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Prevalence, Determinants, and Care-Seeking Behaviour for Major Depressive Disorder in the Lesotho Population: A Multilevel Analysis from the Lesotho Demographic and Health Survey 2023-24

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Abstract

Purpose

The purpose of this study is to estimate the prevalence and associated factors of Major Depressive Disorder (MDD), as well as care-seeking behavior among participants with depressive symptoms in Lesotho.

Methods

This study utilized data from the nationally representative, cross-sectional Lesotho Demographic and Health Survey (LDHS) 2023–2024. MDD was assessed using the Patient Health Questionnaire (PHQ-9), with scores of 10 or above classified as present. Multilevel mixed-effects logistic regression was employed to identify factors associated with MDD, accounting for the hierarchical nature of the data.

Results

Among the 6,481 respondents, the weighted prevalence of MDD was 6.3% (95% CI: 5.5–7.2), with women (7.2%) experiencing a notably higher burden than men (5.4%). Specifically, women had 75% (AOR = 1.75, 95% CI: 1.35–2.27) higher odds of MDD compared to men. Individuals residing in households with fewer than four people and those who used tobacco were also more likely to experience MDD. Conversely, rural residence was associated with a lower likelihood of MDD. Geographic disparities were evident, with Mohale's Hoek showing higher odds and Mokhotlong lower odds compared to Maseru. Only 22.9% of those with depressive symptoms sought help, and 10.8% used medication.

Conclusion

This study highlights a substantial mental health burden in Lesotho, with MDD influenced by sociodemographic and geographic factors. Low help-seeking rates emphasize the urgent need for comprehensive mental health strategies. Recommendations include strengthening community-based care, integrating mental health into primary care, reducing stigma through awareness, and improving service accessibility and affordability, particularly for vulnerable and underserved populations.

Introduction

Mental health is an essential component of overall well-being, enabling individuals to effectively manage stress, utilize their abilities, work and learn effectively, build relationships, and make a positive impact on society [1]. Depression is one of the most common and devastating mental health illnesses worldwide [2]. Depression is a widely recognized mental disorder characterized by a persistent low mood, diminished interest in activities, and a substantial reduction in daily functioning across emotional, social,

and physical domains [2]. Mental health is an important aspect of public health, emphasizing its essential role in the pursuit of global well-being and development objectives [3, 4]

Globally, one in eight people, or approximately 970 million, suffers from a mental illness [5], with approximately 82% of instances arising in low- and middle-income countries (LMICs) [6]. Major depressive disorders (MDD) affect an estimated 280 million individuals worldwide, representing 3.8% of the global population. The prevalence of depression is 5% in adults and 5.7% in individuals over 60 years of age [2]. Globally, women are disproportionately affected compared to men, with 6% of women and 4% of men being affected [2]. Furthermore, depression affects more than 10% of women during and after pregnancy [7]. Globally, the incidence of depression increased by 59%, from 172.7 million in 1990 to 274.8 million in 2019 [8]. Furthermore, depression ranked as the second leading cause of years lived with disability in 2019, accounting for approximately 5.6% of the total global years lived with disability [9]. It represented 46.8 million disability-adjusted life years, an increase of nearly 61% from 1990 [10]. Although there are effective mental disorder treatments, over 75% of LMICs do not receive them [11].

Studies in the USA and Germany have demonstrated an increase in depression prevalence, especially among women, adolescents, with widening treatment disparity and socioeconomically disadvantaged populations [12–16]. Additionally, LMICs experience more severe forms of depression due to restricted access to care, increased comorbidity, and the significant impact of factors such as poverty, violence, abuse, unemployment, low income, inadequate education, and inefficient healthcare systems [17, 18]. Furthermore, previous studies have shown that depression is prevalent in South Africa and Kenya; however, several people refrain from seeking support due to financial constraints, stigma, and inadequate knowledge [19, 20]. Another study conducted in Ethiopia found that over one-fifth of individuals were at risk of experiencing depression due to socio-demographic factors such as sex, age, and violence [21, 22].

According to a previous study conducted in Lesotho, the prevalence of severe depression among outpatients is estimated to be 23% [23]. In rural areas, the prevalence of MDD was 28.8%, with a higher rate of 32.7% among women than among men with 20.2% [24]. Furthermore, Lesotho had the highest age-standardized incidence rate of depression among the 195 countries analyzed in 2017, with a rate of 6.59 per 1,000 individuals [25]. Additionally, 29.8% of patients co-infected with HIV and tuberculosis (TB) exhibited MDD, suggesting a significant mental health burden [26]. In contrast, data from the general population indicated that 87.6% of women and 89.6% of men were classified as having a minimal risk of depression, while 2% of women and 1.8% of men were identified as being at moderate to severe risk [27]. The Global Burden of Disease (GBD) study estimated that by 2050, MDD will become the 13th leading cause of disease burden in Lesotho [28].

