

# Mental health outcome and perceived care needs of women treated for a miscarriage in a low-resource setting

JOHNBOSCO IFUNANYA NWAFOR, VITUS OKWUCHUKWU OBI, CHUKA NOBERT OBI, CHUKWUNENYE CHUKWU IBO, DARLINGTON-PETER CHIBUZOR UGOJI, BLESSING IDZUINYA ONWE, VICTOR UCHENNA ONUCHUKWU

Department of Obstetrics and Gynecology, Alex Ekwueme Federal University Teaching Hospital, Abakaliki, South-East Nigeria

## ABSTRACT

**Introduction:** There have been many advances in the management of miscarriage in recent times including the introduction of expectant and medical management protocols. However, a study of the psychological impact of the condition and its management has not received similar attention.

**Aim:** To determine the psychosocial consequences of miscarriages and perceived needs of the patients compared to the care provided by the hospital.

**Materials and Method:** This was a prospective cohort study conducted between January 15, 2018 and April 30, 2019. Participants were recruited on admission and psychological morbidity was assessed at 1 week after a miscarriage in the gynecological clinics. They were screened for psychological morbidities using DASS 21 (Depression, Anxiety and Stress Scale).

**Results:** Of 140 women that participated in the study, severe depression was reported in 8 (5.7%) whereas 12 (8.5%) participants reported symptoms of extremely severe depression. Moderate to severe anxiety was present in 23.5% while extremely severe anxiety was noted among 21.5% of the women. Stress was reported in over half of respondents and severe to extremely severe stress occurred in 19.9% of the participants. Factors significantly associated with psychological morbidities following miscarriage include age  $\geq 35$  years, no living child, subfertility, planned pregnancy, and assisted conception. Healthcare providers not listening to the patient's concern, non-participation in decision making, and dissatisfaction with care were associated with adverse psychological outcomes.

**Conclusion:** Psychological morbidity following a miscarriage is common among participants in our study. The provision of the correct information and psychological debriefing may be useful in enabling women to adjust emotionally following miscarriage.

**Key words:** Abakaliki; mental health outcome; miscarriage; perceived care needs.

## Introduction

Miscarriage is generally defined as the spontaneous loss of a pregnancy before the age of viability. It is a common gynecological condition and it is estimated to occur in up to 12–15% of clinically diagnosed pregnancies.<sup>[1-5]</sup>

There have been many advances in the management of miscarriage in recent time including expectant and medical management protocols. However, a study of the psychological

impact of the condition and its management has not received similar attention.<sup>[2]</sup> As with other stressful events, the effects of miscarriage vary considerably across individuals.<sup>[3]</sup> Most

**Address for correspondence:** Dr. Johnbosco Ifunanya Nwafor, Department of Obstetrics and Gynecology, Alex Ekwueme Federal University Teaching Hospital, Abakaliki, South-East Nigeria. E-mail: nwaforjohnbosco97@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** WKHLRPMedknow\_reprints@wolterskluwer.com


**How to cite this article:** Nwafor JI, OBI VO, OBI CN, IBO CC, Ugoji DPC, Onwe BI, *et al.* Mental health outcome and perceived care needs of women treated for a miscarriage in a low-resource setting. Trop J Obstet Gynaecol 2020;37:85-94.

**Received:** 17-05-2019

**Revised:** 17-11-2019

**Accepted:** 31-03-2020

**Published Online:** 14-08-2020

Access this article online	
<b>Website:</b> www.tjogonline.com	<b>Quick Response Code</b> 
<b>DOI:</b> 10.4103/TJOG.TJOG_44_19	

