PERCEIVED LIFESTYLE FACTORS INFLUENCING MISCARRIAGE AMONG WOMEN IN ILORIN EAST LOCAL GOVERNMENT AREA, KWARA STATE

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Abstract
Pregnancy is often viewed as a delicate and transformative period in a woman's life, where every lifestyle choice can significantly impact maternal and foetal health. For expectant mothers, understanding how these lifestyle choices contribute to the risk of miscarriage is crucial for promoting healthier pregnancies. The study examined perceived lifestyle factors influencing miscarriage among women in Ilorin East LGA, Kwara State. The objectives examined were if (i) smoking is lifestyle factor influencing miscarriage among pregnant women and (ii) poor nutrition are lifestyle factors influencing miscarriage among pregnant women. A descriptive research design of survey type was adopted for the study involving 306 pregnant women as the sample. A structured questionnaire which was validated by three experts and tested for reliability that yielded a correlation coefficient of 0.82 was used for data collection. Data was analysed using descriptive statistics of frequency and percentage to answer the research questions while Chi-square analysis was used to test the hypotheses for the study at 0.05 alpha level. The findings of the study revealed that smoking (Cal. $\chi 2$ val. 138.08 > Crit. $\chi 2$ val. 16.92) and poor nutrition Cal. $\chi 2$ val. 41.39 > Crit. $\chi 2$ val. 16.92) are significantly perceived lifestyle factors influencing miscarriage among pregnant women. The study concluded that smoking and poor nutrition are lifestyle factors influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State. It was recommended that health educator should implement public health awareness and smoking cessation programs to educate pregnant women about the risks of smoking on pregnancy outcomes. Nutritional education and support programs should be introduced to improve dietary habits among pregnant women.
Keywords: Lifestyle factors, Miscarriage, Pregnant women, Smoking, Malnutrition

Introduction
Pregnancy is often viewed as a delicate and transformative period in a woman's life, where every lifestyle choice can significantly impact maternal and foetal health. Among the many factors influencing pregnancy outcomes, smoking and poor nutrition stand out as major concerns due to their well-documented association with complications. For expectant mothers, understanding how these lifestyle choices contribute to the risk of miscarriage is crucial for promoting healthier pregnancies. However, the perceptions of risk and susceptibility to a disease or problem are often shaped by personal beliefs, cultural influences, and access to health information, which may sometimes may not be adequate or accurate, leading to misunderstandings or underestimations of potential harm.

Miscarriage is defined by the World Health Organisation (2021) as the expulsion of an embryo or foetus weighing 500g or less, which corresponds to a gestational age of up to 20 completed weeks with no sign of life; it can also be defined as a pregnancy ending before the foetus has reached a

viable gestation age, which is clinically and legally equivalent to a human pregnancy ending before 24 weeks of gestation. When a pregnancy ends unintentionally before 20 weeks of gestation, it is referred to as a miscarriage or spontaneous abortion (American College of Obstetricians and Gynaecologists, 2020). Miscarriages are a serious reproductive health concern, with an estimated 10–20% of confirmed pregnancies ending in one (Quenby et al., 2021). Numerous reasons, like as genetic anomalies, maternal health issues, lifestyle choices, and environmental variables, might cause it to arise.

Although the true rate may be greater because of early, undetected losses, miscarriages occur in about 10–20% of recognised pregnancies (Quenby et al., 2021). Economic factors play a significant role in determining health outcomes and access to health services. Income, employment, education, and social status are key economic determinants that impact an individual's ability to maintain good health and utilize healthcare services (Saeed et al., 2017). The onset of miscarriage starts with abdominal pain. The most common symptom of a miscarriage is vaginal bleeding with or without pain (Hurt et al., 2010). Sadness, anxiety and guilt often occurs afterwards (Radford & Hughes, 2015). Tissue and clot-like material may leave the uterus and pass through and out of the vagina. Cleveland Clinic (2024) listed the signs and symptoms of miscarriage as bleeding that progress from light to heavy, ramps, abdominal pain and low back ache that may range from mild to severe.

