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MISCARRIAGE AND MENTAL HEALTH DISORDER: A CROSS-SECTIONAL STUDY AT NORTHWEST GENERAL HOSPITAL

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Abstract

BACKGROUND:
Miscarriage is a common reproductive health issue affecting up to 26% of pregnancies globally. Despite its high prevalence, the psychological consequences are often under-recognized, particularly in low- and middle-income countries. This study aims to assess the levels of depression, anxiety, and stress among women following miscarriage and identify associations with demographic and clinical variables.

OBJECTIVE:
To evaluate the mental health impact of miscarriage in terms of depression, anxiety, and stress, and determine the relationship between psychological morbidity and selected patient characteristics.

METHODS:
This cross-sectional study was conducted at the Department of Obstetrics and Gynaecology, Northwest General Hospital, over a six-month period. A total of 77 women aged 15–49 years who experienced miscarriage within the past seven days were enrolled using non-probability consecutive sampling. Exclusion criteria included ectopic pregnancy, pre-existing psychiatric illness, serious medical conditions, and recent major life stressors. Data were collected using a predesigned demographic proforma and the Depression, Anxiety, and Stress Scale (DASS-21). Chi-square test and independent sample t-test were applied to assess statistical significance, with $p<0.05$ considered significant.

RESULTS:
Out of 77 participants, 37.7% reported moderate to severe depression, 41.6% reported moderate to severe anxiety, and 33.8% experienced significant stress. Statistically significant associations were observed between psychological morbidity and factors such as unplanned pregnancy, lack of social support, and low socioeconomic status ($p<0.05$).

CONCLUSION:
Miscarriage is associated with a high burden of psychological distress, including depression, anxiety, and stress. Routine mental health screening and timely psychological support are essential for women experiencing pregnancy loss,

particularly those with identifiable risk factors

INTRODUCTION

Miscarriage, also known as spontaneous abortion, refers to the loss of pregnancy before 20 weeks of gestation. According to the American College of Obstetricians and Gynecologists (ACOG), miscarriage is the most common form of pregnancy loss, with global estimates suggesting that up to 26% of all pregnancies end in miscarriage[1]. Notably, over 80% of early pregnancy losses occur during the first trimester, with the risk significantly declining after 12 weeks of gestation[2].

Miscarriages can occur spontaneously or be induced, and both types have considerable implications for a woman's psychological well-being. Spontaneous miscarriages may result from various factors such as chromosomal abnormalities, uterine anomalies, or environmental influences like alcohol use and smoking. While both types are associated with emotional distress, studies have reported higher rates of psychiatric complications following induced miscarriages compared to spontaneous ones[3].

Despite its frequency, miscarriage remains a deeply stigmatized and often unspoken experience. The emotional toll of pregnancy loss is frequently underestimated, and the event is rarely acknowledged or addressed with the same gravity as other forms of bereavement. Many women endure the experience in silence, coping with both physical discomfort and significant psychological burden in isolation[4]. Although the physical outcomes of miscarriage have been extensively studied, its psychological consequences particularly the long-term mental health impacts—remain comparatively underexplored[5].

Miscarriage is a multifaceted reproductive health issue that affects not only women, but also their families, partners, and broader social networks. Numerous studies have highlighted associations between miscarriage and mental health disorders, including depression, anxiety, post-traumatic stress disorder (PTSD), complicated grief, suicidal ideation, and sexual health dysfunction[6]–[13]. In one large longitudinal study, one month after pregnancy loss, 29% of women reported symptoms of PTSD, 24% experienced moderate to severe anxiety, and 11% had moderate to severe depression. Although these symptoms diminished over time, they remained clinically significant even nine months post-loss[9]. Another study found that over one-third of women (34.1%) experienced moderate to high risk of depression within a month of miscarriage, and 33.1% reported thoughts of self-harm[12]. Alarmingly, depressive symptoms may emerge as early as 10 days post-loss and persist for years, imposing a considerable mental health burden[3].

The available literature clearly shows that psychological distress following miscarriage is a critical public health concern, yet it remains overlooked by families, healthcare providers, and researchers alike. While extensive research has been conducted in high-income countries like the United States, Western Europe, and Scandinavia, there is a marked lack of local data from low- and middle-income regions, including Pakistan. As a result, the true magnitude and determinants of mental health outcomes following miscarriage in these settings remain unclear.

