

## ORIGINAL RESEARCH ARTICLE

# Predictors of depression, anxiety and stress symptoms among maternity nurses and midwives in a Middle Eastern country

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## Abstract

This study assessed anxiety, depression, and stress levels among midwives and maternity nurses in Oman using the DASS-21 questionnaire in a cross-sectional survey of 200 participants from three public hospitals. Results indicated that 27.0% experienced mild to moderate depression, while 33.5% and 32% reported mild to moderate anxiety and stress, respectively. No severe cases were observed, but the findings highlight significant predictors such as sleep quality, job satisfaction, caseload per shift, age, and working area. These factors were significantly associated with the mental health outcomes measured. The study underscores the importance of addressing the psychological and emotional well-being of midwives and maternity nurses through targeted support and interventions, given the substantial percentage experiencing mild to moderate symptoms. Continuous efforts are essential to mitigate these issues and promote a healthier work environment for these healthcare professionals. (*Afr J Reprod Health* 2024; 28 [9]: 63-72).

**Keywords:** Depression, anxiety, stress, midwives, maternity nurses, predictors

## Résumé

Cette étude a évalué les niveaux d'anxiété, de dépression et de stress chez les sages-femmes et les infirmières de maternité d'Oman à l'aide du questionnaire DASS-21 dans le cadre d'une enquête transversale menée auprès de 200 participants de trois hôpitaux publics. Les résultats ont indiqué que 27,0 % souffraient de dépression légère à modérée, tandis que 33,5 % et 32 % rapportaient respectivement une anxiété et un stress légers à modérés. Aucun cas grave n'a été observé, mais les résultats mettent en évidence des prédicteurs importants tels que la qualité du sommeil, la satisfaction au travail, le nombre de cas par équipe, l'âge et la zone de travail. Ces facteurs étaient significativement associés aux résultats en matière de santé mentale mesurés. L'étude souligne l'importance d'aborder le bien-être psychologique et émotionnel des sages-femmes et des infirmières de maternité par le biais d'un soutien et d'interventions ciblées, étant donné le pourcentage substantiel de symptômes légers à modérés. Des efforts continus sont essentiels pour atténuer ces problèmes et promouvoir un environnement de travail plus sain pour ces professionnelles en soins. (*Afr J Reprod Health* 2024; 28 [9]: 63-72).

**Mots-clés:** Dépression, anxiété, stress, sages-femmes, infirmières en maternité, prédicteurs

## Introduction

Pregnancy and childbirth can create anxiety for women and their families. Negative experiences during pregnancy and birth have been linked to fear, excessive pain, discomfort, poor support, care, and undesirable outcomes. Care and support from healthcare providers during this period create a positive memory increase women's confidence and allow them to better adjust to motherhood<sup>1</sup>. Moreover, evidence suggests the positive impact of

good midwifery care on the health outcomes of a country<sup>2</sup>. Therefore, midwives are expected to provide high-quality services and adhere to professional ethics, values, human rights, and standards of practice. Further, midwives are expected to be non-judgmental, and respectful, and act in a culturally appropriate manner<sup>3</sup>. Thus, ensuring quality care for childbearing women is an essential part of healthcare and it requires considerable emotional work and the midwives are exposed to emotional strain, which could affect their

overall health<sup>4</sup>. The midwifery profession ranks among the most stressful professions because of the difficulties of supporting mothers who are in pain, managing unforeseen maternal and neonatal emergencies, offering emotional support to women as they adjust to motherhood, and competently carrying out a variety of clinical procedures<sup>5</sup>. Furthermore, midwives and nurses are affected by work-related stress due to higher emotional demands at work compared to other healthcare professionals<sup>6,7</sup>.