Lifestyle factors are controllable, and optimising them often improves the chances of a successful reproductive and health outcome. Poor lifestyle is more linked with a hostile reproductive environment that compromises optimal embryo implantation and pregnancy security, even if the precise processes causing early pregnancy loss are still largely unclear (Robertson et al., 2018). Pre-implantation embryo growth and early programming are now known to be significantly influenced by the peri-implantation intrauterine environment (Barker, 1990). For instance, dietary variations among women can drastically change the environment of amino acids in human uterine fluid (Kermack et al., 2020).

Another influential factor that can lead to reproductive illness and higher risk of miscarriage is smoking. There is up to 39% chances of spontaneous abortion that may be due to smoking alone (Rogers, 2009). Women that smoke are at higher risk of miscarriage than women who do not. Smokers are also found to have disturbed menstrual cycles, severe period pain, irregular and heavy period flow (Mishra et al., 2000). Nicotine smoking in pregnancy is associated with significant perinatal morbidity and mortality. It is associated with spontaneous pregnancy loss, placental abruption, preterm premature rupture of membranes, placenta praevia, preterm labour and birth, low birth weight, and ectopic pregnancy (Rodriguez, 2014). Smoking in the home is associated with sudden unexplained death in infancy, asthma, otitis media and lower respiratory tract infections.

Maternal poor nutrition is considered to be an important factor contributing to miscarriages by way of altering the germ cell morphology; however, the relation between maternal nutrition and miscarriage is complex and influenced by several biologic, socioeconomic, and lifestyle factors, which vary extremely in different populations (Ashworth & Antipatis, 2001). During pregnancy,

there is an increased nutritional demand for both mother and foetus (Villar et al., 2003). Maternal under nutrition probably increases the risk of intrauterine death and miscarriage (Abu-Saad & Fraser, 2010), possibly due to cellular dysfunction. Maternal nutritional deficiencies also cause serious damages on different stages of foetal development. Miscarriage remains a significant reproductive health concern globally, with lifestyle factors such as smoking and poor nutrition being major contributors to pregnancy loss. Despite advances in maternal healthcare, the impact of these modifiable behaviours on pregnancy outcomes is still profound, especially in low- and middle-income countries. Globally, maternal smoking during pregnancy is associated with a 25% increased risk of miscarriage and a twofold risk of sudden infant death and birth defects (World Health Organization, 2021). Poor maternal nutrition is also a recognized risk factor, contributing to foetal growth restrictions, pregnancy loss, and maternal mortality worldwide.

Statement of the Problem

In West Africa, the situation is equally concerning, evidence suggests that maternal undernutrition is prevalent and is strongly linked to adverse pregnancy outcomes. Pregnant women in resource-limited settings often experience nutritional deficiencies due to food insecurity, inadequate healthcare access, and socio-cultural practices. In Nigeria, poor maternal nutrition and unhealthy lifestyle practices pose a major public health challenge. Approximately 7% of women of childbearing age suffer from acute malnutrition (United Nations International Children's Emergency Fund, 2023). While tobacco use among women remains relatively low, emerging studies highlight the growing risk of exposure to second-hand smoke, which further increases the likelihood of miscarriage and other adverse pregnancy outcomes. In North-Central Nigeria, including Kwara State, maternal malnutrition remains a critical issue. Studies show that 11.6% of women in this region experience chronic undernutrition, which directly increases the risk of pregnancy complications, including spontaneous abortion (National Center for Biotechnology Information, 2023). These statistics reveal a pressing need to investigate how expectant mothers in this region perceive lifestyle-related determinants of miscarriage.