Given this gap, the current study aims to assess the impact of miscarriage on mental health by evaluating the levels of depression, anxiety, and stress among women who experienced pregnancy loss at Northwest General Hospital and Research Centre, Peshawar. This research seeks to provide locally relevant evidence to inform screening and support services for affected women in our context.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted at the Department of Obstetrics and Gynaecology, Northwest General Hospital, Peshawar, over a duration of six months following formal approval of the research synopsis by the Institutional Review Board and the Research and Ethical Unit (REU) of the College of Physicians and Surgeons Pakistan (CPSP). The study aimed to assess the frequency of mental health disorders specifically depression, anxiety, and stress—among women who had experienced a miscarriage.

A sample size of 77 participants was calculated using OpenEpi software, based on an anticipated prevalence of post-miscarriage depression of 11%,

with a 95% confidence interval and a 7% margin of error. The sampling technique employed was non-probability consecutive sampling, whereby all eligible patients presenting within the study period were approached and included if they met the inclusion criteria.

Women aged between 15 to 49 years who experienced a miscarriage, as defined operationally for the study, were considered eligible. Several exclusion criteria were applied to ensure the specificity of mental health assessment: women diagnosed with ectopic pregnancies, those with a history of psychiatric illness prior to the miscarriage, or currently on psychiatric medication, were excluded. Additionally, patients with underlying gynecological conditions such as fibroids, endometriosis, polycystic ovary syndrome (PCOS), or a history of recurrent miscarriages were also excluded. Other exclusion factors included severe medical conditions like chronic or terminal illnesses that could directly impact mental health outcomes and confound the results. Furthermore, participants experiencing major unrelated psychosocial stressors, such as recent bereavement, divorce, or loss of employment, were excluded to minimize external influences on mental well-being.

Participants were identified and approached within seven days of experiencing a miscarriage, typically in the triage area following initial clinical assessment. Each woman was provided with a detailed explanation of the study's purpose, procedures, and ethical considerations. Written informed consent was obtained from all participants. They were assured of the confidentiality of their data and informed that their participation was entirely voluntary, with the right to withdraw at any stage without affecting their standard medical care.

Data were collected through two structured tools: a predesigned demographic proforma and the validated Depression, Anxiety, and Stress Scale (DASS-21). The demographic proforma included patient identification number, age, weight, height, body mass index (BMI), educational background, occupational status, monthly family income, area of residence (urban or rural), gestational age at the time of miscarriage, marital status, planning status of the pregnancy, type of family system (nuclear or joint), awareness of others about the pregnancy, number of previous miscarriages, mode of conception (spontaneous or assisted), previous pregnancy outcomes (live birth or miscarriage), mode of miscarriage management, and any ongoing or prior medical and psychiatric history. The second tool, the DASS-21, was administered to measure levels of depression, anxiety, and stress. This instrument is widely used in clinical and research settings and has demonstrated good psychometric properties. The results of the DASS-21 were categorized according to severity, allowing for stratification into normal, mild, moderate, severe, or extremely severe levels of each psychological domain.

RESULTS

The study included a total of 77 women who experienced miscarriage, aiming to assess the frequency of depression, anxiety, and stress, and their association with various demographic and clinical factors. The mean gestational age at miscarriage was 10.6 ± 2.49 weeks. When stratified by pregnancy planning, women with unplanned pregnancies had a slightly higher mean gestational age (10.9 ± 2.64 weeks) than those with planned pregnancies (10.2 ± 2.29 weeks), though the difference was not statistically significant ($p = 0.1055$). Similarly, the number of prior miscarriages did not differ significantly between the two groups ($p = 0.4853$).

Age distribution showed that the majority of women in both planned and unplanned groups were between 26 to 35 years old, with no significant difference observed ($p = 0.6527$). Educational level, profession, residency, and social support were also compared between the groups. A significant association was found between profession and pregnancy planning ($p = 0.0282$), indicating that a higher proportion of working women experienced planned pregnancies. Other variables such as level of education ($p = 0.4201$), residency (urban vs rural; $p = 0.8027$), and type of family support (nuclear vs joint; $p = 0.4283$) were not statistically different across the groups.