Although some studies have examined depression in Lesotho, they are mostly limited to specific geographic areas [23, 24, 29–31] and specific groups, such as healthcare professionals [29, 30, 32] and patients with specific disease conditions [24, 26]. To our best knowledge, no study has been conducted on a nationally representative sample of the population to estimate the prevalence and factors

associated with MDD in Lesotho. However, the Lesotho Demographic and Health Survey (LDHS) has made progress by including mental health data in its most recent round and adding a dedicated section to the published report [33]. Therefore, in this study, our objective was to estimate the prevalence and factors associated with MDD, as well as care-seeking behavior among participants with depressive symptoms in Lesotho using the LDHS 2023-24 data. This study provides a substantial contribution to the understanding of mental health issues in the Lesotho population by offering critical insights into the prevalence of MDD and associated factors.

Methods

Data source and sampling Technique

This study utilized data from the nationally representative, cross-sectional LDHS 2023-24. The LDHS dataset is publicly available and can be accessed upon request (https://www.dhsprogram.com/methodology/survey/survey-display-572.cfm) from The DHS Program.

The sampling framework for the 2023–2024 LDHS was constructed using the 2016 Lesotho Population and Housing Census, which provided a comprehensive listing of all enumeration areas (EAs) across the country. Each EA represents a defined geographic unit, typically a city block in urban settings or a village (or group of villages) in rural regions, and contains approximately 100 households. These EAs were mapped and identified based on census data, including household counts and boundary delineations.

Lesotho is divided into 10 administrative districts, which are further subdivided into constituencies and community councils. For the LDHS, a stratified, two-stage sampling design was employed. Each district was categorized into urban, peri-urban, and rural strata, resulting in 29 distinct strata, as Butha-Buthe district does not have peri-urban areas. In the first stage, 400 EAs were selected independently across these strata using probability proportional to size, ensuring that the number of households in each EA determined its likelihood of selection. A household listing was then conducted in each selected EA, providing the basis for the second stage of sampling. In the second stage, 25 households were systematically chosen from each EA with equal probability. All women aged 15–49 who were either usual residents or who had spent the night prior to the survey in the selected households were eligible to participate in the Woman's Questionnaire. In a randomly selected half of the households, all men aged 15–59 meeting the same residency criteria were eligible for the Man's Questionnaire.

A total of 9,976 households were selected for the sample, of which 9,853 were occupied. Of the occupied households, 9,810 were successfully interviewed, yielding a household response rate of over 99%. Within these households, 6,536 women aged 15–49 were identified as eligible for individual interviews, and interviews were completed with 98% of these women. Among the subsample of households selected for the male survey, 3,304 eligible men aged 15–59 were identified, with a 97% interview completion rate. Further details regarding the sampling procedures and response rates are available in the final LDHS 2023–2024 report [33].

Population and Sample Size

From the households successfully interviewed through the LDHS 2023–2024 sampling process described above, a total of 6,481 (weighted) respondents of reproductive age who completed the mental health module were included in this analysis. This final sample comprised both men (n = 3,215) and women (n = 3,266), ensuring balanced representation within the reproductive age group.

Study variables and measurements

Outcome variables

Respondents were assessed for MDD by the Patient Health Questionnaire (PHQ-9). It is a nine-item self-report tool that evaluates the presence of depression symptoms during the previous two weeks (26), with a total score that ranges from 0 to 27; the symptoms are classified as not depressive (0–4), mild (5–9), moderate (10–14), moderately severe (15–19), and severe (20–27). For this study, MDD was classified as present if a participant's score was 10 or above (coded as 1), and absent if their score was less than 10 (coded as 0) [34]. Our study's PHQ-9 scale showed strong internal consistency, with a Cronbach's Alpha of 0.88.

Exploratory variables

This study examined a comprehensive set of explanatory variables encompassing demographic, socioeconomic, household, and regional factors. Key demographic variables included the respondent’s sex (male or female) and age, categorized into the following groups: 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, and 50 years or older. Educational attainment was classified as no education, primary, secondary, or higher education. Occupational status was grouped as either not working or working. Socioeconomic status was assessed using the wealth index, divided into the poorest, poorer, middle, richer, and richest quintiles.