women and their partners consider miscarriage as a tragic, complicated, and life-altering experience causing emotional and psychological distress resulting in significant suffering.<sup>[4]</sup> While a short grief reaction following a miscarriage can be normal, some progress to a pathological prolonged grief reaction.<sup>[2-5]</sup> Recent evidence suggested that spontaneous miscarriage is associated with significant and possibly enduring psychological consequences.<sup>[6]</sup> More than half of women who suffer from miscarriage would suffer from various psychological morbidities in the weeks and months following the event.<sup>[6]</sup> Common psychological problems include grief, depression, and anxiety. Stress disorder and obsessive-compulsive disorder had also been reported.<sup>[11-10]</sup> Expression of grief and depression may show cultural variation and coping strategies may differ depending on culture, racial, or ethnic background.<sup>[7]</sup> When open expression of emotions such as sadness is considered inappropriate in certain cultures they may tend to somatize their distress. Studies have suggested that grief and depression after spontaneous miscarriage are often unrecognized by healthcare providers.<sup>[4-9]</sup> Unlike in postpartum psychological problems, in the context of miscarriage, simple and effective screening measures of psychological morbidity have not been well established.<sup>[9]</sup> The recognized factors that contribute to such morbidity include demographic factors, psychiatric history, pregnancy-specific factors, reproductive history, satisfaction with the care provided by healthcare professionals during and following the loss, and perception of social support.<sup>[10-16]</sup> The association of such factors with psychological morbidity after a miscarriage has not been assessed in Abakaliki.

This study aimed to describe the psychosocial consequences of miscarriages, its correlates, and perceived needs in the care provided by the hospital, and this could shed some light on possible preventive strategies.

## Materials and Method

**Study area:** Abakaliki is the capital of Ebonyi state which is in the south-east geographical zone of Nigeria. Alex Ekwueme Federal University Teaching Hospital is a tertiary institution located in Abakaliki. The hospital receives a referral from all parts of the state and neighboring states of Benue, Enugu, Cross River, and Abia as well as any part of the country.

The obstetrics and gynecology department is one of the many departments in the hospital. The functions of the obstetric unit are performed in the booking, antenatal, postnatal, and family planning clinics; labor, antenatal, and intensive care unit as well as obstetric theater.

**Study design:** A prospective cohort study was carried out at an obstetrics and gynecology unit of Alex Ekwueme Federal

University Teaching Hospital, from January 15, 2018, to April 30, 2019. The participants were 156 consecutive women who were admitted to the unit with a pregnancy loss of fewer than 28 weeks. Women were recruited to the study within 24 h of diagnosis and then followed up at 1 week after the miscarriage. The psychological morbidity was assessed at 1 week in the gynecological clinic visit. Previous psychiatric illness and conditions that limit their ability to understand the study questions were considered as exclusion criteria.

**Data collection instrument and procedures:** Data were collected by the researchers. A self-administered questionnaire was used to collect data from the study participants. The sociodemographic details, the participant's experience of care received at the hospital, and the perceived care needs of participants were collected using a specifically designed, structured, pretested, and validated questionnaire. The DASS (Depression, Anxiety and Stress Scale) was used to collect data on psychological morbidities [see Appendix 1]. The DASS is a 21-item self-report instrument designed to measure the three related negative emotional states and stress.<sup>[17]</sup> In completing the DASS, the individual is required to indicate the presence of a symptom over the previous week. Each item was scored from 0 ("did not apply to me at all over the past week") to 3 ("applied to me very much or most of the time over the past week"). It was also designed to get data on the care they received at the hospital in comparison to their expectations about the services at the hospital. Women identified with specific psychological morbidities were referred to a psychiatrist for additional evaluation and treatment.

**Data processing and analysis:** All returned questionnaires were checked manually for completeness and consistency of responses. The collected data were coded and analyzed using Epi Info version 7.0 (CDC, USA). Continuous variables were presented as means  $\pm$  standard deviations (SDs), while categorical variables were summarized as numbers and percentages. Logistic regression analysis, presented with the odds ratios (OR) and 95% confidence intervals (CI), was used to identify factors associated with psychological morbidities following a miscarriage. The *P* values  $<$  0.05 were considered to be statistically significant.

**Ethical consideration:** Before the commencement of the study, ethical approval was obtained from the Research and Ethics Committee of the Alex Ekwueme Federal University Teaching Hospital, Abakaliki. Written informed consent was obtained from each study participant to confirm willingness to participate after explaining the objectives of the study. They were informed about the option of opting out of the study if they want and that opting out would not affect their

care. Respondents' names and personal identifiers were not included in the written questionnaires.