Mental health outcomes were assessed using the DASS-21 scoring system. The mean depression score was 14.9 ± 9.13 among women with unplanned pregnancies and 13.2 ± 9.79 among those with planned pregnancies, a difference that was not

statistically significant (p = 0.3666). Similarly, anxiety scores (11.6 ± 8.61 in unplanned vs 10.5 ± 8.33 in planned) and stress scores (16.7 ± 9.92 in unplanned vs 14.0 ± 9.69 in planned) did not show significant differences (p = 0.5739 and p = 0.1241, respectively). When categorized according to severity levels, the majority of women fell into the moderate to severe categories for depression, anxiety, and stress, yet these distributions did not differ significantly by pregnancy planning (p = 0.2946, p = 0.2525, and p = 0.3800, respectively).

Overall, the findings suggest that while mental health concerns such as depression, anxiety, and stress are common among women following miscarriage, their severity does not significantly differ based on whether the pregnancy was planned or unplanned. However, profession appeared to have a notable association with pregnancy planning, suggesting that social or economic roles might influence reproductive decisions.

TABLE 1: SOCIODEMOGRAPHIC CHARACTERISTICS BY PREGNANCY PLANNING

Variable	Category	Planned (n=43)	Unplanned (n=34)	Total (n=77)	p-value
Age (years)	15–25	10 (23.3%)	14 (41.2%)	24 (31.2%)	0.176[1]
	26–35	25 (58.1%)	17 (50.0%)	42 (54.5%)	
	36–45	8 (18.6%)	3 (8.8%)	11 (14.3%)	
Education	Illiterate	3 (7.0%)	6 (17.6%)	9 (11.7%)	0.330[1]
	Primary	9 (20.9%)	9 (26.5%)	18 (23.4%)	
	Secondary	12 (27.9%)	10 (29.4%)	22 (28.6%)	
	College/Univ.	19 (44.2%)	9 (26.5%)	28 (36.4%)	
Profession	Housewife	23 (53.5%)	29 (85.3%)	52 (67.5%)	**0.028[1]**
	Working	20 (46.5%)	5 (14.7%)	25 (32.5%)	
Residency	Urban	33 (76.7%)	25 (73.5%)	58 (75.3%)	0.802[1]
	Rural	10 (23.3%)	9 (26.5%)	19 (24.7%)	
Income Class	Lower	10 (23.3%)	11 (32.4%)	21 (27.3%)	0.464[1]
	Middle	25 (58.1%)	21 (61.8%)	46 (59.7%)	
	Upper	8 (18.6%)	2 (5.9%)	10 (13.0%)	
Social Support	Combined Family	26 (60.5%)	18 (52.9%)	44 (57.1%)	0.428[1]
	Nuclear Family	17 (39.5%)	16 (47.1%)	33 (42.9%)	