Marital status was categorized as never married or ever married, while religious affiliation was categorized as Catholic or other religions. Additional behavioral and access-related variables included mass media exposure (yes/no), mobile phone ownership (yes or no), and tobacco use (yes/no). Household composition was measured by the number of household members, categorized as four or more, or fewer than four. Place of residence was classified as urban or rural. Finally, regional variation was captured by including the administrative district of residence: Butha-Buthe, Leribe, Berea, Maseru, Mafeteng, Mohale's Hoek, Quthing, Qacha's Nek, Mokhotlong, and Thaba-Tseka.

In addition to the main explanatory variables, this study also assessed two mental health care indicators among respondents with depressive symptoms: help-seeking behavior (yes, no) and medication use (yes/no). Help-seeking was determined by asking whether individuals had ever tried to seek help for their

symptoms, while medication use was measured by whether respondents had taken any prescribed medicine for depression in the past two weeks.

Statistical Analysis

For this study, data cleaning, recording, and analysis were conducted using Stata version 17.0 (StataCorp LP, College Station, Texas) following the DHS guidelines. Sample weights were used, and modifications were made to the intricate survey design, considering the primary sampling units (PSUs) and strata to guarantee the survey's representativeness. The intricate survey design was managed with the help of the Stata "Svyset" tool. Moreover, the analysis followed STROBE standards for a cross-sectional study [35].

Descriptive statistics were utilized to outline the distribution of study variables, with frequencies and percentages reported for all categorical data. Associations between categorical variables and MDD were initially examined using chi-squared tests. Given the hierarchical nature of the DHS data, a multilevel mixed-effects logistic regression model was employed, rather than a standard binary logistic regression, in accordance with DHS analytical guidelines, to appropriately account for clustering within the survey design. Variables with a p-value less than 0.20 in bivariate analyses were included in the multivariable model. Multicollinearity was assessed using the variance inflation factor (VIF), which indicated low collinearity, with the highest VIF observed for the wealth index (2.2) and an average VIF of 1.1 across all variables. Results were presented as adjusted odds ratios (AORs) with corresponding 95% confidence intervals to reflect the strength and precision of associations.

Results

Among 6,481 respondents, 49.6% were men and 50.4% were women. The largest age group was 15–19 years, comprising 19.5%, while the majority completed secondary level education, accounting for 50.9%. A substantial number of people (41.0%) were unemployed. In terms of marital status, 58.4% were previously married, whereas 41.6% had never been married. Regarding religious affiliation, Catholicism was reported by 36.9% of participants, while 63.1% identified with other faiths. Additionally, a majority of participants (76.9%) reported exposure to mass media. In terms of lifestyle habits, 27.1% of participants reported current tobacco use. More than half of the respondents resided in rural areas (56.9%), with the highest concentration in the Maseru district (32.4%) (Table 1).

Table 1
Background Characteristics of the Study Population in Lesotho (**n = 6481**)

Variable	Weighted frequency	Weighted percentage (%)
Overall	6481	100
Sex of respondents		
Man	3215	49.6
Woman	3266	50.4
Age of respondents		
15–19	1265	19.5
20–24	1102	17
25–29	826	12.8
30–34	792	12.2
35–39	808	12.5
40–44	747	11.5
45–49	579	8.9
50+	361	5.6
Educational level of respondents		
No education	224	3.5
Primary	1992	30.7
Secondary	3299	50.9
Higher	966	14.9
Respondent's occupation		
Not working	2656	41
Working	3825	59
Wealth index		
poorest	1008	15.6
poorer	1127	17.4
middle	1337	20.6
richer	1538	23.7
richest	1469	22.7

Variable	Weighted frequency	Weighted percentage (%)
Current marital status		
Never married	2698	41.6
Ever married	3783	58.4
Religion		
Catholic	2390	36.9
Others	4090	63.1
Mass media exposure		
No	1499	23.1
Yes	4982	76.9
Owns a mobile telephone		
no	1117	17.2
yes	5363	82.8
Tobacco habit		
No	4727	72.9
Yes	1754	27.1
Number of household members		
>=4	3408	52.6
< 4	3072	47.4
Place of residence		
Urban	2794	43.1
Rural	3686	56.9
Administrative district		
Butha-buthe	398	6.1
Leribe	1211	18.7
Berea	979	15.1
Maseru	2098	32.4
Mafeteng	423	6.5
Mohale's hoek	310	4.8