## Results

Of the 156 participants who met the inclusion criteria, only 140 returned for follow-up assessment. Four women were excluded because they did not meet the inclusion criteria. All the study participants who returned for follow-up responded to the questionnaire making the response rate to be 100%. The mean age of the respondents was  $26.2 \pm 2.1$  years. The majority of the participants, (62.9%), were <35 years while 74.3% were married. Sixty-nine women had 1 or 2 children whereas 37 (26.4%) of the participants had no living child. Almost half (48.6%) of respondents had a previous history of 1 or 2 miscarriages. History of subfertility was present in 11.4% of the women and 7.9% of participants conceived through assisted conception [Table 1].

Of the 140 women that participated in the study, severe depression was reported in 8 (5.7%), whereas 12 (8.5%) participants reported symptoms of extremely severe depression. Moderate to severe anxiety was present in 23.5% while extremely severe anxiety was noted 21.5% of the women. Stress was reported in over half of respondents and severe to extremely severe stress occurred in 19.9% of the participants [Table 2].

Univariate logistic regression analysis showed that age  $\geq 35$  years (OR = 2.07, 95% CI = 1.05–4.08,  $P$  value = 0.04), no living child (OR = 24.89, 95% CI = 10.01–61.89,  $P$  value < 0.0001), history of subfertility (OR = 0.25, 95% CI = 0.12–0.54,  $P$  value = 0.0004), and assisted conception (OR = 3.14, 95% CI = 1.41–6.99,  $P$  value = 0.005) were factors associated with depression among the participants [Table 3]. Anxiety among the clients was significantly associated with age  $\geq 35$  years (OR = 0.14, 95% CI = 0.07–0.32,  $P$  value < 0.0001), no living child (OR = 20.00, 95% CI = 8.23–48.58,  $P$  value < 0.0001), history of subfertility (OR = 0.16, 95% CI = 0.07–0.36,  $P$  value < 0.0001), planned pregnancy (OR = 0.43, 95% CI = 0.21–0.87,  $P$  value = 0.01), and assisted conception (OR = 3.85, 95% CI = 1.66–8.92,  $P$  value = 0.001) [Table 4], whereas stress among the study cohorts was also associated with age  $\geq 35$  years (OR = 2.45, 95% CI = 1.155–23,  $P$  value = 0.01), no living child (OR = 21.27, 95% CI = 8.1855–28,  $P$  value < 0.0001), history of subfertility (OR = 0.34, 95% CI = 0.160–69,  $P$  value = 0.003), and assisted conception (OR = 2.67, 95% CI = 1.26–5.66,  $P$  value = 0.01) [Table 5].

Healthcare providers not listening to patient's concerns (OR = 5.91, 95% CI = 2.66–13.13,  $P$  value < 0.0001) and

**Table 1: Sociodemographic and clinical characteristics of women admitted with miscarriage**

Characteristics	Frequency (n=140)	Percentage (%)
Age (years)		
20-25	14	10.0
26-31	38	27.1
32-37	57	40.7
$\geq 38$	31	22.2
Marital status		
Married	104	74.3
Unmarried	36	25.7
Employment status		
Employed	92	65.7
Unemployed	48	34.3
Parity		
0	31	22.1
1	9	6.4
2	13	9.3
3	26	18.6
4	24	17.1
$\geq 5$	37	26.5
Number of living children		
None	37	26.4
1-2	69	49.3
$\geq 3$	34	24.3
Previous miscarriage		
0	51	36.4
1	49	35.0
2	19	13.6
$\geq 3$	21	15.0
History of subfertility		
Yes	16	11.4
No	124	88.6
Planning of pregnancy		
Planned	26	18.6
Unplanned	114	81.4
Mode of conception		
Spontaneous	129	92.1
Assisted	11	7.9
Type of miscarriage		
Complete	9	6.4
Incomplete	88	62.9
Missed	34	24.3
Inevitable	9	6.4

dissatisfaction with care (OR = 11.50, 95% CI = 4.74–27.91,  $P$  value < 0.0001) were associated with symptoms of depression [Table 6], whereas non-participation in decision making during care (OR = 2.34, 95% CI = 1.07–5.15,  $P$  value = 0.03) and dissatisfaction with care received (OR = 2.67, 95% CI = 1.26–5.66,  $P$  value = 0.009) were significantly associated with symptoms of anxiety [Table 7]. Participants who developed symptoms of stress were more likely to have their concerns not listened to by healthcare providers (OR = 3.67, 95% CI = 1.71–7.85,  $P$  value = 0.001), and dissatisfied with their treatment (OR = 7.41, 95% CI = 3.34–16.46,  $P$  value < 0.0001) [Table 8].