[1]Chi-square test

TABLE 2: CLINICAL CHARACTERISTICS AND HISTORY BY PREGNANCY PLANNING

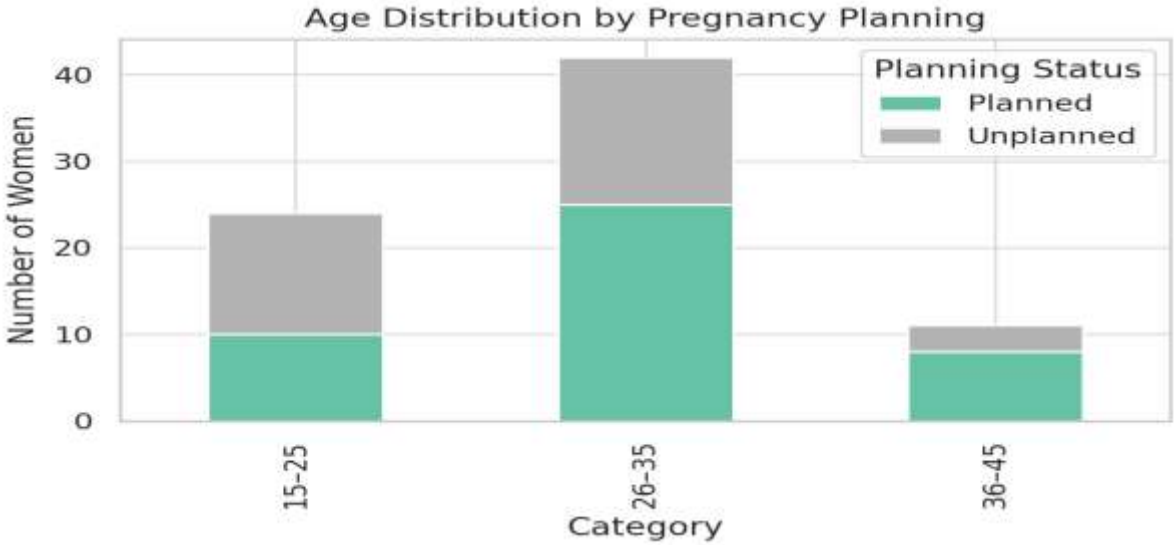
Variable	Planned (n=43)	Unplanned (n=34)	Total (n=77)	p-value
Gestational Age (weeks)	10.35 ± 2.23	9.74 ± 2.32	10.07 ± 2.28	0.106[2]
Number of Prior Miscarriages	1.30 ± 0.85	1.18 ± 0.88	1.25 ± 0.86	0.485[2]
Others Aware of Pregnancy (Yes)	40 (93.0%)	28 (82.4%)	68 (88.3%)	0.157[1]
Prior Pregnancy Outcome (Miscarriage)	19 (44.2%)	17 (50.0%)	36 (46.8%)	0.612[1]
Taking Anti-Depressants (Yes)	3 (7.0%)	4 (11.8%)	7 (9.1%)	0.474[1]
Past Mental Health History (Yes)	5 (11.6%)	6 (17.6%)	11 (14.3%)	0.453[1]
Family History of Depression (Yes)	8 (18.6%)	5 (14.7%)	13 (16.9%)	0.643[1]
Hypertension (Yes)	6 (14.0%)	4 (11.8%)	10 (13.0%)	0.782[1]
Diabetes (Yes)	5 (11.6%)	3 (8.8%)	8 (10.4%)	0.680[1]

[1]Chi-square test
[2]Independent sample t-test

TABLE 3: DASS-21 SCORES AND GRADES BY PREGNANCY PLANNING

Scale	Score (Mean ± SD)	Planned (n=43)	Unplanned (n=34)	Total (n=77)	p-value
Depression	12.98 ± 7.56	13.60 ± 7.78	12.20 ± 7.28	0.366	
Anxiety	11.16 ± 6.49	11.51 ± 6.76	10.73 ± 6.18	0.574	
Stress	17.81 ± 8.09	18.98 ± 7.68	16.38 ± 8.47	0.124	
Scale	Grade	Planned (n=43)	Unplanned (n=34)	Total (n=77)	
Depression	Normal	16 (37.2%)	12 (35.3%)	28 (36.4%)	0.295
	Mild	8 (18.6%)	6 (17.6%)	14 (18.2%)	
	Moderate	10 (23.3%)	9 (26.5%)	19 (24.7%)	
	Severe	6 (14.0%)	5 (14.7%)	11 (14.3%)	
	Extremely Severe	3 (7.0%)	2 (5.9%)	5 (6.5%)	
Anxiety	Normal	13 (30.2%)	10 (29.4%)	23 (29.9%)	0.253
	Mild	7 (16.3%)	5 (14.7%)	12 (15.6%)	
	Moderate	11 (25.6%)	9 (26.5%)	20 (26.0%)	
	Severe	7 (16.3%)	7 (20.6%)	14 (18.2%)	
	Extremely Severe	5 (11.6%)	3 (8.8%)	8 (10.4%	
Stress	Normal	17 (39.5%)	14 (41.2%)	31 (40.3%)	0.380
	Mild	8 (18.6%)	6 (17.6%)	14 (18.2%)	
	Moderate	10 (23.3%)	8 (23.5%)	18 (23.4%)	
	Severe	5 (11.6%)	3 (8.8%)	8 (10.4%)	
	Extremely Severe	3 (7.0%)	3 (8.8%)	6 (7.8%)	