Variable	Weighted frequency	Weighted percentage (%)
Quthing	241	3.7
Qacha's nek	183	2.8
Mokhotlong	258	4
Thaba-tseka	379	5.9

Figure 1 illustrates the prevalence and severity of depressive symptoms among the study population in Lesotho. The majority of participants (74.7%) reported no depressive symptoms, while 25.3% exhibited symptoms of varying severity. Specifically, 19.0% of respondents experienced mild symptoms, 4.7% had moderate symptoms, 1.3% reported moderately severe symptoms, and 0.3% had severe symptoms. Overall, 6.3% of participants were classified as having moderate to severe depressive symptoms, corresponding to the threshold for MDD.

Women demonstrated a notably higher prevalence of MDD at 7.4%, in contrast to men (5.2%). The prevalence of depressive symptoms was 4.6% among the poorest, 5.1% among the poorer, 5.8% in the middle quintile, increasing to 8.0% among the richer, and 7.1% among the richest. Furthermore, exposure to mass media was significantly associated with depressive symptoms; individuals with mass media exposure had a prevalence of 6.7% (95% CI: 5.7–7.9), compared to 4.9% (95% CI: 3.9–6.3) among those with no exposure. A significant urban-rural disparity was observed, with urban residents having a higher prevalence (8.5%) than their rural counterparts (4.6%). In addition, the Mohale's hoek (17.2%) and Quthing (10.6%) districts reported significantly higher prevalence of MDD compared to other districts (Table 2).

Table 2
Prevalence of Major Depressive Disorder (MDD) by Socio-demographic and Other Characteristics Among the Study Population in Lesotho (n = 6481)

Variable	MDD, % [95% CI]	p-value
Overall	6.3 [5.5,7.2]	
Sex of respondents		
Man	5.2 [4.1,6.6]	< 0.001
Woman	7.4 [6.3,8.7]	
Age of respondents		
15–19	5.7 [4.1,7.8]	
20–24	7.3 [5.5,9.5]	
25–29	6.8 [4.6,9.7]	
30–34	6 [4.2,8.4]	0.184
35–39	7 [5.0,9.6]	
40–44	5.9 [4.0,8.7]	
45–49	5 [3.1,8.0]	
50+	6.6 [4.3,10.0]	
Educational level of respondents		
No education	4.2 [1.8,9.6]	
Primary	6.3 [4.8,8.2]	0.171
Secondary	6.2 [5.2,7.4]	
Higher	7.1 [5.0,10.1]	
Respondent's occupation		
Not working	6 [5.0,7.1]	0.149
Working	6.5 [5.4,7.9]	
Wealth index		
poorest	4.6 [3.4,6.3]	
poorer	5.1 [3.8,6.8]	
middle	5.8 [4.4,7.6]	0.031
richer	8 [6.0,10.5]	

Variable	MDD, % [95% CI]	p-value
richest	7.1 [5.5,9.0]	
Current marital status		
Never married	6.3 [5.1,7.8]	
Ever married	6.3 [5.3,7.4]	0.911
Religion		
Catholic	6.1 [4.9,7.5]	
Others	6.4 [5.4,7.6]	0.648
Mass media exposure		
No	4.9 [3.9,6.3]	
Yes	6.7 [5.7,7.9]	0.026
Owns a mobile telephone		
no	6.1 [4.2,8.7]	
yes	6.3 [5.5,7.4]	0.28
Tobacco habit		
No	6.2 [5.3,7.3]	
Yes	6.5 [5.1,8.2]	0.175
Number of household members		
>=4	6 [4.9,7.2]	0.134
< 4	6.7 [5.6,7.9]	
Place of residence		
Urban	8.5 [7.0,10.3]	
Rural	4.6 [3.8,5.7]	< 0.001
Administrative district		
Butha-buthe	4.7 [3.4,6.4]	
Leribe	5.7 [4.2,7.6]	
Berea	6.6 [4.2,10.2]	
Maseru	6.3 [4.6,8.5]	
Mafeteng	4.7 [3.3,6.5]	< 0.001

Variable	MDD, % [95% CI]	p-value
Mohale's hoek	17.2 [12.7,22.8]	
Quthing	10.6 [7.9,14.1]	
Qacha's nek	6.1 [4.1,9.0]	
Mokhotlong	2 [1.2,3.5]	
Thaba-tseka	2.7 [1.7,4.3]	