Even though it is well known that lifestyle choices can increase the risk of miscarriage, many pregnant women are still not fully aware of how their daily habits may affect their pregnancy. Smoking, exposure to second-hand smoke, and poor nutrition are some of the major risk factors, yet many expectant mothers do not know how harmful these can be. For example, a personal experience with a relative show how serious this lack of knowledge can be. During her pregnancy, she avoided eating healthy foods like fish, eggs, milk, and snails because she believed they were harmful. Unfortunately, this led to a miscarriage. This situation highlights how dangerous misinformation can be and shows the urgent need for proper education about maternal health. In several communities across Nigeria, including Kwara State, traditional beliefs often downplay the importance of eating well or avoiding harmful substances during pregnancy. These cultural views can lead women to ignore medical advice, avoid seeking help, or follow harmful practices that increase their risk of miscarriage.

Since many miscarriages are caused by lifestyle choices that can be changed, it is important to understand what pregnant women believe about these risks. Without this understanding, it is difficult to design effective health education programs. This study, therefore, aims to explore how pregnant women in Ilorin East Local Government Area of Kwara State understand and perceive the roles of smoking and poor nutrition as lifestyle-related factors that can lead to miscarriage.

Purpose of the Study

The main aim of the study was to examine perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State. Specifically, the study examined:

1. Smoking as a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State; and
2. Poor nutrition as a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State.

Research Questions

The study provided answers to the following questions;

1. Will smoking be a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State?
2. Will poor nutrition be a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State?

Research Hypotheses

The following hypotheses were formulated to guide the study;

Ho_1: Smoking will not significantly be a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State.

Ho_2: Poor nutrition will not significantly be a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State

Methodology

The study used a survey style descriptive research design. All expecting mothers in Ilorin East LGA, Kwara State, made up the study's population. All 1,075 pregnant women who use the chosen Primary Healthcare Centres in Ilorin East LGA, Kwara State, made up the study's target group. Research Advisor (2006) recommended that a sample size of 278 be chosen at a 95% confidence level and a 5% margin of error, given a target population of 1075. The researcher therefore increased the sample size to 306 by adding the 10% attrition rate of 28. The sample was chosen using a multi-stage sampling procedure. Ilorin East LGA was first divided into 12 pre-existing strata according to wards using a stratified sampling technique. In the second stage, six wards were chosen from the twelve wards in the LGA using a simple random technique called the fish bowl method. These wards are Oke-Oyi, Ibagun, Marafa, Agbeyangi, Maya/Ile Apa, and Gambari II. A total of 12 Primary Healthcare Centres, two in each of the chosen wards, were employed in the study. The selected Primary Healthcare Centres were Oke Oyi Dispensary Maternity and Alalubosa Health Centre from Oke-oyi ward, Okelele Health Centre and Alimayaki Health Centre from Ibagun ward, Marafa Health

Centre and Okaka Health Centre from Marafa ward, Panada Health Centre and Agbeyangi Health Centre from Agbeyangi ward, Lajiki Health Center and Ile-Apa Health Centre from Maya/Ile Apa ward, as well as Ojagboro Primary Healthcare Centre and Abata Karuma Health Centre from Gambari II ward. In the third stage, 28.5% of pregnant women who used the Primary Healthcare Centres that were chosen were chosen using a proportionate sample technique. Therefore, 306 respondents participated in the study. The participants for each primary healthcare centre were chosen on the day of their appointments using a convenience sample technique in the final stage.

A structured questionnaire is the tool used to collect data from the respondents. Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1 are the four-point Likert rating scales used in this closed-ended questionnaire. Three specialists from the University of Ilorin's Department of Health Promotion and Environmental Health Education verified the tool. Before testing the instrument's reliability, the experts' comments and recommendations were carefully considered and applied to enhance the research instrument's quality. The study employed the split half method to guarantee the instrument's dependability. Respondents outside the study area at Kulende Primary Healthcare Centre in Ilorin South LGA were given twenty copies of the instrument. A correlation coefficient of 0.82r was produced by applying the Spearman Brown Prophecy Formula to the recovered questionnaire copies. This suggested that the study's research tool was sufficiently dependable. Health officers who worked at the PHCs assisted in administering the questionnaire to the respondents. To guarantee 100% retrieval, the instruments were immediately filled out and taken from the respondents. Respondents received assurances that the information gathered would only be utilised for scholarly purposes. The information gathered from the participants was coded, categorised, and then statistically analysed as needed. The research questions using descriptive statistics of frequency and percentage, and the null hypotheses were tested at the 0.05 alpha level using chi-square inferential statistics.