## Discussion

This study addressed an area that is very important in clinical practice, yet seldom reported in our area of practice. It

**Table 2: Occurrence of psychological morbidities and their severity among women with miscarriage**

Psychological morbidity	Frequency (n=140)	Percentage (%)
Depression		
Normal	76	54.3
Mild	33	23.6
Moderate	11	7.9
Severe	8	5.7
Extremely severe	12	8.5
Anxiety		
Normal	45	32.1
Mild	32	22.9
Moderate	16	11.4
Severe	17	12.1
Extremely severe	30	21.5
Stress		
Normal	61	43.6
Mild	19	13.6
Moderate	32	22.9
Severe	21	15.0
Extremely severe	7	4.9

**Table 3: Association of sociodemographic and clinical characteristic with symptoms of depression among participants**

Variable	Depression		OR	95% CI	P
	Absent	Present			
Age (years)					
<35	34	31	2.07	1.05-4.08	0.04
≥35	26	49			
Employment status					
Employed	33	36	1.19	0.61-2.30	0.61
Unemployed	37	34			
Parity					
Nullipara	23	25	0.82	0.35-1.94	0.66
Primipara	30	24			
Multipara	20	18			
Living children					
Yes	31	11	24.89	10.01-61.89	<0.0001
No	12	106			
Previous miscarriage					
Yes	34	37	1.19	0.61-2.32	0.60
No	30	39			
History of subfertility					
Yes	13	50	0.25	0.12-0.54	0.0004
No	39	38			
Planning of pregnancy					
Planned	32	37	0.89	0.46-1.73	0.73
Unplanned	35	36			
Mode of conception					
Spontaneous	21	36	3.14	1.41-6.99	0.005
Assisted	13	70			

studied the presence of psychological morbidity among women who had miscarriages, which is a very common gynecological presentation. It is important to study this in Abakaliki since the psychological response to such a life event varies among different populations.

Over half of the women who presented with miscarriage had some psychological disturbance. These findings were similar to the findings of studies done in Sri Lanka, Norway, the USA, and Sweden.<sup>[1-4]</sup> As past literature has

**Table 4: Association of sociodemographic and clinical characteristic with symptoms of anxiety among participants**

Variable	Anxiety		OR	95% CI	P
	Absent	Present			
Age (years)					
<35	56	29	0.14	0.07-0.32	<0.0001
≥35	12	43			
Employment status					
Employed	31	36	1.04	0.54-2.03	0.89
Unemployed	33	40			
Parity					
Nullipara	27	29	1.27	0.49-3.24	0.82
Primipara	11	15			
Multipara	25	33			
Living children					
Yes	40	10	20.00	8.23-48.58	<0.0001
No	15	75			
Previous miscarriage					
Yes	27	33	0.86	0.44-1.68	0.66
No	39	41			
History of subfertility					
Yes	12	57	0.16	0.07-0.36	<0.0001
No	40	31			
Planning of pregnancy					
Planned	40	43	0.43	0.21-0.87	0.01
Unplanned	39	18			
Mode of conception					
Spontaneous	23	40	3.85	1.66-8.92	0.001
Assisted	10	67			

