Research paper

2/2025 vol. 24 (1) 2
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Prevalence and predictors of depression among midwives working in public hospitals in Amhara regional state in selected zones, Northwest Ethiopia: A cross-sectional study

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INTRODUCTION Depression among healthcare professionals in Ethiopia is prevalent, and the burden remains high. However, few studies have addressed this issue in Ethiopia, and none have specifically focused on midwives in the study area. Therefore, the aim of this study was to determine the prevalence of depression and identify its predictors among midwives working in public hospitals in the West Gojjam, East Gojjam, and Central Gondar zones of the Amhara regional state, Northwest Ethiopia.

METHODS An institution-based cross-sectional study design was employed between February and March 2022. The study was conducted among midwives who were working at public hospitals located in the three randomly selected clusters/zones in the Northwest Amhara region. There were 31 functional hospitals (4 tertiary hospitals, 3 general hospitals, and 24 primary hospitals) in the selected clusters. A simple random sampling technique was used for health facilities, and cluster sampling was employed for the selection of study participants. A self-administered questionnaire, including the Depression Anxiety Stress Scale-21 (DASS-21), was used to assess midwives' depression status. Statistical analyses were performed using SPSS Version 26.0. Both binary and multivariable logistic regression were used. The adjusted odds ratio (AOR) with its 95% confidence interval (CI) was considered at a p-value of ≤0.05.

RESULTS A total of 634 midwives participated in this study. The prevalence of depression among midwives was 25.7% (95% CI: 22.4-29.0). In multivariable analysis, being female (AOR=3.85; 95% CI: 2.29-6.46, p=0.001) and having a history of stress (AOR=5.56; 95% CI: 2.02-15.26, p=0.001) were significant predictors of depression. Participants who had work experience of fewer than 5 years (AOR=0.51; 95% CI: 0.31-0.84, p=0.008) and those who were unmarried (AOR=2.00; 95% CI: 1.24-3.25, p=0.005) were also found to be significant predictors of depression.

CONCLUSIONS There was a high prevalence of work-related depression symptoms among midwives working in Amhara region public hospitals. Being female, unmarried, having less work experience, and a history of stress were variables significantly associated with depression among midwives. Therefore, raising awareness through education about depression and implementing routine screening among midwives working in Amhara region public hospitals is crucial for early detection and management. Furthermore, for researchers, it is better to use both qualitative and quantitative study designs for further understanding of depression.

ABBREVIATIONS ANC=Ante Natal Care, AOR=Adjusted Odd Ratio, COR=Crude Odd Ratio, CI=Confidence Interval, ETB=Ethiopian Birr, DASS= Depression Anxiety Stress Scale, NICU=Neonatal Intensive Care

INTRODUCTION

Depression is a common mental disorder that presents with a depressed mood, loss of pleasure or interest, decrease in energy, feelings of guilt or low self-worth, disturbed sleep and appetite, and poor concentration[1,2]. Midwives and Neonatal Intensive Care Unit (NICU) nurses are both more vulnerable to developing depression than other professionals since they both encounter traumatic work-related stressors[3]. Midwives regularly have to manage traumatic births and other traumatic perinatal events. In all occupations, health professionals (particularly

midwives and nurses) are more prone to develop burnout due to the characteristics of their work and due to their spending most of their working hours with clients/patients[4-7]. The main reason midwives are exposed to depression is that they work in a more stressful environment[8].

Healthcare providers, especially midwives, suffering from psychological distress are at higher risk for medical errors and the subsequent diminished quality of services given to pregnant women, who are of special concern[9]. Depression, anxiety, and stress (DASS) among midwives are globally affecting every individual to variable extents[6]. Midwives and nurses not only provide care and assistance to patients/clients but also participate in their rehabilitation, provide support to patients/clients and their families, and advocate health education, playing an important role in improving and promoting health services in the community. This contributes to more stress for those healthcare providers[10].