Results

Research Question One: Will smoking be a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State?

Table 1: Percentile Analysis on Smoking as a Perceived Lifestyle Factor Influencing Miscarriage

S/N	ITEMS	SA	A	Positive Response	D	SD	Negative Response
1.	Smoking during pregnancy increases the risk of miscarriage	163 (53.3%)	99 (32.4%)	262 (85.7%)	30 (9.8%)	14 (4.6%)	44 (14.4%)
2.	Exposure to secondhand smoke significantly contributes to miscarriage.	170 (55.6%)	101 (33.0%)	271 (88.6%)	24 (7.8%)	11 (3.6%)	35 (11.4%)
3.	Pregnant women who smoke are more likely to experience pregnancy complications, including miscarriage.	90 (29.4%)	212 (69.3%)	302 (98.7%)	4 (1.3%)	0 (0.0%)	4 (1.3%)
4.	Reducing or quitting smoking during pregnancy can lower the chances of miscarriage.	165 (53.9%)	129 (41.7%)	294 (96.1%)	10 (3.2%)	2 (0.7%)	12 (3.9%)
	Mean			**282 (92.2%)**			**24 (7.8%)**

Table 1 shows the mean of positive responses by the respondents to the items is 282 (92.2%), which is greater than the mean of negative responses of 24 (7.8%). This implies that smoking is a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State.

Research Question Two: Will poor nutrition be a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State?

Table 2

Percentile Analysis on Poor Nutrition as a Perceived Lifestyle Factor Influencing Miscarriage

S/N	ITEMS	SA	A	Positive Response	D	SD	Negative Response
1.	Poor hydration during pregnancy is linked to miscarriage risks	194 (63.4%)	102 (33.3%)	296 (96.7%)	8 (2.6%)	2 (0.7%)	10 (3.3%)
2.	During pregnancy, a lack of iron-rich foods like liver, watermelon, red meat can result in miscarriage	157 (51.3%)	127 (41.5%)	284 (92.8%)	21 (6.9%)	1 (0.3%)	22 (9.0%)
3.	Pregnant women who consume a balanced diet have a lower risk of miscarriage than those who do not	217 (70.9%)	82 (26.8%)	299 (97.7%)	6 (2.0%)	1 (0.3%)	7 (2.3%)
4.	Eating contaminated or unsafe food increases miscarriage risks	162 (52.9%)	118 (38.6%)	280 (91.5%)	23 (7.5%)	3 (1.0%)	26 (8.5%)
	Mean			**290 (94.8%)**			**16 (5.2%)**

Table 2 shows the mean of positive responses by the respondents to the items is 290 (94.8%), which is greater than the mean of negative responses of 16 (5.2%). This implies that poor nutrition is a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State.

Test of Hypotheses

$H0_1$: Smoking will not significantly be a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State.

Table 3

Chi-Square Analysis of Smoking as a Perceived Lifestyle Factor Influencing Miscarriage

Variable	N	df	Cal. χ^2 value	Crit. χ^2 value	P value	Remark
Smoking as a Perceived Lifestyle Factor Influencing Miscarriage among Pregnant Women	306	9	138.08	16.92	0.000	$H0_1$ Rejected

With a degree of freedom of 9 at the 0.05 alpha level, Table 3 displays the computed chi-square value of 138.08, which is higher than the critical chi-square value of 16.92. The hypothesis, according to which smoking will not be a significant perceived lifestyle factor impacting miscarriage among pregnant women in Ilorin East LGA, Kwara State, is rejected since the computed χ^2 value is higher than the critical value. This suggests that among pregnant women in Ilorin East LGA, Kwara State, smoking is a major perceived lifestyle factor influencing miscarriage.

$H0_2$: Poor nutrition will not significantly be a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State.