**Table 5: Association of sociodemographic and clinical characteristic with symptoms of stress among participants**

Variable	Stress		OR	95% CI	P
	Absent	Present			
Age (years)					
<35	45	34	2.45	1.15-5.23	0.01
≥35	13	48			
Employment status					
Employed	29	37	0.67	0.34-1.29	0.23
Unemployed	40	34			
Parity					
Nullipara	29	30	1.31	0.58-2.94	0.08
Primipara	17	23			
Multipara	11	30			
Living children					
Yes	29	15	21.27	8.18-55.28	<0.0001
No	8	88			
Previous miscarriage					
Yes	29	33	1.19	0.61-2.34	0.59
No	33	45			
History of subfertility					
Yes	16	49	0.34	0.16-0.69	0.003
No	37	38			
Planning of pregnancy					
Planned	37	40	0.57	0.29-1.12	0.10
Unplanned	39	24			
Mode of conception					
Spontaneous	26	39	2.67	1.26-5.66	0.01
Assisted	15	60			

shown that psychological distress is highest shortly after the miscarriage and decreases with time, one explanation of this difference may be the difference in timing of the assessment. Earlier the assessment the more severe the

**Table 6: Association of participants description of the services received and expectations of care at the hospital with symptoms of depression**

Variable	Depression		OR	95% CI	P
	Absent	Present			
They listened to my concern					
Yes	27	26	5.91	2.66-13.13	<0.0001
No	13	74			
Explained about the condition					
Yes	32	34	0.64	0.33-1.25	0.19
No	44	30			
Explained about treatment methods					
Yes	29	39	1.17	0.59-2.29	0.65
No	28	44			
Participated in decision making					
Yes	40	32	1.79	0.91-3.49	0.09
No	28	40			
Satisfaction with service					
Yes	23	15	11.50	4.74-27.91	<0.0001
No	12	90			
Expects to understand					
Yes	34	40	0.90	0.46-1.76	0.76
No	32	34			
Expects explanation					
Yes	32	43	1.12	0.57-2.19	0.75
No	26	39			
Expects education on treatment					
Yes	37	39	1.48	0.75-2.90	0.25
No	25	39			
Expects opportunity for questions					
Yes	10	34	1.19	0.50-2.83	0.69
No	19	77			

**Table 7: Association of participants description of the services received and expectations of care at the hospital with symptoms of anxiety**

Variable	Anxiety		OR	95% CI	P
	Absent	Present			
They listened to my concern					30
Yes	30	32	1.77	0.89-3.50	0.09
No	27	51			
Explained about the condition					
Yes	29	36	1.94	0.97-3.89	0.06
No	22	53			
Explained about treatment methods					
Yes	32	36	0.59	0.31-1.17	0.13
No	43	29			
Participated in decision making					
Yes	53	49	2.34	1.07-5.15	0.03
No	12	26			
Satisfaction with service					
Yes	26	39	2.67	1.26-5.66	0.009
No	15	60			
Expects to understand					
Yes	36	44	0.58	0.29-1.15	0.12
No	35	25			
Expects explanation					
Yes	40	37	0.67	0.34-1.31	0.24
No	39	24			
Expects education on treatment					
Yes	33	41	1.16	0.59-2.28	0.66
No	27	39			
Expects opportunity for questions					
Yes	29	32	0.84		0.61
No	41	38		0.43-1.64	

psychological morbidity would be. Anxiety, stress, and early complicated grief may also have an overlapping effect on

a relatively high rate of psychological morbidities in our study.



**Table 8: Association of participants description of the services received and expectations of care at the hospital with symptoms of stress**

Variable	Stress		OR	95% CI	P
	Absent	Present			
They listened to my concern					
Yes	29	14	3.67	1.71-7.85	0.001
No	35	62			
Explained about the condition					
Yes	44	34	0.99	0.51-1.96	1.00
No	35	27			
Explained about treatment methods					
Yes	35	31	1.40	0.72-2.73	0.32
No	33	41			
Participated in decision making					
Yes	19	31	0.64	0.32-1.29	0.21
No	44	46			
Satisfaction with service					
Yes	34	26	7.41	3.34-16.46	<0.0001
No	12	68			
Expects to understand					
Yes	51	43	1.19	0.59-2.40	0.64
No	23	23			
Expects explanation					
Yes	38	35	0.93	0.48-1.82	0.84
No	36	31			
Expects education on treatment					
Yes	31	47	0.98	0.49-1.93	1.00
No	25	37			
Expects opportunity for questions					
Yes	39	29	1.68	0.86-3.28	0.13
No	32	40			

With the current trend in the developing countries of women postponing childbearing until later years, the effect of miscarriage on older women ( $\geq 35$  years) in this study shows that older women had higher psychological morbidities when compared with younger women. These findings were not in agreement with results from similar studies reported by other authors.<sup>[5-7]</sup> due to cultural differences as a reaction to adverse life outcomes that varies from one culture to another.