Midwives are more vulnerable to burnout because they work in a demanding area of health care and are exposed to several factors in pregnancy care that increase mental health problems[11]. Midwives experience both organizational and occupational sources of work-related psychological depression. Negative working cultures, a lack of staff support, burnout, compassion fatigue, and high staff turnover have been observed in the midwifery profession[12].

For midwives working in rural settings of developing countries, maternal mortality and death are still a certainty in clinical practice. Experiencing death situations, such as maternal death, for a prolonged period or multiple times is common in rural areas of developing countries because of the general shortage and the low quality of the resources available to provide maternity services[13,14].

A postal survey in the United Kingdom found that over 95% of midwives had been directly or indirectly exposed to a traumatic event at work[15]. Midwives' principal fears are related to death (of the baby or the mother), medical emergencies, and the cause of a negative birth experience[16]. Approximately 20% of the 1037 midwives in a cross-sectional study in Australia had moderate to severe symptoms of depression, anxiety, and stress[13,17]. Fourteen percent of midwives suffering from work-related health difficulties reported stress, depression, or anxiety as their severe health problem[18]. The prevalence of depressive symptoms in the post-traumatic event was significantly different between professional groups, at 26.9%[5].

The prevalence of work-related burnout (as measured with the Copenhagen Burnout Inventory) was highest among Australian midwives, especially those working in non-caseload/continuity models (median scores of 48.4 and 46.4) and Western Canadian midwives (median score 46.4), and lowest among Norwegian midwives (mean score 19.1)[14]. Among the total participants, 67% (n = 1,167) recorded moderate and above work-related burnout, including depression among midwives[19]. The prevalence of moderate/severe/very severe symptoms of depressive symptoms among midwives was 12% in Swedish midwives in a cross-sectional survey[20]. The prevalence of depressive symptoms among healthcare professionals was 27.8% at Dessie Comprehensive Specialized Hospital in Ethiopia[1].

Major contributing factors to work-related depression were the age of the midwife, marital status, qualifications, number of children, years of experience, current area of the work unit, workload, job satisfaction, and type of shift (night or day)[10,21,22].

Although limited studies have shown the prevalence of depression among midwifery healthcare professionals in Ethiopia and the burden of the problem is still high, there is no published study conducted among midwives in the study area as well as in Ethiopia at large. The lack of existing studies on depression among midwives, particularly in the study area, and working without enough payment at night also contribute to this mental disorder among midwives. Therefore, this study aimed to determine the prevalence of depression and its predictors among midwives working in public hospitals of West Gojjam, East Gojjam, and Central Gondar zones of the Amhara regional state, Northwest Ethiopia, in 2022.

METHODS

Study design and setting

An institutional-based cross-sectional study was conducted from February to March 2022 at public hospitals located in the selected zones of the Amhara regional state. The Amhara region is located in the Northwestern and North-Central parts of Ethiopia. It is comprised of 13 administrative zones, one special zone, 181 woredas, and 78 urban centers. In addition, the region has 8 referral hospitals and 10 private hospitals. There were 4,384 midwives, 2,130 male and 2,254 female, in the region. The study was conducted among midwives working at public hospitals located in the three randomly selected clusters in the Northwest Amhara region. This study included all public hospitals in the Central Gondar, West Gojjam, and East Gojjam zones, as well as Bahir Dar administrative city. There were 31 functional public hospitals (4 tertiary hospitals, 3 general hospitals, and 24 primary hospitals) in the selected clusters. There were about 755 permanently employed midwives in these hospitals.

Participants

All midwives working in public hospitals in the Amhara region, Northwest Ethiopia, were the source population. In contrast, all midwives who worked in the selected zones of Amhara region public hospitals, Northwest Ethiopia, were the study population. This study included midwives who had worked for a minimum of 6 months and those working during the study period in the selected facilities. Midwives on maternal leave, annual leave, and those not permanently employed were excluded from this study.