Depression, anxiety, and stress (DASS) are globally affecting every individual to variable extents in the healthcare sector leading to psychological exhaustion from working in stressful environments<sup>8</sup>. Likewise, the work of midwives and nurses in maternity care is quite challenging and demanding as they have to provide care to women experiencing symptoms like anxiety, pain, fear, grief, and trauma<sup>2,7</sup>. Working closely with clients in such distress causes severe mental and physical distress to midwives and obstetric nurses leading to workplace exhaustion and burnout<sup>7,8</sup>. Evidence across different countries using reliable psychometric measures has identified severe burnout among maternity nurses and midwives and recommended the importance of addressing this issue closely by administrators in the health care system<sup>9</sup>. While there is emerging data about psychological distress among midwives and maternity nurses, a more collaborative inquiry is called for to address the contributing and associated factors among midwifery professionals from a Middle Eastern perspective.

We sought to address the dearth of research on depression, anxiety, and stress symptoms among Omani midwives and maternity nurses working in maternity units in selected hospitals in Oman. The purpose of this study is to determine the prevalence of depression, anxiety, and stress symptoms among Omani midwives and identify the factors associated with these symptoms.

## Methods

### *Study design and participants*

A cross-sectional descriptive design was adopted. The study was conducted from March to June 2023.

### *Setting*

The study included three major hospitals in Oman (Khoulah Hospital, Sohar Hospital, and Nizwa Hospital) that provide women antenatal, postnatal, and labor services. All these hospitals are governmental hospitals that provide either tertiary or secondary care. Khoulah Hospital is a tertiary hospital in Muscat, the capital city of Oman. While Sohar and Nizwa hospitals are among the secondary hospitals in Al Dakhlyah and Al Batinah governate, in Oman. In general, secondary hospitals serve a larger patient population with a variety of clinical cases, which can result in higher workloads and limited resources. By contrast, tertiary hospitals offer more specialized care, more advanced medical equipment, and better staff-to-patient ratios. In these hospitals, maternity units offer comprehensive obstetrical and gynecological care, including antenatal outpatient units, labor and delivery, gynecology, and postpartum units. Nurses at these hospitals are primarily from the Middle East region, with an average of 20 nurses per unit.

### *Sample, sample size, and recruitment*

All maternity nurses and midwives who worked in the antenatal, gynecology, postnatal, and labor units of the study settings were approached to participate in the study. The inclusion criteria for the participants were maternity nurses or midwives, working in the study settings during the study period, having at least one year of clinical experience in a maternity unit, and being willing to participate in the study. Maternity nurses or midwives with known mental issues were excluded from the study.

Assuming a power of 80%, with alpha level 0.05, two-tailed, and medium effect size 0.15 for depression, anxiety, and stress, 131 participants were required to be included in the multiple regression analysis (13 predictors) to address the study objective related to predictors. However, expecting an attrition rate of 20%, the final estimate for the overall sample was 151 maternity nurses. The medium effect size was selected as an appropriate effect size to answer the aim of the study.

## **Data collection**

Before the initiation of study procedures, ethical approval of the study was obtained from the Research and Ethical Review and Approval Committee (RERAC) of the Ministry of Health (MOH), Oman. Following the ethical approval of the study, official letters were sent from the College of Nursing Dean's office to the Director Generals and Nursing Administration offices of the study settings to obtain permission for data collection from the potential participants. After receiving confirmation for data collection, the recruitment process was coordinated with the head nurses of the study units (antenatal OPD, GNY, postnatal, and labor) after providing them with an orientation to the study aim and the eligibility criteria. The hospital nursing office provided a list of nurses and midwives, and a link to the questionnaire was sent to each study participant. Each participant had the chance to submit one response. The online link was active for two months. At the end of the data collection period, responses from the study participants were exported from Google Forms to an Excel sheet, which was later copied to an SPSS sheet.

## **Data collection measures**

### **Part 1**

The demographic characteristics of the participants included their age, marital status, level of education, years of experience, income, area of practice, workload per shift (the number of women assigned to them), working hours, rotating between shifts, rotating between units, sleep duration, sleep quality, and job satisfaction.