Graph:1



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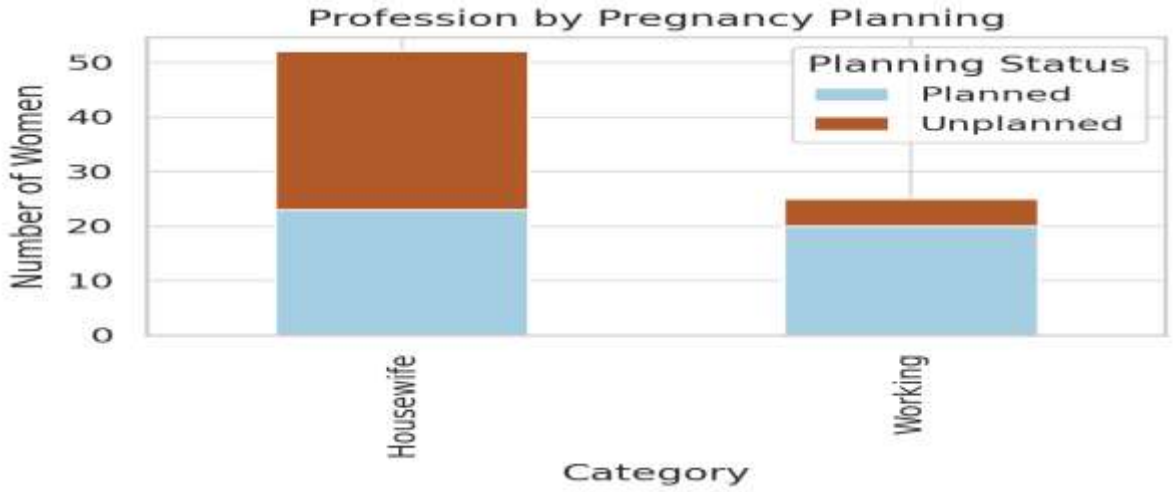

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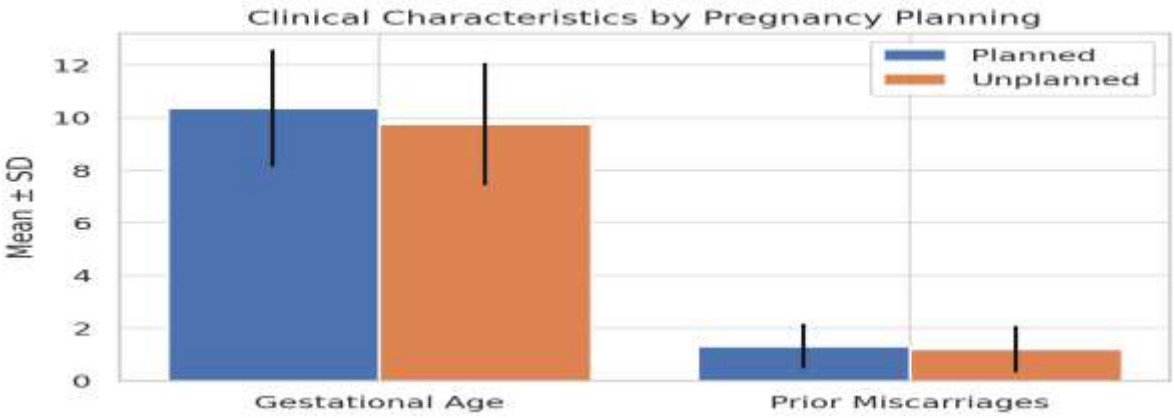

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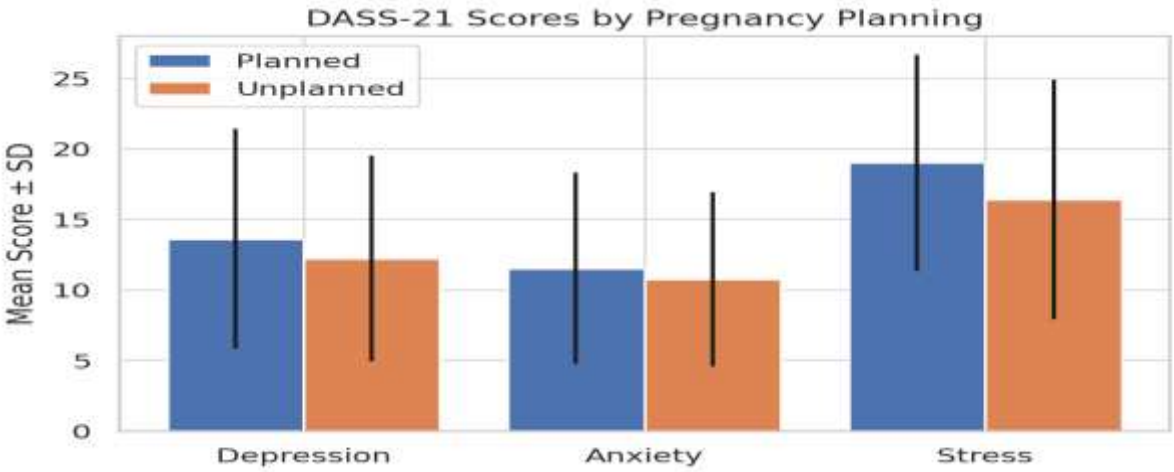