The sample size was calculated using the single population proportion formula. In our study, there was no previous study conducted in Ethiopia. Therefore, taking (P)

2/2025 vol. 24 (1) 2
https://doi.org/10.18332/eleftho/201474

50%, a 95% confidence interval, a 5% margin of error, a 10% non-response rate, and a 1.5 design effect for feasibility issues, the sample size was calculated as follows:

$$n = \frac{((Z\alpha/2)^2\ p\ (1-p)}{d^2}$$

Where, n= sample size, Zα/2 = 95%=1.96 confidence level of the study
p = 50% proportion of midwives who had work-related depression
d = 5% margin of error

$$n = \frac{(1.96)^2(0.5)\ (0.5)}{(0.05)^2}$$

= 384
=384×1.5 design effect
=576+ (576×0.1) gives =634
The final sample size was =634

A simple random sampling technique was used to select three zones from the 13 zones and health facilities in the three zones in the Amhara region. Cluster sampling was employed to select the study participants from the selected zone public hospitals.

Three of the 12 zones in the region (20%) were selected by simple random sampling: East Gojjam, West Gojjam, and Central Gondar.

Ethical considerations

Ethical clearance was obtained from the School of Midwifery on behalf of the Institutional Review Board (IRB) of the University of Gondar, with reference number PGC 302/1/2021, dated 11/1/2021. A formal support letter was then obtained from the School of Clinical Midwifery and submitted to the respective public hospitals. Written informed consent was obtained from each study participant. Participants were informed that they could refuse or discontinue participation at any time. Their privacy and confidentiality were ensured by not recording names or any identifying information. All methods were performed in accordance with the relevant guidelines and regulations.

Data sources and measurement

Socio-demographic and other work-related information were obtained through self-reported, self-administered questionnaires. Symptoms of stress were measured using Lovibond and Lovibond's short version of the Depression Anxiety Stress Scale[23]. This version, the Depression Anxiety Stress Scale 21 (DASS-21), has been validated as a reliable self-administered psychological instrument consisting of 21 items in three domains (R Add), but it has not been validated in the Ethiopian context. Each domain comprises seven items assessing three dimensions of mental health symptoms: depression, anxiety, and stress. In this study, respondents were required to indicate the presence of stress symptoms over the past week on a 4-point Likert scale, scoring from 0 to 3: (0: did not apply at all over the last week, 1: applied to some degree, or some of the time; 2: applied a considerable degree or a good part of the time; 3: applied very much or most of the time). Scores were summed up. According to the DASS manual, the final score was multiplied by 2 and categorized as a stress score of 0–14, which was considered normal, and 15 and above, which was considered having stress.

The questionnaire was prepared in English, translated into Amharic for data collection, and then translated back into English to maintain the consistency of the questionnaire. We did not perform Cronbach's alpha or internal consistency testing, but we conducted a pretest and translation of the questionnaire into Amharic and English.

After training on the study's data collection process, three BSc Midwifery professionals collected the data for each zonal hospital. A pretest was conducted in non-selected hospitals on 5% of the study's sample size before the actual study. Based on the pretest, necessary adjustments were made to the data collection tools. Training was provided to data collectors and supervisors for each zone. At the end of each day, the questionnaires were reviewed and checked for completeness, accuracy, and consistency by the supervisor and investigator, and corrective discussions were undertaken with all the research team members.

Variables

Outcome variable

Depression among midwives was identified with scores above 10 on the DASS-21 (21-item Depression, Anxiety, and Stress Scale).

The exposure

Predictors (age, gender, marital status, education, perceived social status, perceived accomplishments), work-related factors (facility level, position and years of experience, workload, availability of resources, work shift), potential confounders (e.g., age, gender, marital status, income, educational level, shift work, etc.), and effect modifiers (e.g., work experience, work unit, etc.). were used as independent variables.

Statistical analysis

Depression scores were categorized into dichotomous responses (yes/no) before univariate analyses. Participants with a cut-off score of 9 in the depression dimension were considered to have these disorders, as referenced by the DASS manual[23]. Statistical analyses were performed using SPSS Version 26.0 for the Windows platform. Prevalence was presented as absolute and relative frequencies (%) with 95% confidence intervals (95% CI).

