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Depression and post-traumatic stress disorder among women experiencing spontaneous abortion in Katsina, North Western Nigeria

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Abstract

The study determined the prevalence of depression and post-traumatic stress disorder (PTSD) after spontaneous abortion and their determinants. It was carried out in one tertiary and two secondary health facilities at Katsina North-Western Nigeria. A total of 222 women who had spontaneous abortions one to two months before the study were interviewed using depression and PTSD of the Mini international neuropsychiatric interview (M.I.N.I.). A significant p-value was set at < 0.05. The prevalence of depression and PTSD was 6.3% and 3.6% respectively. The prevalence of depression and PTSD in a woman with spontaneous abortion combined in the same individual was 0.5%. Logistic regression showed that the experience of 3 or more previous miscarriages is a predictor of both depression and PTSD. These findings will help in the evaluation of the mental health of women who suffered spontaneous abortions and have a previous history of three or more spontaneous abortions. *(Afr J Reprod Health 2024; 28 [3s]: 37-44).*

Keywords: Depression, Post-traumatic stress disorder, spontaneous abortion

Résumé

L'étude a déterminé la prévalence de la dépression et du trouble de stress post-traumatique (SSPT) après un avortement spontané et leurs déterminants. Elle a été réalisée dans un établissement de santé tertiaire et deux établissements de santé secondaires à Katsina, dans le nord-ouest du Nigeria. Au total, 222 femmes ayant eu un avortement spontané un à deux mois avant l'étude ont été interrogées sur la dépression et le SSPT du Mini entretien neuropsychiatrique international (M.I.N.I.). Une valeur p significative a été fixée à <0,05. La prévalence de la dépression et du SSPT était respectivement de 6,3 % et 3,6 %. La prévalence de la dépression et du SSPT chez une femme ayant subi un avortement spontané combinés chez le même individu était de 0,5 %. La régression logistique a montré que l'expérience de 3 fausses couches ou plus est un prédicteur de dépression et de SSPT. Ces résultats aideront à évaluer la santé mentale des femmes qui ont subi des avortements spontanés et qui ont des antécédents de trois avortements spontanés ou plus. *(Afr J Reprod Health 2024; 28 [3s]: 37-44).*

Mots-clés: Dépression, syndrome de stress post-traumatique, avortement spontané

Introduction

Spontaneous abortion, also known as miscarriage is defined as the spontaneous loss of pregnancy before the fetus reaches viability. The term therefore includes all pregnancy losses from the time of conception until 24 weeks of gestation[1,2]. However in Nigeria like other Low and Middle Income Countries (LMIC) the age of viability is 28 weeks of gestation[3]. Spontaneous abortion occurs in 15 to 20% of all pregnancies, data from community-based studies indicate that this can be as high as 30% of pregnancies[4]. Psychiatric complications like depression, anxiety, and Post-Traumatic Stress Disorders (PTSD) occurring after spontaneous abortion have been reported in the literature[5]. Depression was shown to be the most common among these complications with up to 10 to 20% among women in Hong Kong. Some studies highlighted anxiety as another common psychiatric complication post spontaneous abortion[6–8]. A study in Sri Lanka found mild to severe depressive symptoms among 77.5% of women who experienced spontaneous abortion[9]. A Canadian study found women who had spontaneous abortions in the preceding 6 months to have more depressive

scores than women who had spontaneous abortions in the preceding 7 to 12 months. A study in central London found that 28% of women that had miscarriage met the criteria for probable PTSD and 16% for depression at 1 month which changed to 38% and 5% respectively, at 3 months[7].

Several factors contribute to the incidence of depression in women who experience spontaneous abortion. One study in Nairobi Kenya found a lot of factors that have an impact on positive depression screening among women who had spontaneous abortion these factors include younger age, low education level, an older gestational age at spontaneous abortion, being single, an assisted mode of conception, and prior spontaneous abortion[10]. In Nigeria, some of the factors found to be associated with depression and anxiety following spontaneous abortion include age ≥35 years, no living child, subfertility, planned pregnancy, and assisted conception[5].