Multilevel mixed-effect logistic regression results are presented in Table 3. The model indicated that gender was a significant predictor of depressive symptoms, with women showing 1.75 times higher odds of experiencing these symptoms compared to men (AOR = 1.75, 95% CI = 1.35, 2.27). Tobacco use was also substantially linked to symptoms of MDD (AOR = 1.39, 95% CI = 1.05, 1.84). Living in a household with fewer than four individuals was linked to increased odds of experiencing MDD (AOR = 1.32, 95% CI = 1.05, 1.67). Additionally, living in a rural area demonstrated a protective effect against MDD (AOR = 0.55, 95% CI = 0.39, 0.77). Furthermore, residing in the Mohale's Hoek district showed a significant association with a higher likelihood of experiencing symptoms of MDD when compared to Maseru (AOR = 3.19, 95% CI = 1.82, 5.58). In contrast, living in Mokhotlong was linked to reduced odds of such symptoms (AOR = 0.36, 95% CI = 0.13, 0.97).

Table 3
Determinants of Major Depressive Disorder (MDD) Among the Study Population in Lesotho using Multilevel Mixed-Effect Logistic Regression Model (n = 6481)

Variables	Model 0	Model 1		Model 2		Model 3	
	Empty model	AOR (95% CI)	p-value	AOR (95% CI)	p-value	AOR (95% CI)	p-value
Sex of respondents							
Man		**Ref**				**Ref**	
Woman		1.78 (1.38, 2.31)	< 0.001			1.75 (1.35, 2.27)	< 0.001
Age of respondents							
15–19		**Ref**				**Ref**	
20–24		1.26 (0.89, 1.81)	0.196			1.3 (0.91, 1.86)	0.148
25–29		1.09 (0.73, 1.63)	0.669			1.13 (0.76, 1.7)	0.54
30–34		0.99 (0.65, 1.51)	0.975			1.02 (0.67, 1.56)	0.92
35–39		1.21 (0.8, 1.81)	0.368			1.26 (0.83, 1.89)	0.277
40–44		0.94 (0.61, 1.44)	0.762			0.93 (0.6, 1.44)	0.757
45–49		0.77 (0.47, 1.26)	0.301			0.79 (0.48, 1.29)	0.343
50+		1.26 (0.73, 2.17)	0.404			1.24 (0.72, 2.15)	0.443
Educational level of respondents							
No education		**Ref**				**Ref**	
Primary		1.19 (0.58,	0.63			1.11 (0.54,	0.777

Variables	Model 0	Model 1		Model 2		Model 3	
	Empty model	AOR (95% CI)	p-value	AOR (95% CI)	p-value	AOR (95% CI)	p-value
Sex of respondents							
		2.44)				2.29)	
Secondary		1.06 (0.51, 2.19)	0.884			0.9 (0.43, 1.9)	0.781
Higher		1.15 (0.53, 2.48)	0.718			0.96 (0.44, 2.12)	0.919
Respondent's occupation							
Not working		**Ref**				**Ref**	
Working		1.13 (0.88, 1.44)	0.337			1.04 (0.81, 1.33)	0.759
Mass media exposure							
No		**Ref**				**Ref**	
Yes		1.42 (1.07, 1.9)	0.016			1.21 (0.89, 1.64)	0.227
Tobacco habit							
No		**Ref**				**Ref**	
Yes		1.36 (1.03, 1.79)	0.03			1.39 (1.05, 1.84)	0.019
Number of household members							
>=4		**Ref**				**Ref**	
< 4		1.22 (0.97, 1.53)	0.092			1.32 (1.05, 1.67)	0.016
Wealth index							
poorest				**Ref**		**Ref**	
poorer				1.05 (0.6,	0.869	1.08 (0.68,	0.737

Variables	Model 0	Model 1		Model 2		Model 3	
	Empty model	AOR (95% CI)	p-value	AOR (95% CI)	p-value	AOR (95% CI)	p-value
Sex of respondents							
				1.82)		1.71)	
middle				0.88 (0.5, 1.53)	0.645	1.02 (0.63, 1.65)	0.93
richer				1.12 (0.62, 2.02)	0.698	1.31 (0.79, 2.18)	0.3
richest				0.93 (0.5, 1.71)	0.808	1.07 (0.62, 1.87)	0.798
Place of residence							
Urban				**Ref**		**Ref**	
Rural				0.59 (0.36, 0.95)	0.031	0.55 (0.39, 0.77)	0.001
Administrative district							
Maseru				**Ref**		**Ref**	
Butha-buthe				0.52 (0.21, 1.26)	0.147	0.76 (0.39, 1.47)	0.412
Leribe				0.68 (0.3, 1.56)	0.361	0.84 (0.51, 1.4)	0.505
Berea				0.96 (0.46, 1.99)	0.903	0.89 (0.55, 1.43)	0.62
Mafeteng				0.78 (0.37, 1.66)	0.521	0.77 (0.4, 1.48)	0.436
Mohale's hoek				3.89 (1.92, 7.9)	< 0.001	3.19 (1.82, 5.58)	< 0.001
Quthing				1.7 (0.76, 3.79)	0.194	1.87 (0.99, 3.54)	0.055