Bivariate and multivariate analyses were used to measure the strength of associations between variables and to identify significant predictors for the study's outcomes of interest. An adjusted odds ratio (AOR) with a 95% CI and

Table 1: Socio-economic and demographic characteristics of midwives working in public hospitals in Amhara Regional State, Northwest Ethiopia, 2022 (N=634)

Variable	Frequency	Percentage
Age (years)		
18-25	73	11.5
26-35	480	75.7
36-44	72	11.4
≥45	9	1.4
Sex		
Male	315	49.7
Female	319	50.3
Marital status		
Married	365	57.6
Single	269	42.4
Education		
Diploma	73	27.3
Degree	396	62.5
Master and above	65	10.3
Average month income (ETB)		
< 5000	165	26.0
5000-10000	402	63.4
>10000	67	10.6

a p-value of ≤ 0.05 was used to determine statistical significance.

RESULTS

Participants' socio-demographic characteristics

All midwives during the data collection period were eligible for this study, and none were excluded. There were no missing data, and all collected data were complete and analyzed. Therefore, the response rate was 100%.

The respondents' ages ranged from 20 to 55 years, with a median age of 29 years. About 480 (75.7%) of the respondents were between 26 and 35 years old. Half of the study participants, 319 (50.3%), were female. The majority of the study participants, 367 (57.7%), were married.

A total of 396 (62.5%) midwives had a bachelor's degree, and 402 (63.4%) of them earned between 5,000 and 10,000 ETB per month (Table 1).

Participant's work-related characteristics

About 308 (48.6%) of the study participants worked in referral hospitals, and 350 (55.2%) worked in labor and delivery wards. A total of 355 (56.0%) of the study participants worked more than 50 hours per week, and 366

Table 2: Work-related characteristics of midwives working in Amhara regional State, Northwest Ethiopia, 2022 (N=634)

Variable	Frequency	Percentage
Working facility level		
Primary Hospital	249	39.3
General Hospital	77	12.1
Referral Hospital	308	48.6
Working unit		
Labor and delivery	350	55.2
Antenatal care	134	21.1
Postnatal care	92	14.5
Family planning	58	9.1
Average working (hours per week)		
40	199	31.4
41-50	80	12.6
>50	355	56.0
Work shift		
Yes	226	35.6
No	408	64.4
Type of work shift		
Two/Day and Night	83	51.2
Three/eight hours shift	79	48.8
Work experience (years)		
≤5	268	42.3
>5	366	57.7
Traumatic event experience		
Yes	351	55.4
No	283	44.6
Adequacy of resource		
Yes	197	31.1
No	437	68.9
Basic training participation		
Yes	369	58.2
No	265	41.8
Acknowledgment for work		
Yes	184	21.0
No	450	71.0
Clinical autonomy		
Good	608	95.9
Poor	26	4.1
History of having stress		
Yes	381	60.1
No	253	39.9
History of having anxiety		
Yes	154	24.3
No	480	75.7

2/2025 vol. 24 (1) 2
https://doi.org/10.18332/eleftho/201474

Table 3: Bivariate analysis for factors associated with depression among midwives working in Amhara region public hospitals in Amhara Regional State, Northwest Ethiopia, 2022 (N=634)