### **Part 2**

The Depression, Anxiety, and Stress Scale-21 (DASS-21) is a 21-item tool used to assess three related negative emotional statuses of an individual including depression, anxiety and stress level.<sup>10,11</sup> The tool consists of three subscales that are DASS-Anxiety (items: 2, 4, 7, 9, 15, 19, 20), DASS-Depression (items: 3, 5, 10, 13, 16, 17, 21) and DASS-Stress (1,6, 8, 11, 12, 14,18). The scoring is done on a 4-point Likert scale where 0 means =does not apply to me at all; 1=applies to me to some degree, or some of the time; 2=applies to me to a

considerable degree, or a good part of my life; and 3=applies to very much, or most of the time.

For depression, scores of 0 to 9 are considered normal, 10 to 13 are considered mild, 14 to 20 are considered moderate, 21 to 27 are considered to indicate severe depression, and 28 to 42 are considered to indicate extremely severe depression. The range of anxiety scores is as follows: normal (0–7), mild (8–9), moderate (10–14), severe (15–19), and extremely severe (20–42). For stress, a score of 0–10 indicates normal stress, 11–18 indicates mild stress, 19–26 indicates moderate stress, 27–34 indicates severe stress, and 35–42 indicates extremely severe stress. A cut-off score of 19 is used for moderate and higher stress.

The DASS-21 instrument is available for public use, therefore permission to use is not applicable<sup>12</sup>. The content validity, internal consistency, and test-retest reliability have been well established for the DASS-21 instrument among English-speaking nurses and midwives<sup>10,11,13</sup>. In this study, alpha coefficients for each subscale were good (depression  $\alpha = 0.84$ , anxiety  $\alpha = 0.83$ , and stress  $\alpha = 0.83$ ).

## **Ethical considerations**

Ethical approval was obtained before data collection. Completing the questionnaire constitutes giving implied consent, therefore the need for written consent from midwives and maternity nurses was waived. Participants in the study were informed that their participation was voluntary and that they could discontinue at any time or choose not to answer any questions. Participants were informed that no personally identifiable information was collected and that only the PI had access to the encrypted, password-protected data.

## **Statistical analysis**

Statistical analysis was undertaken using SPSS version 26 with the statistical significance level set at  $p < 0.05$ . Descriptive statistics (categorical data: frequency, percentage, continuous data: means, and standard deviation) were used to describe the sample characteristics, and the prevalence of depression, anxiety, and stress. Multiple linear regression was used to examine the factors associated with depression, anxiety, and stress

symptoms. The studied factors were participants' age, marital status, education, and years of experience, income, area of practice, workload per shift, and working hours, rotating between shifts, rotating between units, sleep duration, sleep quality, job satisfaction. These factors were identified based on the literature review<sup>14-16</sup>. Regression assumptions (normality and multicollinearity) were checked and amended as required.

## Results

### *Sample demographic and work-related characteristics*

A total of 200 midwives completed the online survey, representing 20% of the total participants. Over half of the participants (56%) in this study were between the ages of 31 and 40, -hundred and eighty-four (92.0%) of the participants were married, 11 (5.5%) were single (Figure 1), and the majority (66.5%) had more than ten years of clinical experience. It was also revealed from the analysis that 42.5% of the study participants attended between one to five women per shift and 40.0% attended between six to ten women per shift. Further, most of the study participants (66%) were satisfied or highly satisfied with the work they were performing at present. Moreover, about 15.5% of participants reported poor sleep quality (Table 1).