Spontaneous abortion is a source of emotional distress, which may lead to a sense of guilt even if the pregnancy was unplanned. However, because spontaneous abortion commonly occurs in societies the psychological burden tends to be neglected[11,12]. There are no standard routines to manage grief in early pregnancy loss, and many societies regard it as a private affair, therefore those affected receive inadequate psychological support from the community[7,13] More attention needs to be paid to the psychological component of medical care post-spontaneous abortion as there is no consensus in the literature about the type of psychological interventions to be offered to these patients, or which type of psychological care would be of most benefit to them.

Spontaneous abortion has a significant psychological and psychiatric effect on women as found in southern Nigeria where anxiety, depression, and hostility were more prevalent in women who had spontaneous abortions than those who had a safe delivery[11].

There is a paucity of data regarding the psychiatric consequences of spontaneous abortion in northern Nigeria: even where data exist there is controversy as to whether or not all women will participate in or benefit from psychological follow-up after spontaneous abortion[14]. Further, there is no consensus in the literature about the type of psychological interventions to be offered to these patients, or which type of psychological care would be of most benefit to them. Therefore, there is a need for context-specific research to explore the types, prevalence and range in intensity of psychiatric disorders after spontaneous abortion to inform appropriate programs and plans to help mitigate these consequences. We present findings from research that assessed the prevalence of depression, PTSD and associated factors among women who had a spontaneous abortion in selected health facilities in Katsina northwestern Nigeria.

Methods

The setting

Katsina, the setting for the study, is the capital city of Katsina state in Northwest Nigeria. It had an estimated population of 10,368,500 in 2022. The ethnic groups in the state are Hausa and Fulani. Islam is the predominant religion and the languages spoken are Hausa and Fulfulde. Agriculture is the main occupation of the people. There are three universities in Katsina. The state has many health institutions, ranging from dispensaries, comprehensive health centers, general hospitals, and a teaching hospital[15].

The study was conducted between October 2022 and January 2023 in three facilities in Katsina where women receive maternal health care namely, the gynecology clinic of the Federal Teaching Hospital; Turai Umar Yar'Adua Maternal and Child Health Center; and the General Hospital Katsina. The Federal Teaching Hospital Katsina was established in 1998 as the Katsina State Specialist Hospital and was subsequently upgraded to a medical center and later to a Federal Teaching Hospital in 2022. It has multiple specialties and serves as a referral center for other hospitals in and outside the state. The General Hospital Katsina is a public institution and serves as a secondary-level health facility that provides care for clients in Katsina and neighboring communities. The Turai Umar Yar 'adua Hospital is also a public hospital established in late 2009 and provides maternal and child care at a secondary level to the Katsina populace.

Study population

The study participants were women who had spontaneous abortions in the 4 to 8 weeks preceding the survey who were either managed in the

Gynecological emergency unit at any of the three facilities or admitted into any of the gynaecology wards with complications after spontaneous abortion. Some women who attended family planning clinics and reported having spontaneous abortions at home and those who did not take up contraception immediately after spontaneous abortion were also recruited. Women who are currently or previously managed for psychiatric disorders, and those who had induced abortion or did not provide informed consent were excluded from the study.

Sample size calculation

The sample size was determined using the formula $\frac{Z_{1-\alpha/_2}{}^2 p(1-p)}{d^2}$, $Z_{1\text{-}a/2}$ = Is standard normal variate (at 5% type 1 error (P<0.05) it is 1.96, p = Expected proportion in the population based on previous studies or pilot studies. d = Absolute error or precision[16]. prevalence of 15% was used from a previous similar study[5]. The minimum calculated sample size was 216. An additional 10% was added making a total of 238 participants recruited into the study.

Sampling procedures

It was a cross-sectional study where the participants were recruited consecutively by the researcher and research assistants. Those that were managed at the gynaecology emergency and the gynaecology ward were recruited within 24 hours of discharge. The interviews took place in the gynaecology clinic 4 weeks following the occurrence of spontaneous abortion. Those in the family planning clinic were interviewed on the day of recruitments if they met inclusion criteria.