Table 4

Chi-Square Analysis of Poor Nutrition as a Perceived Lifestyle Factor Influencing Miscarriage

Variable	N	Df	Cal. χ^2 value	Crit. χ^2 value	P value	Remark
Poor Nutrition as a Perceived Lifestyle Factor Influencing Miscarriage among Pregnant Women	306	9	41.39	16.92	0.000	$H0_2$ Rejected

With a degree of freedom of 9 at the 0.05 alpha level, Table 4 displays the computed chi-square value of 41.39, which is higher than the critical chi-square value of 16.92. The null hypothesis, according to which inadequate nutrition will not be a significant perceived lifestyle factor impacting miscarriage among pregnant women in Ilorin East LGA, Kwara State, is rejected since the computed χ^2 value is higher than the critical value. This suggests that among pregnant women in Ilorin East LGA, Kwara State, poor nutrition is a major perceived lifestyle risk influencing miscarriage.

Discussion of Findings

It was revealed from the findings of this study that smoking is significantly a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State. This finding in corroboration with the finding of Rogers (2009) which found that women that smoke are at higher risk of miscarriage than women who do not. Smokers are also found to have disturbed menstrual cycles, severe period pain, irregular and heavy period flow (Mishra et al., 2000). Nicotine smoking in pregnancy is associated with significant perinatal morbidity and mortality. It is associated with spontaneous pregnancy loss, placental abruption, preterm premature rupture of membranes, placenta praevia, preterm labour and birth, low birth weight, and ectopic pregnancy (Rodriguez, 2014). The perception of smoking as a risk factor for miscarriage could be attributed to the widespread awareness of the harmful effects of smoking, particularly in the context of maternal health, as it is often a focal point in health education campaigns.

Additionally, the findings also revealed that poor nutrition is significantly a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State. This finding in corroboration with the finding of Ashworth & Antipatis (2001) which asserted that maternal poor nutrition is considered to be an important factor contributing to miscarriages by way of altering the

germ cell morphology; however, the relation between maternal nutrition and miscarriage is complex and influenced by several biologic, socioeconomic, and lifestyle factors, which vary extremely in different populations. During pregnancy, there is an increased nutritional demand for both mother and foetus (Villar et al., 2003). Maternal under nutrition probably increases the risk of intrauterine death and miscarriage (Abu-Saad & Fraser, 2010). This shows the importance of proper nutrition and highlights the widespread perception that inadequate nutrition is a critical determinant of miscarriage risk among pregnant women in the region.

The findings of this study emphasize the need for comprehensive maternal health education programmes that address the risks of smoking and poor nutrition during pregnancy. Despite the recognized importance of these lifestyle factors, the study also highlights the persistent misconceptions and gaps in knowledge that exist among pregnant women. For instance, some women in Nigeria, as pointed out in the personal anecdote shared, may avoid consuming nutritious foods due to misinformation or traditional beliefs. This highlights the importance of integrating culturally sensitive health education that not only provides accurate medical information but also respects and works within local cultural contexts. Moreover, given the high percentage of pregnant women who perceive smoking and poor nutrition as risk factors for miscarriage, health interventions should focus on increasing awareness of the specific ways in which these lifestyle choices can impact pregnancy. Strategies could include community-based education campaigns, targeted outreach programs, and collaboration with healthcare professionals to reinforce the importance of smoking cessation and proper nutrition during pregnancy.

Conclusion

1. Smoking is a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State.
2. Poor nutrition is a perceived lifestyle factor influencing miscarriage among pregnant women in Ilorin East LGA, Kwara State.

Recommendations

i. Health educator should implement public health awareness and smoking cessation programs to educate pregnant women, about the risks of smoking on pregnancy outcomes. Healthcare providers should actively counsel expectant mothers on the dangers of smoking and offer support for quitting, such as nicotine replacement therapies or behavioural interventions.

ii. Nutritional education and support programs should be introduced to improve dietary habits among pregnant women. This can include community-based nutrition workshops, access to affordable and nutritious food, and prenatal nutritional counselling to ensure adequate maternal health and foetal development.

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