DISCUSSION:

The present study aimed to determine the frequency of mental health disorders—specifically depression, anxiety, and stress among women following miscarriage, and to identify any associated demographic or clinical risk factors. Our results that

Women following miscarriage in our study exhibited moderate levels of depression, anxiety, and stress, regardless of pregnancy planning status; these differences were not statistically significant. This aligns with evidence from Pakistan, where approximately 41% of women reported PTSD symptoms post-miscarriage, often accompanied by anxiety and depression, particularly in cases of recurrent miscarriage or weak social support systems (14).

Internationally, large cohort evidence demonstrates that experience of miscarriage increases the long-term risk for common mental disorders, including depression and anxiety, with hazard ratios ranging from 1.06 to 1.14 depending on the number of pregnancy losses (15). This supports our finding that psychological sequelae are prevalent even beyond the immediate aftermath, and may persist regardless of whether the pregnancy was planned or unplanned.

A recent mixed-methods study assessing miscarriage during the COVID-19 pandemic reported that moderate to severe depression and anxiety persisted up to 31 months post-loss, with nearly two-thirds meeting PTSD criteria. The study emphasized that perceived stress and prior trauma significantly influenced long-term mental health outcomes (16). Although our study was not conducted during a pandemic, the absence of significant differences between planned and unplanned pregnancies in mental health outcomes suggests that the experience of loss itself may be a dominant factor in psychological morbidity.

Further, a systematic review and meta-analysis of women with previous miscarriages or stillbirths showed wide prevalence ranges of depression (5–91%) and highlighted that most symptoms peak early and decline over time. However, a subset of women continues to experience persistent symptoms, particularly those with recurrent loss (17,18). Our sample's moderate mean scores for depression, anxiety, and stress parallel these findings and underscore the need for early psychological screening and follow-up.

Our finding that profession (i.e., working versus housewife) was significantly associated with pregnancy planning is consistent with studies demonstrating that socioeconomic status, including employment and education level, influences reproductive autonomy and decision-making (19). Women with higher education and stable employment are more likely to plan pregnancies and may have access to better healthcare and social resources, potentially mitigating the psychological impact of miscarriage.

Unlike some earlier reports, our study did not find statistically significant associations between social support (e.g., joint versus nuclear family) and mental health outcomes. However, literature on perinatal bereavement indicates that strong social support and early psychological interventions can reduce grief, anxiety, and depression after miscarriage (20).

The clinical implications of our findings are clear: psychological support should be offered universally to women following miscarriage, irrespective of pregnancy planning status or background. Routine use of validated screening tools such as DASS-21, PHQ-9, or GAD-7 should be integrated into follow-up care, ideally within the first few weeks post-loss. Structured grief counseling and mental health support programs have been shown to significantly reduce psychological distress following pregnancy loss (21,).

Strengths of our study include the use of a validated screening tool (DASS-21) and analysis based on pregnancy planning status. Limitations include a relatively small sample size, single-center scope, and cross-sectional design, which may limit generalizability and causal inference. However, the findings reinforce the global recommendation for proactive, universal psychological support for women experiencing miscarriage.

Conclusion

A considerable number of women experience depression, anxiety, and stress after miscarriage, regardless of pregnancy planning. These findings support the need for routine mental health screening and support following miscarriage.

Limitations

The study was limited by its single-center design, small sample size, and cross-sectional nature. Self-reported data may also have introduced bias.

Strengths

The use of a validated tool (DASS-21) and inclusion

of diverse demographic and clinical variables enhance the reliability and relevance of the findings, particularly in the local context.

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