Women with no living child who had a miscarriage were more likely to present with symptoms of psychological morbidities in this study. By contrast, the presence of children appears to be entirely protective. Several researchers have also reported lower symptom levels with an increasing number of children.<sup>[5-7]</sup> However, since this study lacked comparison group it did not disclose the more striking finding that women with several children who had miscarriage did not exhibit significant higher symptom levels as compared to women with children who had not experienced a recent reproductive loss. The apparent reduction in the psychological effect of miscarriage on women with children in this study contradicts a large body of research linking life events involving loss to that of increases in psychological morbidities.<sup>[8]</sup> Stress studies have focused on factors that buffer individuals from the pathogenic effects of negative life events, with much

attention accorded to social supports.<sup>[8]</sup> For a woman who miscarries, the presence of living children may afford psychological support indirectly, by presenting evidence of reproductive success in the past.

Furthermore, miscarriage in women with a history of infertility assisted conception, and planned pregnancy were associated with increased psychological morbidities in this study cohorts. This is probably because this subgroup of women are at risk of psychological morbidities due to their peculiar characteristics, so miscarriage would further worsen already existing psychological symptoms.

Women with a history of prior miscarriage were not affected more strongly by their miscarriages than were women without prior loss in this study. Subgroup analysis among nulliparous women in this study did not alter this finding. Previous studies of miscarriage found no association between prior miscarriage and increased psychological morbidities in their study cohorts.<sup>[5-7]</sup>

Several factors related to patients' experience of service provision were significantly associated with symptoms of depression, anxiety, and stress. Patients who felt that their concerns were not listened to, did not participate in decision making and those who were dissatisfied with

care received had significantly more stress, anxiety, and depressive symptoms. These findings were similar to findings in Norway, India, and Sri Lanka.<sup>[5,6,7]</sup> The factors associated with psychological morbidity among women who underwent miscarriage were useful in identifying women who are at a higher risk for such morbidity so that effective screening and treatment strategies can be introduced. As less satisfaction with service provision was associated with the presence of psychological distress, consideration should be given on how to improve the current practice to reduce the psychological burden on patients. Our study suggests that validating the patient's concerns and giving more explanations about the miscarriage and its treatment would be useful in reducing psychological distress. Increasing awareness among hospital staff about the high frequency of depressive symptoms, anxiety, and stress following miscarriage would be important; as it would help the medical staff to adopt a more sensitive approach towards their patients.

As a high percentage of women experience depressive and anxiety symptoms following a miscarriage, screening women presenting with miscarriages for psychological distress would be an important step in identifying those at risk of developing these disorders and would help decide whether a referral to mental health services is appropriate. Previous literature has revealed that the level of anxiety and depressive symptoms gradually decrease with time and return to normal by about 12 months. Therefore, follow-up of these women for longer periods once discharged from the hospital would help identify those whose symptoms persist, and these patients could be referred to psychiatric services for further assessment.

The strength of this study is that it is one of the few studies in the developing countries that assessed depression, anxiety, and stress among women who had miscarriages using standardized scales. However, this study has some limitations. The major weakness of the study was that data were collected only at a single point of time and there was no control group. Therefore, the authors recommend a longitudinal psychological assessment at intervals up to 1 year after miscarriage with matched control among women with miscarriage in low resource settings to determine their psychological outcome.

## Conclusion

Psychological morbidity following a miscarriage is common among participants in our study. Risk factors associated with psychological morbidity should be used to identify women who are at a higher risk to provide effective screening and offer treatment. Provision of correct information, patient's participation in decision making in their medical care, and

psychological debriefing, may be useful in enabling women to adjust emotionally following miscarriage.