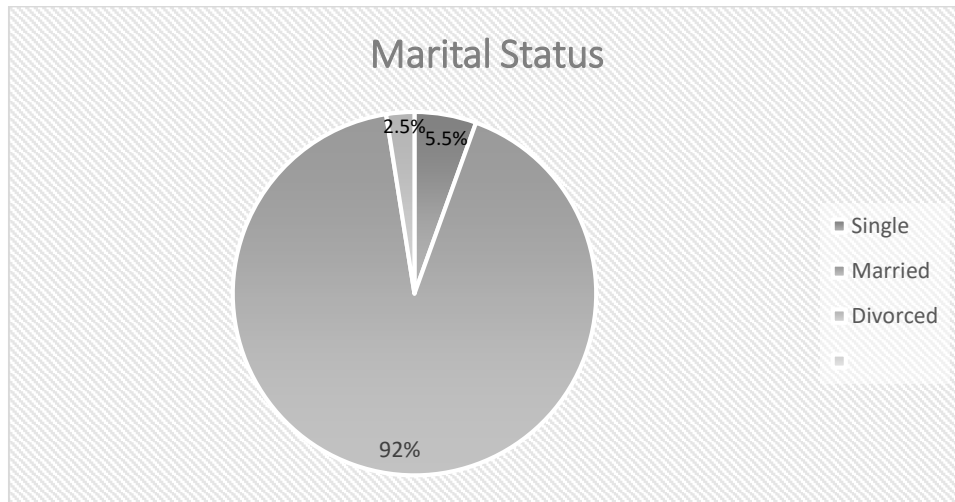
### *Level of depression, anxiety, and stress among study participants*

Descriptive statistics were used to describe the level of depression, anxiety, and stress among the study participants. Among study participants, the mean scores for depression, anxiety, and stress were 6.32 (SD=5.96), 7.95 (SD=6.39), and 9.04 (SD= 6.58), respectively. According to these results, midwives in this study were not depressed, anxious, or stressed to a significant degree.

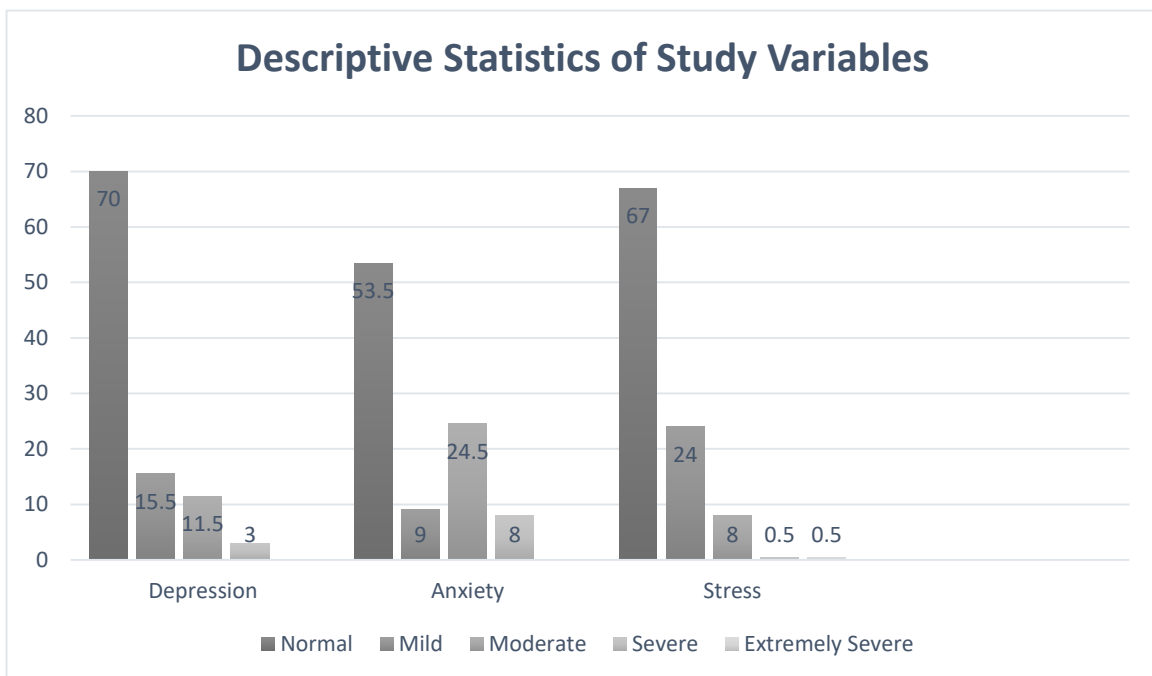
To further describe the severity level within each variable, frequency and percentages were used. The analysis revealed that approximately 27.0% of the study participants exhibited a mild to moderate level of depression. Similarly, around one-third of the participants experienced mild to moderate levels of anxiety (33.5%) and stress (32%).