Variable	Depression		Crude Odd Ratio (95% CI)	p-value
	Yes	No		
Working unit				
Labor	20	114	1.11 (0.60-2.06)	0.74
ANC	23	69	0.46 (0.22-0.97)	0.04
PNC	16	42	0.88 (0.42-0.84)	0.73
FP	104	246	Reference	
Average working (hrs)				
≤40	74	6	Reference	
41-50	264	91	0.16 (0.09-0.40)	0
>50	133	66	0.70 (0.48-1.02)	0.06
Work experience (years)				
< 5	36	232	Reference	
> 5	127	239	0.29 (0.19-0.44)	0
Acknowledgment				
Yes	25	159	Reference	
No	138	312	0.36 (0.22-0.57)	0
Age (years)				
≤30	19	105	0.54 (0.28-1.01)	0.054
31-39	126	340	0.26 (0.12-0.57)	0.001
≥40	18	26	Reference	
Autonomy				
Yes	0	471	Reference	
No	0	163	2.20 (0.99-4.89)	0
Educational status				
Diploma	12	53	Reference	
Degree	79	317	3.15 (1.57-6.31)	0.001
Master	72	101	1.10 (0.56-2.16)	0.78
Stress				
Yes	40	213	2.54 (1.70-3.79)	0
No	123	258	Reference	
Anxiety				
Yes	95	385	3.20 (2.17-4.73)	0
No	68	86	Reference	
Sex				
Female	103	216	2.03 (1.41-2.92)	0
Male	60	255	Reference	
Marital status				
Married	85	280	Reference	
Unmarried	78	191	0.74 (0.52-1.06)	0.105

Table 4: Bivariate and multivariable analysis for factors associated with depression among midwives working in Amhara region public hospitals in Amhara Regional State, Northwest Ethiopia, 2022 (N=634)

Variable	Work-related depression		Crude Odd Ratio (95% CI)	p-value	Adjusted Odd Ratio (95% CI)	p-value
	Yes	No				
Sex						
Female	103	216	2.03 (1.41-2.92)	0.001	3.85 (2.29-6.46)	0.001*
Male	60	255	Ref			
Stress						
Yes	12	14	2.54/9 (1.70-3.79)	0.001	5.56 (2.02-15.26)	0.001*
No	151	457	Ref			
Work experience (years)						
<5	36	232	0.29 (0.19-0.44)	0.001	0.51 (0.31-0.84)	0.008
>5	127	239	Ref			
Marital status						
Married	85	280	Ref			
Unmarried	78	191	0.74 (0.52, 1.06)	0.10	2.00 (1.24-3.25)	0.005*

(57.7%) had more than five years of work experience.

Four hundred thirty-seven (68.9%) of midwives believed that the hospital's resource supply was insufficient for their work. About 408 (64.4%) participants had working shifts, and 83 (51.2%) had two shifts. More than 369 (58.2%) of respondents had received basic training.

Approximately 450 (71.0%) of the participants had not received acknowledgment for their work from their respective leaders or managers. The majority of study participants, 608 (95.0%), had clinical autonomy. About 351 (55.4%) of the participants had experienced traumatic events (Table 2).

Prevalence of depression

The prevalence of depression among midwives working in Amhara Regional State, Northwest Ethiopia, was 25.7% (95% CI: 22.4–29.0).

Factors associated with work-related depression

In the bivariate analysis, ten variables—working unit, average working hours, work experience, acknowledgment, autonomy, age, education status, stress, anxiety, and sex—were all associated with depression, with a p-value of less than 0.25.

In the multivariable analysis, four variables—sex, stress, marital status, and work experience—were significantly associated with depression. Female participants were 3.9 times more likely to have depression than male midwife professionals (AOR = 3.85; 95% CI: 2.29–6.46, p = 0.001).

The odds of depression were 5.6 times higher among participants who had work-related stress compared to those who had no work-related stress (AOR = 5.56; 95% CI: 2.02–15.26, p = 0.001). Participants with less than five years of work experience were 0.51 times less likely to experience depression than those with more than five years of work experience (AOR = 0.51; 95% CI: 0.31–0.84, p = 0.008).

The likelihood of developing depression among midwives who were unmarried was 2.0 times higher than among those who were married (AOR = 2.00; 95% CI: 1.24–3.25, p = 0.005) (Table 4).

DISCUSSION

The purpose of this study was to determine the prevalence of depression among midwives and identify its predictors. The study found that 25.7% of participants had depression. This prevalence is consistent with a previous study conducted in Ethiopia, such as in Dessie town, Amhara region, where the prevalence was 27.8% among healthcare professionals, and 19.8% in Bahir Dar town, Amhara region, among youth attending public high school.