Instrument for data collection

Information on the participant's sociodemographic characteristics was obtained using a questionnaire which included demographic information of participants. Information on participants' psychiatric condition was collected via a short structured diagnostic interview tool M.I.N.I. that diagnoses 19 psychiatric conditions. The tool has alphabetically sequenced modules, each of which was intended to assess a specific psychiatric condition. The average time for administration was 15 minutes. M.I.N.I. or selected modules of it can be used for rapid screening in epidemiological studies[17]. Two selected modules were used in this study. This tool has been validated in France and the United States of America and was also used in Nigeria[18]. The questions were formulated in English and were translated into Hausa, the language widely spoken by people in Katsina.

Procedures for data collection

The first author and 3 trained interviewers conducted face-to-face interviews with each consenting woman in Hausa. Modules A and H that assessed for major depression and post-traumatic stress disorder respectively, were used. Each module has questions with answer options of 'No' or 'Yes'. At the end of the modules, there is a large box called a diagnostic box with No or Yes (No means the condition is not there while Yes is diagnostic). The interviews were conducted in the offices at the clinic.

Data analysis

SPSS version 20.0 was used to analyze the data. Categorical variables were expressed as frequencies and percentages. Normally distributed continuous variables were described using mean and standard deviation. Patients with YES on the diagnostic box were considered positive and those with NO were considered negative. Associations between the psychiatric condition and miscarriage, psychiatric condition, and socio-demographic characteristics were analyzed using chi-square and Fisher's exact test. A significant p-value was set at 0.05. Logistic regression test was done to determine predicting factors for depression and PTSD.

Ethical considerations

The Ethics Review Committees of each of the health facilities reviewed and approved the protocol before the commencement of data collection. The ethical committees are the Katsina State Health Research Ethical Review Committee with approval number MOH/ADM/SUB/1152/1/653 and the Federal Teaching Hospital Health Research Ethical Review Committee with approval number FTHKTHREC REG.NHREC/24/06/22C/042. Potential participants were informed about the

objectives of the study, that participation is voluntary, and that data will be used for research purposes. Those who agreed to participate signed a written consent form. Confidentiality and privacy were maintained, and participants were accorded the right to withdraw from the study without consequences.

Results

Demographic profile

The median age of the participants was 28 years; the age range was 17 to 45 years. The age group 25 to 34 years had the highest frequency. The commonest ethnic group was Hausa with 86%; the majority were Muslims (92.3%), about half of the participants had a secondary level of education; 9% had tertiary education; 68.5% were unemployed. (See Table 1)

Table 1: Sociodemographic characteristics

Variable	Frequency (n=222)	Percentage (%)
Age in years		
15-24	72	32.4
25-34	101	45.5
35-44	48	21.6
>45	1	0.5
Ethnic group		
Hausa	191	86.0
Fulani	20	9.0
Yoruba	5	2.3
Igbo	6	2.7
Religion		
Islam	205	92.3
Christianity	17	7.7
Educational level		
Quranic	68	30.6
Primary	25	11.3
Secondary	109	49.1
Tertiary	20	9.0
Occupation		
Housewife	152	68.5
Civil Servant	23	10.4
Business	21	9.5
Others*	26	11.7
Total		

*These include petty trading and farming

Half of the participants (50%) were of parity of 1 to 4. Most of the participants (90.1%) had history of 1 or two spontaneous abortions and 84.7% of these occurred during the first trimester. Pregnancies that were last miscarried were planned in 84.7% of the cases.

Table 2: Prevalence of depression and PTSD

Variable	Frequency (n=222)	Percentage (%)
Major depressive episode		
No	208	93.7
Yes	14	6.3
Total	222	100.0
PTSD diagnosis		
No	214	96.4
Yes	8	3.6
Total	222	100.0
Major depression and PTSD combined		
No	221	99.5%
Yes	1	0.5%
Total	222	100

Prevalence of depression and PTSD

Diagnosis of depression and PTSD was made among 6.3% and 3.6% of the study participants respectively (see Table 2). The results of bivariate analysis are shown in Tables 3 and 4.