**Table 1:** Demographic characteristics

| Variable                       | Total Sample<br>N= 200<br>M (SD) or N (%) |
|--------------------------------|---|
| <b>Age</b>                     |   |
| 22- 30 years                   | 34 (17.0%)                                |
| 31- 40 years                   | 112 (56.0%)                               |
| 41- 50 years                   | 54 (27.0%)                                |
| <b>Education Level</b>         |   |
| Diploma in Midwifery           | 102 (51.0%)                               |
| Bachelor in Midwifery          | 18 (9.0%)                                 |
| Postgraduate Diploma           | 21 (10.5%)                                |
| Bachelor in Nursing            | 58 (29.0%)                                |
| Master in Midwifery            | 1 (0.5%)                                  |
| <b>Working Hospital</b>        |   |
| Sohar                          | 67 (33.5%)                                |
| Nizwa                          | 71 (35.5%)                                |
| Khawla                         | 62 (31.0%)                                |
| <b>Working Unit</b>            |   |
| Labor Unit                     | 96 (48.0%)                                |
| Antenatal OBD                  | 5 (2.5%)                                  |
| Postnatal Unit                 | 43 (21.5%)                                |
| Gynecology Unit                | 56 (28.0%)                                |
| <b>Year of Practice</b>        |   |
| 1-9 year                       | 67 (33.5%)                                |
| 10 or more years               | 133 (66.5%)                               |
| <b>Working Shift</b>           |   |
| A shift                        | 167 (83.5%)                               |
| Day shift 7 am- 7 pm           | 8 (4.0%)                                  |
| Night shift 7 pm – 7 am        | 25 (12.5%)                                |
| <b>Rotating between Shifts</b> |   |
| Yes                            | 21 (10.5%)                                |
| No                             | 179 (89.5%)                               |
| <b>Caseload Per Shift</b>      |   |
| 1-5 women                      | 85 (42.5%)                                |
| 6- 10 women                    | 80 (40.0%)                                |
| >10 women                      | 35 (17.5%)                                |
| <b>Job Satisfaction</b>        |   |
| Very Dissatisfied              | 9 (4.5%)                                  |
| Somewhat Dissatisfied          | 13 (6.5%)                                 |
| Fair                           | 46 (23.0%)                                |
| Somewhat Satisfied             | 34 (17.0%)                                |
| Very Satisfied                 | 98 (49.0%)                                |
| <b>Sleep Quality</b>           |   |
| Poor                           | 31 (15.5%)                                |
| Good                           | 139 (69.5%)                               |
| Excellent                      | 30 (15.0%)                                |
| <b>Sleep duration</b>          |   |
| <5 hours/day                   | 50 (25.0%)                                |
| 6-7 hours/day                  | 124 (62.0%)                               |
| 8-9 hours/day                  | 22 (11.0%)                                |
| >9 hours/day                   | 4 (2.0%)                                  |



**Figure 1:** Marital status of midwives



**Figure 2:** Descriptive statistics for the study variables

Among the midwives, a small percentage reported severe levels of depression (3.0%), anxiety (6.58%), and stress (1%) (Figure 2).

**Predictors of depression, anxiety and stress**

A multiple linear regression model was fitted with a total score of DASS as the outcome and age, marital status, educational level, years in practice, working hospital, working area, caseload per shift, working shift, rotation between shifts, job satisfaction, sleep quality and sleep duration as potential predictors.

