies that the independent variables (Maternal nutrition knowledge and

dietary practices) accounted for 52.7%. Since 0.00<0.05, the null hypothesis is rejected and it is concluded that Maternal nutrition knowledge and dietary practices significantly impact the likelihood of experiencing a safe delivery among pregnant women in Ijebu Ode Local Government area of Ogun State.

Hypothesis Three: Neonates born to mothers who received nutrition education during pregnancy will not significantly have higher birth

weights and low incidence of preterm births among pregnant women in Ijebu Ode Local Government Area of Ogun State

Table 3. Summary of the regression of Higher Birthweight and low incidence of preterm births
Model Summary

Model	R	R-Square	Adjusted R square	The std error of the estimate
Higher Birthweight and low incidence of preterm births	0.679	0.461	0.459	0.400

Analysis of ANOVA

Model	Sum of square	Df	Mean Square	F	Sig.
Regression	40.668	1	40.668	256.965	0.00
Residual	47.559	297	0.160		
Total	88.227	298			

The result in Table 3.2 reveals that Neonates born to mothers who received nutrition education during pregnancy will have higher birth weights and there will be a lower incidence of preterm births compared to neonates born to mothers who did not receive such education pregnant women in Ijebu Ode Local Government Area of Ogun State. ($R=0.697$, $F=256.965$, $P<0.05$). The table further revealed that the R square value of 0.461, and adjusted R square of 0.459 were obtained as multiple regression coefficients. This implies that the independent variable (Higher Birthweight and low incidence of preterm births) accounted for 46.1%. Since $0.00<0.05$, the null hypothesis is rejected, and it is concluded neonates born to mothers who received nutrition education during pregnancy will have higher birth weights and there will be a lower incidence of preterm births compared to neonates born to mothers who did not receive such education among pregnant women among pregnant women in Ijebu Ode Local Government Area of Ogun State.

DISCUSSION OF FINDINGS

The findings from Table 1.2 indicating a significant association between nutrition education interventions and improved safe delivery outcomes among pregnant women align with existing literature on the subject. Numerous studies have demonstrated the beneficial effects of nutrition education during pregnancy on maternal and neonatal health outcomes. A study by Katenga-Kaunda et al. (2021), conducted in Kenya found that participation in a nutrition education programme led to a significant reduction in the incidence of low birth weight and preterm birth among pregnant women. They attributed these positive outcomes to increased maternal knowledge of nutrition and adherence to healthy dietary practices promoted through the educational intervention. Similarly, a review by (Oh et al., 2020), synthesised evidence from multiple randomised controlled trials and observational studies to assess the impact of nutrition education on pregnancy outcomes. The review concluded that nutrition education interventions were associated with improvements in birth weight, gestational age at delivery, and reduced risk of pregnancy complications such as preeclampsia and

gestational diabetes. Moreover, a study (Asresie & Dagneu, 2019), conducted in Ethiopia found that pregnant women who received nutrition education had significantly higher rates of institutional delivery and skilled attendance during childbirth compared to those who did not receive such education. This suggests that nutrition education interventions not only influence maternal dietary behaviours but also contribute to improved access to healthcare services, which is crucial for safe delivery. The significant association between nutrition education interventions and improved safe delivery outcomes among pregnant women in Ijebu Ode Local Government Area of Ogun State is supported by a body of literature highlighting the beneficial effects of maternal nutrition education on maternal health, birth outcomes, and access to healthcare services during pregnancy. These findings underscore the importance of integrating comprehensive nutrition education initiatives into maternal healthcare programmes to enhance the well-being of both mothers and infants.

The findings presented in Table 2.2 provide compelling evidence that maternal nutrition knowledge and dietary practices significantly influence the likelihood of experiencing a safe delivery among pregnant women in Ijebu Ode Local Government Area of Ogun State. The results indicate a strong positive correlation between maternal nutrition knowledge, dietary practices, and safe delivery outcomes, as evidenced by a correlation coefficient (R) of 0.726. The obtained F-value of 330.675 suggests that the relationship between the independent variables (maternal nutrition knowledge and dietary practices) and the dependent variable (safe delivery outcomes) is highly significant. Furthermore, the p-value (p) being less than 0.05 indicates that the association between these variables is statistically significant at the 5% level of significance, providing robust evidence to reject the null hypothesis. The regression analysis yielded an R-square value of 0.527, indicating that approximately 52.7% of the variance in safe delivery outcomes can be explained by maternal nutrition knowledge and dietary practices. The adjusted R-square value of 0.525 suggests that this percentage remains consistent even when considering the number of predictors in the model. These findings align

with existing literature on the subject, which consistently demonstrates the importance of maternal nutrition knowledge and dietary practices in influencing pregnancy outcomes. A study by (Caut et al., 2020), found that pregnant women with higher levels of nutrition knowledge were more likely to adhere to recommended dietary guidelines, resulting in improved birth outcomes such as higher birth weight and reduced risk of preterm birth. Similarly, a review by (Gete et al., 2020), concluded that maternal dietary practices during pregnancy significantly impact maternal and infant health outcomes, including birth weight, gestational age at delivery, and risk of pregnancy complications. These authors emphasised the importance of promoting healthy dietary behaviours through targeted nutrition education interventions to optimise pregnancy outcomes. The significant association between maternal nutrition knowledge, dietary practices, and safe delivery outcomes underscores the importance of comprehensive maternal healthcare programmes that integrate nutrition education initiatives. By empowering pregnant women with knowledge and skills to make informed dietary choices, healthcare providers can effectively support maternal and infant health during the prenatal period, ultimately contributing to improved birth outcomes and reduced maternal and neonatal morbidity and mortality.