## Acknowledgments

Nil.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## References

1. Chojenta C, Harris S, Reilly N, Forder P, Austin MP, Loxton D. History of pregnancy loss increases the risk of mental health problems in subsequent pregnancies but not in the postpartum. *PLoS One* 2014;9:e95038.
2. Wijesooriya LRA, Paliawadana TS, Rajapaksha RNG. A study of psychological impact on women undergoing miscarriage at a Sri Lankan hospital setting. *Sri Lanka J Obstet Gynaecol* 2015;35:34-7.
3. Jansson C, Volgsten H, Huffman C, Svanberg AS, Swanson KM, Stavreus-Evers A. Validation of the revised impact of miscarriage scale for Swedish conditions and comparison between Swedish and American couples' experiences after miscarriage. *Eur J Contracept Reprod Health Care* 2017. doi: 10.1080/13625187.2017.1409346.
4. Major B, Appelbaum M, Beckman L, Dutton AM, Felipe N, West C. Abortion and Mental Health Evaluating the Evidence. *Am Psychol Assoc* 2009;64:863-90.
5. Olga BA, Akker VD. The psychological and social consequences of miscarriage. *Expert Rev Obstet Gynecol* 2011;6:234-40.
6. Kulathilaka S, Hanwella R, Varuni AS. Depressive disorder and grief following spontaneous abortion. *BMC Psychiatry* 2016;16:100.
7. Broen AN, Moum TRN, Dtker AN, Ekeberg OI. Predictors of anxiety and depression following pregnancy termination: A longitudinal five-year follow-up study. *Acta Obstet Gynecol Scand* 2006;85:317-23.
8. Mota NP, Burnett M, Sareen J. Associations between abortion, mental disorders, and suicidal behaviour in a nationally representative sample. *Can J Psychiatry* 2010;55:239-47.
9. Fergusson DM, Horwood LJ, Boden JM. Abortion and mental health disorders: Evidence from a 30-year longitudinal study. *Br J Psychiatry* 2008;193:444-51.
10. Brier N. Anxiety after miscarriage: A review of the empirical literature and implications for clinical practice. *Birth* 2004;31:138-42.
11. Lok IH, Neugebauer R. Psychological morbidity following miscarriage. *Best Pract Res Clin Obstet Gynaecol* 2007;21:229-47.
12. Franche RL. Psychological and obstetric predictors of couples' grief during pregnancy after miscarriage or perinatal death. *Obstet Gynaecol* 2001;97:597-602.
13. Neugebauer R, Kline J, O'Connor P, Shrout P, Johnson J, Skodol A, *et al.* Determinants of depressive symptoms in the early weeks after miscarriage. *Am J Public Health* 1992;82:1332-9.
14. Mutiso SK, Murage A, Mwaniki AM. Factors associated with a positive depression screen after a miscarriage. *BMC Psychiatry* 2019;19:8.
15. Adolfsson A, Larsson PG, Wijma B, Berterö C. Guilt and emptiness: Women's experiences of miscarriage. *Health Care Women Int* 2004; 25:543-60.
16. Geller PA, Psaros C, Kornfield SL. Satisfaction with pregnancy loss aftercare: Are women getting what they want? *Arch Womens Ment Health* 2010;13:111-24.
17. DASS 21 scale. <http://www2.psy.unsw.edu.au/dass/DASSFAQ.htm>.

## Appendix 1

### Questionnaire to assess mental health outcomes and perceived care needs of women treated for miscarriage at the Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Southeast, Nigeria.

Informed consent form

Dear Madam,

I am a doctor and researcher in the Obstetrics and Gynaecology department of the Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Ebonyi State. I am carrying out a study on “mental health outcome and perceived care needs of women treated for miscarriage at the Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Southeast, Nigeria.” This study aimed to describe the psychosocial consequences of miscarriages and perceived needs in the care provided by the hospital, and this could shed some light on possible preventive strategies to be adopted during the care of women with a miscarriage to optimize their psychological outcome.

Participation in this study is voluntary and you are at liberty to decline to participate or withdraw anytime without offering any reason. Also, opting-out from the study will not affect the care you will receive in the hospital. All information will be treated confidentially and the findings will not be linked to any individual. This research has no harm to the participants.