The overall model fit was adjusted R-square = .322, meaning that 32.2% percent of the total variation in depression, anxiety, and stress was explained by participants' demographic characteristics and work-related factors and the overall relationship was significant [ $F(12, 187) = 8.87, p = .000$ ] (Table 2). Additional analysis was conducted using stepwise regression to exclude variables that were found to be non-significant. Stepwise regression analysis gave five significant ( $p < .001$ ) models of specific predictors (i.e., sleep quality, job satisfaction,

**Table 3:** Multiple regression analysis for predictors of depression, anxiety and stress

| Model |                                    | Unstandardized Coefficients |            | Standardized Coefficients | t      | p Value | R <sup>2</sup> |
|-------|------------------------------------|-----------------------------|------------|---------------------------|--------|---------|----------------|
|       |                                    | B                           | Std. Error | Beta                      |        |         |                |
| 1     | (Constant)                         | 26.275                      | 3.133      |                           | 8.386  | .000    | 0.322          |
|       | Age                                | -2.228                      | 1.119      | -.168                     | -1.991 | .048    |                |
|       | Marital Status                     | -.058                       | 1.909      | -.002                     | -.031  | .976    |                |
|       | Qualifications                     | -.637                       | .442       | -.098                     | -1.442 | .151    |                |
|       | Years in Practice                  | -1.283                      | 1.458      | -.070                     | -.880  | .380    |                |
|       | working Hospital                   | -1.203                      | .656       | -.111                     | -1.833 | .068    |                |
|       | Working Area                       | -.657                       | .314       | -.136                     | -2.091 | .038    |                |
|       | Caseload per Shift                 | 2.918                       | .725       | .246                      | 4.024  | .000    |                |
|       | Working Shift                      | .589                        | .786       | .046                      | .749   | .455    |                |
|       | Rotating between Shifts            | .358                        | 1.780      | .013                      | .201   | .841    |                |
|       | Job Satisfaction with Current Work | -1.962                      | .474       | -.266                     | -4.137 | .000    |                |
|       | Sleep Quality                      | -3.871                      | 1.113      | -.246                     | -3.479 | .001    |                |
|       | Sleep Duration                     | -1.230                      | .932       | -.093                     | -1.320 | .189    |                |

**Table 4:** Stepwise regression analysis for predictors of depression, anxiety and stress

| Model |                                    | Unstandardized Coefficients |            | Standardized Coefficients | t      | p Value | R <sup>2</sup> |
|-------|------------------------------------|-----------------------------|------------|---------------------------|--------|---------|----------------|
|       |                                    | B                           | Std. Error | Beta                      |        |         |                |
| 1     | (Constant)                         | 18.018                      | 1.163      |                           | 15.492 | .000    | 0.161          |
|       | Sleep Quality                      | -6.400                      | 1.022      | -.407                     | -6.262 | .000    |                |
| 2     | (Constant)                         | 23.086                      | 1.566      |                           | 14.742 | .000    | 0.238          |
|       | Sleep Quality                      | -4.795                      | 1.035      | -.305                     | -4.632 | .000    |                |
|       | Job Satisfaction with Current Work | -2.225                      | .486       | -.301                     | -4.581 | .000    |                |
| 3     | (Constant)                         | 20.488                      | 1.673      |                           | 12.247 | .000    | 0.284          |
|       | Sleep Quality                      | -4.460                      | 1.008      | -.283                     | -4.426 | .000    |                |
|       | Job Satisfaction with Current Work | -2.133                      | .472       | -.289                     | -4.523 | .000    |                |
|       | Caseload per Shift                 | 2.649                       | .717       | .223                      | 3.694  | .000    |                |
| 4     | (Constant)                         | 22.362                      | 1.826      |                           | 12.249 | .000    | 0.301          |
|       | Sleep Quality                      | -4.677                      | .999       | -.297                     | -4.680 | .000    |                |
|       | Job Satisfaction with Current Work | -1.968                      | .471       | -.266                     | -4.181 | .000    |                |
|       | Caseload per Shift                 | 2.600                       | .709       | .219                      | 3.669  | .000    |                |
|       | Age                                | -1.921                      | .795       | -.145                     | -2.416 | .017    |                |
| 5     | (Constant)                         | 23.759                      | 1.885      |                           | 12.604 | .000    | 0.320          |
|       | Sleep Quality                      | -4.453                      | .990       | -.283                     | -4.498 | .000    |                |
|       | Job Satisfaction with Current Work | -1.863                      | .466       | -.252                     | -3.996 | .000    |                |
|       | Caseload per Shift                 | 2.824                       | .705       | .238                      | 4.007  | .000    |                |
|       | Age                                | -2.592                      | .829       | -.195                     | -3.128 | .002    |                |
|       | Working Area                       | -.762                       | .303       | -.158                     | -2.514 | .013    |                |

caseload per shift, age, and working area), and the adjusted R-square ranged between 0.161–0.320 (Table 3). In conclusion, the results indicated that none of the participants’ demographic

characteristics and working-related factors significantly predict depression, anxiety, and stress except sleep quality, job satisfaction, caseload per shift, age, and working area.