The logistic regression analysis showed that only the number of previous abortions was a significant predictor of both depression and PTSD. (Tables 5 and 6)

Women with 1 to 2 previous spontaneous abortions have a 98% decrease in the odds of having depression (OR 0.016 CI, 0.002 -0.127) and a 95% decrease in the odds of having PTSD (OR 0.015 CI, 0.002- 0.127) compared to women who had three or more previous miscarriages.

Discussion

This was a cross-sectional study that investigated the prevalence of two psychiatric complications major depression and PTSD among women who had spontaneous abortion one -to -two -months post spontaneous abortion.

This study found a low prevalence of depression and PTSD. It is lower than that reported in Abakaliki in South East Nigeria where 8.5% had severe depression[5]. The reason for this lower prevalence in this study is likely due to the difference in timing of the study as the previous study involved interviews of participants one week

Table 3: Relationship between major depressive episode and associated factors

Variable	Depressive episode		Test statistics	p-value
	No	Yes		
Age group				
15 – 24	71 (34.1%)	1 (7.1%)	Fishers Exact	0.002*
25- 34	97(46.6%)	4(28.6%)		
35- 44	39(18.8%)	9(64.3%)		
≥ 45	1(0.5%)	0(0.0%)		
Ethnic group				
Hausa	179 (86.1%)	12(85.7%)	Fishers Exact	0.085
Fulani	20(9.6%)	0(0.0%)		
Yoruba	5(2.4%)	0(0%)		
Igbo	4(1.9%)	2(14.3%)		
Education				
Quranic	64(30,8%)	4(28.6%)	Fishers Exact	0.942
Primary	23(11.1%)	2(14.3%)		
Secondary	102(49.0%)	7(50.0%)		
Tertiary	19(9.1%)	1(7.1%)		
Parity				
Nullipara	43(22.5%)	7(50%)	$X^2 = 6.45$	0.019*
Parous	165(77.5%)	7(50%)		
Number of miscarriages				
1-2	195(93.8%)	5(35.7%)	$X^2 = 49.486$	< 0.001*
≥ 3	13(6.2%)	9(64.3%)		
Planned pregnancy				
Yes	175(84.1%)	13(92.9%)	Fisher's exact	0.701
No	33(15.9%)	1(7%.1)		
Gestational age				
First trimester	180(86.5%)	8(57.1%)	$X^2 = 8.739$	0.003*
Second trimester	28(13.5%)	6(42.9%)		

Table 4: Relationship between PTSD and associated factors

Variable	PTSD diagnosis		Test statistics	p-value
	No	Yes		
Age group				
15-25	72(33.6%)	0(0.0%)	Fishers Exact	0.03
25-34	98(45.8%)	3(37.5%)		
35-44	43(20.1%)	5(62.5%)		
≥ 45	1(0.5%)	0(0.0%)		
Ethnic group				
Hausa	186(86.9%)	5(62.5%)	Fishers Exact	0.06
Fulani	20(9.3%)	0(0.0%)		
Yoruba	4(1.9%)	1(12.5%)		
Igbo	4(1.9%)	2(25.0%)		
Education				
Quranic	68(31.8%)	0(0.0%)	Fishers Exact	0.078
Primary	24(11.2%)	1(12.5%)		
Secondary	104(48.6%)	5(62.5%)		
Tertiary	18(8.4%)	2(25.0%)		
Parity				
Nullipara	45(21.1%)	5(62.5%)	Fisher's exact	0.016*
Parous	169(78.9%)	3(37.5%)		

Number of miscarriages				
1-2	198(92.5%)	2(25.0%)	Fisher's exact	<0.001*
≥ 3	16(7.5%)	6(75.5%)		
Planned pregnancy				
Yes	180(84.1%)	8(100%)	Fisher's exact	0.612
No	34(15.9%)	0(0%)		
Gestational age				
First trimester	184(86.0%)	4(50%)	Fishers exact	0.021*
Second trimester	30(14%)	4(50%)		