This study has been ethically approved by the Research and Ethics Committee of the Alex Ekwueme Federal University Teaching Hospital Abakaliki as conveyed vide reference FETHA/REC/VOL1/2017/575 dated 9<sup>th</sup> December 2017.

Should you have any inquiries, please feel free to contact me at any time via email at [nwaforjohnbosco97@gmail.com](mailto:nwaforjohnbosco97@gmail.com) or by phone at + 2347035742084.

Your assistance would be much appreciated.

Yours Sincerely,

**Dr Nwafor J.I.**

By signing here, you consent to participate in this study:

\_\_\_\_\_

**Name    Signature        Date**

Kindly fill this questionnaire

- 1) Please tick or fill the spaces provided
- 2) Do not leave any question unanswered
- 3) Tick or fill only one response to each question
- 4) You are encouraged to be truthful while filling out the questionnaire as your response to the questions will not affect your care.

#### 1. Sociodemographic characteristics of the participant:

- A) Age (years): \_\_\_\_\_
- B) Marital status: Married ( ) Single ( ) Divorced ( ) Separated ( )
- C) Employment status: Employed ( ) Unemployed ( )



- D) Parity: 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( )  $\geq$  5 ( )  
 E) Number of living children: 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( )  $\geq$  5 ( )  
 F) Number of previous miscarriage: 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( )  $\geq$  5 ( )  
 G) History of subfertility: Yes ( ) No ( )  
 H) Planning of pregnancy: Planned ( ) Unplanned ( )  
 I) Mode of conception: Spontaneous ( ) Assisted ( )  
 J) Type of miscarriage: Complete ( ) Incomplete ( ) Missed ( ) Inevitable ( )

## 2. DASS 21

Please read each statement and circle a number 0, 1, 2, or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all  
 1 Applied to me to some degree, or some of the time  
 2 Applied to me to a considerable degree or a good part of the time  
 3 Applied to me very much or most of the time

1 (s)	I found it hard to wind down	0	1	2	3
2 (a)	I was aware of dryness of my mouth	0	1	2	3
3 (d)	I could not seem to experience any positive feeling at all	0	1	2	3
4 (a)	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5 (d)	I found it difficult to work up the initiative to do things	0	1	2	3
6 (s)	I tended to over-react to situations	0	1	2	3
7 (a)	I experienced trembling (e.g. in the hands)	0	1	2	3
8 (s)	I felt that I was using a lot of nervous energy	0	1	2	3
9 (a)	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10 (d)	I felt that I had nothing to look forward to	0	1	2	3
11 (s)	I found myself getting agitated	0	1	2	3
12 (s)	I found it difficult to relax	0	1	2	3
13 (d)	I felt down-hearted and blue	0	1	2	3
14 (s)	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15 (a)	I felt I was close to panic	0	1	2	3
16 (d)	I was unable to become enthusiastic about anything	0	1	2	3
17 (d)	I felt I was not worth much as a person	0	1	2	3
18 (s)	I felt that I was rather touchy	0	1	2	3
19 (a)	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
20 (a)	I felt scared without any good reason	0	1	2	3
21 (d)	I felt that life was meaningless	0	1	2	3

Note: (d) = depression, (a) = anxiety and (s) = stress

## 3. Description of the services received and expectations at the hospital

- a) Did your healthcare providers listen to your concern? Yes ( ) No ( )  
 b) Did your healthcare providers explain the condition to you? Yes ( ) No ( )  
 c) Did your healthcare providers explain the treatment methods to you? Yes ( ) No ( )  
 d) Did you participate in decision making during your care? Yes ( ) No ( )  
 e) Were you satisfied with the services received during your care? Yes ( ) No ( )  
 f) Did you expect healthcare providers to show empathy and understanding about your condition? Yes ( ) No ( )  
 g) Were you educated on the treatment you received? Yes ( ) No ( )

h) Were you provided with an opportunity to ask questions about your condition and your care? Yes ( ) No ( )

**KEY**

**NB:** Scores on each category of the DASS-21 will need to be multiplied by 2 to calculate the final score. Participants are classified in each category into normal, mild, moderate, severe, and extremely severe based on their final score

	<b>Depression</b>	<b>Anxiety</b>	<b>Stress</b>
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+