## Discussion

This study is aimed to examine the stress anxiety and depression level of midwives and maternity nurses and to identify potential risk factors. According to the study results, the average scores for stress, anxiety, and depression were low, indicating that overall psychological distress was not a major issue for the participants. However, it is important to note that some participants did report mild to moderate levels of depression (27%) while around one-third experienced similar levels of anxiety (33.55), and stress (32%) which is closer to a study conducted found the prevalence of depression among Omani medical residents as 28.8%.<sup>12,17</sup>

The results of our study are also comparable to those of a study among midwives conducted in the UK, in which more than one-third of participants reported high levels of stress (36.7%), anxiety (38%), and depression (33%)<sup>11,18</sup>. However, compared to earlier published international midwifery studies this study found a higher prevalence of these symptoms.<sup>13,19,18</sup>

The various degrees of psychological distress among the participants warrant careful consideration of the possible causes. Midwives/maternity nurses frequently encounter difficult situations and emotional pressures in their work, making the midwifery profession a demanding and extremely stressful one.<sup>20</sup> However, the overall finding of our study of relatively low levels of stress, anxiety, and depression points to the possibility that the participants have collectively developed effective coping mechanisms or have access to resources that can help them lessen the negative effects of their workplace.

In comparison, our results, in contrast, show lower prevalence rates than those seen in previous studies. For instance, another study found that higher percentages of healthcare workers in Turkey experienced depression (64.7%), anxiety (51.6%), and stress (41.2%).<sup>21</sup> Similar findings were reported in New York which found higher levels of depression (48%), anxiety (33%), and stress (57%).<sup>22</sup> Another study presented that depression, anxiety, and stress were significantly present in China (50.4%, 44.6%, and 71.5%, respectively).<sup>23</sup> Additionally it also found that midwives in Ethiopia had higher rates of stress (19.0%), anxiety (29.6%), and depression (41.1%).<sup>23</sup> It is

noteworthy that the high prevalence rates in these studies may be because of the timing as those studies were conducted when COVID-19 was still in its early stages. It is crucial to understand the significance of proactive mental health support for midwives despite the relatively low levels of psychological distress found in this study. Over time, depression, anxiety, and stress, even at mild to moderate levels, can affect a midwife's well-being and ability to perform their duties. It should be a top priority to implement interventions to support midwives' mental health and wellbeing. Providing access to counseling services, establishing peer support groups or networks, and fostering an environment at work that encourages open communication and self-care practices are a few examples of how to do this.<sup>19</sup>

### *Predictors associated with high levels of depression, anxiety, and stress*

The study identified a few of the predictors to significantly affect the amounts of stress, anxiety, and depression that midwives experience. These important predictors included age, working environment, caseload per shift, sleep quality, and job satisfaction. One of the most important predictors of midwives' psychological well-being was found to be their sleep quality, with poorer sleep being linked to higher levels of stress, anxiety, and depression. Sleep disturbances may be a result of the demanding nature of midwifery work, which includes unpredictable shifts, long hours, and emotional demands.<sup>18</sup> Given that poor sleep can hurt midwives' mental health, this finding emphasizes the significance of addressing sleep-related issues among midwives. Midwives need strategies to improve their sleep quality to support their well-being. These include proper shift scheduling, sleep hygiene education, and creating a relaxing environment.