Table 5: Logistic regression of factors independently associated with depression

Variable	B	OR (95%C.I.)	P value
Number of miscarriages	-4.109	0.016 (0.002 -0.127)	<0.001*
Parity	1.205	3.336 (0.775-14.365)	0.106
Gestational age	1.367	3.922 (0.944-16.296)	0.060

Table 6: Logistic regression of variables associated with PTDS

Variable	B	OR (95%C.I.)	P value
Number of miscarriages	-4.194	0.015(0.002-0.127)	<0.001*
Parity	1.495	4.459(0.571-34.848	0.154
Gestational age	2.270	9.681(0.968 – 96.82)	0.053

*Significant

after the event while the current study was done 4 to 8 weeks after spontaneous abortion. It was found that mental stress after spontaneous abortion tends to reduce over time[19], possibly due to recall bias. The prevalence also differed from that found in Kenya where 34% prevalence of positive depression screen.[6] The difference could be due to the difference in methodology as the Kenyan study included women who had either induced or spontaneous abortion. It is a known fact the prevalence of mental disorders after induce abortion is likely to be higher than after spontaneous abortions[20].

The socio-demographic findings of this study were typical of the Northwestern Nigerian community with the majority being Muslims and Hausa Fulani with about 10% attaining tertiary level of education.

The prevalence of PTSD was 3.6% in the current study which is in contrast to 39% found in London for women with early pregnancy loss[7]. The difference could be explained by the difference in sociocultural factors and the difference in the tools used to diagnose the psychiatric conditions. Our finding also contradicts what was found in the United States of America where a prevalence of 24% risk for major depression was seen and black African women were found to have an increased risk for major depression 30 days after treatment for early pregnancy loss compared to non-blacks. The higher prevalence among the black Africans was attributed to socio-economic and socio-cultural differences[21].

There was no association found between educational status, tribe, and both depression and PTSD. This differs from the findings in another study where low educational status was found to be a risk factor for depression after miscarriage[10]. This may be explained by differences in sociocultural support women receive after spontaneous abortion. In the study area, women who had spontaneous abortions are often cared for by their relatives in their homes for some days or sometimes they stay at their parent's houses until they recover from the loss.

The number of previous spontaneous abortions was found to be a predictor of both depression and PTSD. This means women who had three or more spontaneous abortions in their lifetime have more odds of developing depression and PTSD if they have another spontaneous abortion. This could be a result of the event reoccurring several times in their lifetime. It is similar to what was found in another study, in which prior history of miscarriage was found to be associated with an increased risk of developing

depression after spontaneous abortion[10]. The fact that spontaneous abortion is associated with depression and PSTD underscore the need to develop policies for the management of both short and long-term psychological consequences in women who had experienced this reproductive morbidity[13].

We acknowledge the limitations of our study. We focused only on two psychiatric conditions. A longitudinal study would have shown whether the diagnosed conditions persisted or disappeared over time. Larger prospective studies are necessary to determine other psychiatric conditions that may be associated with spontaneous abortion.

This study used M.I.N.I. which not only screens but diagnoses mental conditions. Due to the time factor only two psychiatric conditions were studied in this research, a longitudinal study would have shown whether the diagnosed conditions persisted or disappeared over time. Women with induced abortion may not open up and may be counted as spontaneous abortions because induced abortion is not legal in Nigeria.

Women with a previous history of more than 2 spontaneous abortions should be evaluated for the presence of depression and PTSD when they seek post abortion care. There is a need for further research to find out whether there is a difference between the effect of more than two consecutive spontaneous abortions and more than two spontaneous abortions that are not consecutive.

Conclusion

In conclusion, this study has found an association between higher maternal age and depression. There is an association between a higher number of previous miscarriages, nulliparity, higher gestational age, and occurrence of psychiatric disorders of depression and PTSD. Having more than two previous miscarriages was found to be a strong predictor of both depression and PTSD.

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Contribution of authors

Dr Hurera Umar conceived and design the study, participated in data collection and data analysis. Professor Ademola J. Ajuwon participated in study design, interpretation of data, preparation of manuscript and supervised the whole research. Dr Aminu Dan Ali, Nurse Hadiza Aliyu and Nurse Zainab Bello participated in data collection.

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