The results presented in Table 3.2 provide compelling evidence supporting the hypothesis that neonates born to mothers who received nutrition education during pregnancy will have higher birth weights and lower incidence of preterm births in Ijebu Ode Local Government Area of Ogun State. The correlation coefficient (R) of 0.697 indicates a strong positive relationship between nutrition education during pregnancy and favourable neonatal outcomes such as higher birth weights and reduced incidence of preterm births. The high F-value of 256.965 suggests that the relationship between the independent variable (nutrition education during pregnancy) and the dependent variable (neonatal outcomes) is highly significant. Furthermore, the p-value (P) being less than 0.05 indicates that this association is statistically significant at the 5% level of significance, providing robust evidence to

reject the null hypothesis. The regression analysis yielded an R-square value of 0.461, indicating that approximately 46.1% of the variance in neonatal outcomes (birth weights and incidence of preterm births) can be explained by receiving nutrition education during pregnancy. The adjusted R-square value of 0.459 suggests that this percentage remains consistent even when considering the number of predictors in the model. These findings are consistent with existing literature demonstrating the positive impact of maternal nutrition education on neonatal health outcomes. Studies have consistently shown that pregnant women who receive nutrition education are more likely to adhere to healthy dietary practices, resulting in improved fetal growth and development, higher birth weights, and a reduced risk of preterm birth (Beulen et al., 2020). Furthermore, a study by (Chia et al., 2019; Gete et al., 2020) found that nutrition education interventions during pregnancy were associated with a 32% reduction in the risk of preterm birth. These authors emphasised the importance of providing comprehensive nutrition education to pregnant women as a key strategy for reducing the burden of preterm birth and improving neonatal health outcomes. The significant association between nutrition education during pregnancy and favourable neonatal outcomes, as evidenced by higher birth weights and a lower incidence of preterm births, highlights the importance of integrating nutrition education initiatives into maternal healthcare programmes. By empowering pregnant women with knowledge and skills to make healthy dietary choices, healthcare providers can effectively improve neonatal health outcomes and contribute to the overall well-being of mothers and infants in Ijebu Ode Local Government Area of Ogun State.

CONCLUSION

In conclusion, this research provides compelling evidence of the significant positive impact of nutrition education on safe delivery outcomes among pregnant women in Ijebu Ode Local Government Area of Ogun State. Through comprehensive analysis of data collected from 500 participants, it was revealed that nutrition education interventions play a crucial role in promoting maternal and neonatal health, as evidenced by improved safe delivery

outcomes, higher birth weights, and a reduced incidence of preterm births. The findings highlight the importance of integrating nutrition education initiatives into maternal healthcare programmes to empower pregnant women with the knowledge and skills to make informed dietary choices. By equipping expectant mothers with the necessary information about proper nutrition and healthy dietary practices, healthcare providers can effectively contribute to reducing the risk of adverse pregnancy outcomes and improving maternal and neonatal health.

Furthermore, the results emphasise the need for targeted interventions aimed at enhancing maternal nutrition knowledge and promoting healthy dietary behaviours among pregnant women. Such interventions should be tailored to address the specific needs and cultural contexts of the target population, with a focus on increasing access to nutrition education resources and supporting sustained behaviour change throughout the prenatal period. Overall, this study underscores the critical role of nutrition education in maternal healthcare and advocates for its integration into existing healthcare systems to improve pregnancy outcomes and enhance the well-being of mothers and infants. By prioritising nutrition education initiatives, policymakers and healthcare providers can make significant strides towards achieving better maternal and neonatal health outcomes in communities like Ijebu Ode Local Government Area of Ogun State, ultimately contributing to the broader goal of reducing maternal and child mortality rates.

RECOMMENDATIONS

Based on the findings and conclusions of this research, the following recommendations are suggested to enhance maternal and neonatal health outcomes in Ijebu Ode Local Government Area of Ogun State:

1. **Integrate Nutrition Education into Antenatal Care:** Healthcare facilities should incorporate structured nutrition education sessions into routine antenatal care visits. These sessions should focus on essential nutrients during pregnancy, recommended

dietary guidelines, and strategies for adopting healthy eating habits.

2. **Tailor Educational Materials to Local Context:** Develop culturally appropriate educational materials and resources that resonate with the local population's cultural beliefs, traditions, and dietary preferences. This ensures that nutrition education messages are relatable and effectively communicated to pregnant women.
3. **Community-Based Nutrition Programmes:** Implement community-based nutrition programmes that engage pregnant women, their families, and community leaders in promoting healthy nutrition practices. These programmes can include cooking demonstrations, community workshops, and peer support groups focused on maternal and child nutrition.
4. **Mobile Health (mHealth) Interventions:** Utilize mobile health technologies, such as text messaging and smartphone applications, to deliver personalised nutrition education messages and reminders to pregnant women. These interventions can serve as cost-effective tools for reaching a wide audience and supporting behaviour change.
5. **Supportive Policy Environment:** Advocate for policies that prioritise maternal and child nutrition, including increased funding for nutrition education programmes, integration of nutrition interventions into maternal healthcare services, and implementation of supportive policies to improve access to nutritious foods.
6. **Empowerment of Women:** Promote women's empowerment through education, economic opportunities, and access to resources, as empowered women are more likely to prioritise their health and the health of their children.

By implementing these recommendations, stakeholders can work collaboratively to strengthen nutrition education initiatives and improve maternal and neonatal health outcomes in Ijebu Ode Local Government Area of Ogun

State. Investing in maternal nutrition education is not only a sound public health strategy but also a fundamental human right that can positively impact the lives of women and children for generations to come.

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