However, the prevalence reported in this study is higher than in previous studies conducted in other countries, including 12% among Swedish midwives, 17.3% among Australian midwives, and 16.3% among Lithuanian midwives. Conversely, it is lower than findings from other studies, which reported a prevalence of 44.7% among public school teachers in Jimma town, Ethiopia; 46.9% among students at Mekelle University College of Health Sciences, Ethiopia; 41.2% among nurses in Australia; 41.1% among midwives in Ethiopia; and 33% among midwives in the United Kingdom.

The discrepancies in prevalence rates may be attributed to differences in study settings, the use of different

2/2025 vol. 24 (1) 2
https://doi.org/10.18332/eleftho/201474

assessment tools, sample sizes, cultural variations among study participants, time variations, and increased workloads due to the war in Ethiopia.

Regarding factors associated with depressive symptoms, this study found that female participants were nearly 3.9 times more likely to experience depressive symptoms than male participants. This finding aligns with studies conducted in different regions of Ethiopia. The difference may be due to a combination of genetic, biological, hormonal, social, and psychological factors. The presence of androgen receptors in men may offer protection, and since testosterone levels remain more stable than estrogen levels in women, men may have a lower risk of depression. Furthermore, in low-income countries such as Ethiopia, women often bear additional responsibilities, including household management and caregiving, alongside their professional duties, which may contribute to work-related depression.

The study also found that unmarried individuals were twice as likely to experience depressive symptoms compared to those who were married. This finding is consistent with studies conducted in Ethiopia, Norway, and the United Kingdom. Being unmarried may increase psychosocial risk factors for depression due to the lack of a partner to share daily stressors, leading to reduced social support. It is also widely believed that marriage contributes to better mental health and lower mental illness morbidity.

Additionally, midwives with a history of stress were 5.6 times more likely to develop depressive symptoms compared to those without a history of stress. This finding is consistent with studies conducted in Ethiopia. Work-related traumatic events and difficult decision-making scenarios contribute to high stress levels, increasing the risk of depression among midwives.

The study further revealed that individuals with less than five years of work experience were less likely to experience depression than their more experienced counterparts. This finding contradicts studies conducted among midwives in Croatian university hospitals and the United Kingdom. The inconsistency may be due to differences in assessment tools—this study used the DASS-21, while others used the Patient Health Questionnaire (PHQ-9). Differences in sample size and socio-economic or demographic characteristics of study populations may also contribute to these variations.

The implications of this study suggest that factors such as single marital status, work-related stress, longer work experience, and female sex significantly contribute to depression among midwives. These findings provide guidance for policymakers and healthcare managers to develop targeted interventions addressing these risk factors. Additionally, future researchers should consider conducting longitudinal studies to better understand the causal relationships between these factors and depression among midwives.

Strengths and limitations

The high response rate and the control for confounding variables through multivariable analysis were strengths of this study. However, the cross-sectional study design makes it difficult to establish a causal relationship between risk factors and depression. Additionally, since the data were collected in the workplace, midwives may not have given their full attention when completing the questionnaire, and self-report bias was a limitation of this study.

CONCLUSIONS

There was a high prevalence of depression symptoms among midwives working in public hospitals in the Amhara Regional State, Northwest Ethiopia. Being female, unmarried, having more work experience, and a history of stress were variables significantly associated with depression symptoms among midwife healthcare professionals. Therefore, raising awareness through education about depression and implementing routine screening among midwives in Amhara region public hospitals is crucial for early detection and management. Special attention should be given to those who are female, unmarried, and have more work experience in the midwifery profession. Furthermore, future researchers should consider using both qualitative and quantitative study designs for a more comprehensive understanding of depression.

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2/2025 vol. 24 (1) 2
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The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none was reported.

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DATA AVAILABILITY
The datasets from the current study are available from the corresponding author upon reasonable request.

PROVENANCE AND PEER REVIEW
Not commissioned; externally peer reviewed.