According to the study, a significant predictor of depression, anxiety, and stress in midwives was their caseload per shift. A sizable portion of midwives reported seeing one to five or six to ten women per shift. Healthcare professionals' job satisfaction and well-being can be significantly impacted by the patient and workload condition which is supported by researchers.<sup>18,24</sup> To lessen the detrimental effects of high caseloads on midwives' mental health, healthcare institutions must consider

workload management strategies like adequate staffing and workload distribution. Another important predictor of depression, anxiety, and stress among midwives was found to be job satisfaction. A sizable percentage of midwives said they were satisfied or extremely satisfied with their jobs. However, levels of stress, anxiety, and depression were negatively correlated with job satisfaction. This finding emphasizes the significance of addressing elements like workload, a lack of resources, or organizational support that contribute to job dissatisfaction<sup>24</sup> Interventions that support a friendly workplace, acknowledge the contributions of midwives, and provide opportunities for professional growth can improve job satisfaction.

Age and the working environment were found to be significant predictors of psychological well-being. The study's findings showed that a significant percentage of midwives were between the ages of 31 and 40, which is typically regarded as the mid-career stage in a variety of medical professions. This finding suggests the possibility of unique difficulties, challenges, or stressors that could potentially hurt the mental health of midwives in this age group. Future research may help us understand the precise causes of stress and the results for mental health at this stage of the career. This finding is consistent with the findings of another paper, which found that midwives under the age of 40 and those with less than 10 years of experience had significantly higher DASS scores.<sup>25</sup> Depression, anxiety, and stress were less common in older midwives and those working in specific fields. These results might be explained by factors like a supportive workplace environment, improved coping skills, or more experience. Future research could examine the precise elements of age and workplace that promote better mental health outcomes and create targeted interventions in accordance. Also, it is important to support the new and young midwives and to address their concerns as these midwives are the future of the midwifery field. It is significant to note that the regression analysis explained a large portion of the variation in midwives' levels of depression, anxiety, and stress, suggesting that factors other than those evaluated in this study may also affect psychological well-being. Additional factors such as social support and coping strategies should be included in future

research to provide a more complete understanding of midwives' mental health.

## Limitations

When evaluating the findings, it is important to consider the present study's limitations. Since the study was cross-sectional in design, no cause-and-effect relationship could be discovered. A longitudinal study could potentially overcome this limitation, but it would be time- and cost-intensive. Furthermore, the sample was restricted to the participants who work in the three public hospitals in the selected setting, which limits its generalizability to the whole of Oman; we suggest conducting multicenter research with bigger sample sizes. Participants who had internet access and were sufficiently inclined to be interested in the topic only completed online surveys. Given that this study relied on self-reports, and recall bias, it is impossible to assess the level of bias in online questionnaires.<sup>26</sup> As a result, it is suggested that the study be repeated with a paper survey methodology and a larger sample size. Despite being a well-known and validated screening tool, the DASS cannot be used exclusively for diagnosing and treating depression. It should be followed by appropriate clinical assessment and evaluation.

## Conclusion

The study's participants did not experience severe depression, anxiety, or stress overall, but a subset of midwives did report mild to moderate psychological distress. These results underline the necessity of ongoing assistance and initiatives to advance midwives' psychological well-being. Future studies should focus on investigating the causes of midwives' psychological distress and evaluating the effectiveness of interventions to enhance it. Overall, the results of this study show how critical it is to address issues, such as sleep quality, job satisfaction, caseload per shift, age, and working environment, to support midwives' psychological well-being. The overall mental health and job satisfaction of midwives may be improved by interventions aimed at these factors, such as implementing workload management techniques, enhancing job satisfaction initiatives, and offering sleep-related support. For the benefit of midwives themselves and the provision of high-



quality care, it is critical to establish a supportive work environment that prioritizes the mental health of midwives.

## Competing interests

The authors declare that they have no conflict of interest with the material presented in this paper.

## Consent for publication

The authors consent to publish the research.

## Contributions of authors

Conception and design of the study: AA, IAH, DR

As Data collection: HAS

Data analysis and interpretation: AA, IAH, JA

Statistical analysis: AA, IAH

Manuscript preparation: AA, IAH, DR, JA

The authors read and approved the final manuscript.

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