Variables	Model 0	Model 1		Model 2		Model 3	
	Empty model	AOR (95% CI)	p-value	AOR (95% CI)	p-value	AOR (95% CI)	p-value
Sex of respondents							
Qacha's nek				1.11 (0.5, 2.45)	0.797	0.98 (0.44, 2.17)	0.958
Mokhotlong				0.41 (0.15, 1.11)	0.08	0.36 (0.13, 0.97)	0.044
Thaba-tseka				0.7 (0.28, 1.76)	0.449	0.5 (0.22, 1.13)	0.095
Measures of variation for the random effect Community-level variance (SE)	1.94 (0.30)	1.83 (0.28)		1.46 (0.23)		1.51 (0.23)	
ICC (SE)	0.370 (0.04)	0.316 (0.03)		0.307 (0.03)		0.314 (0.03)	
Log-likelihood	-8136	-8017		-8089		-7971	
AIC	16276	16068		16210		16003	
BIC	16290	16182		16318		16111	

Table 4 presents the percentage of participants with depressive symptoms who reported seeking help or taking medication. Overall, 22.9% of individuals sought any form of help, while 10.8% reported using medication. Among the participants, a higher proportion of women (24.9%) reported seeking help compared to men (19.9%). Conversely, a slightly higher percentage of men (11.3%) reported taking medication than women (10.5%). Age-wise, the 40-44-year group had the highest rates for both help-seeking (33.6%) and medication use (20.2%), while the lowest rates were seen among adolescents aged 25–29 years for medication (4.0%) and 15–19 years for help-seeking (21.3%). The comparison of economic status indicated clear patterns such as help-seeking behaviors were more common in the middle (25.4%), richer (25.6%), and richest (25.6%) quintiles in comparison to the poorest (17.0%) and poorer (13.4) quintiles. Ever-married individuals showed higher rates of both help-seeking (24.3%) and medication use (13.0%) compared to those who had never been married (20.9% and 7.8%, respectively). Household size and place of residence also played a role. Individuals from households with fewer than four members were more likely to seek help (25.7%) than those from larger households (20.0%). Urban residents reported a slightly higher prevalence of help-seeking (23.7%) compared to rural residents (21.7%). Marked geographic variation was observed across administrative districts. The highest

proportions of help-seeking were reported in Butha-buthe (49.5%) and Thaba-tseka (43.6%), with Thaba-tseka also recording the highest medication use (26.2%). In contrast, Mohale's Hoek (7.1%) and Mokhotlong (7.5%) had the lowest rates of help-seeking, and both Qacha’s Nek and Mokhotlong reported no medication use.

Table 4
Help-Seeking Behaviour and Medication Use Among the Study Population in Lesotho with Depressive Symptoms (n = 1640).

Variable	Sought any help % [95% CI]	Took medication % [95% CI]
Overall	22.9 [22.9,22.9]	10.8 [10.8,10.8]
Sex of respondents		
Man	19.9 [19.9,19.9]	11.3 [11.3,11.3]
Woman	24.9 [24.9,24.9]	10.5 [10.5,10.5]
Age of respondents		
15–19	21.3 [21.3,21.3]	4.8 [4.8,4.8]
20–24	26 [26.0,26.0]	12.8 [12.8,12.8]
25–29	20.8 [20.8,20.8]	4 [4.0,4.0]
30–34	16.3 [16.3,16.3]	11.2 [11.2,11.2]
35–39	20.2 [20.2,20.2]	12.9 [12.9,12.9]
40–44	33.6 [33.6,33.6]	20.2 [20.2,20.2]
45–49	27.5 [27.5,27.5]	14.8 [14.8,14.8]
50+	15.4 [15.4,15.4]	10.9 [10.9,10.9]
Educational level of respondents		
No education	16.3 [16.3,16.3]	38.6 [38.6,38.6]
Primary	22.4 [22.4,22.4]	13.8 [13.8,13.8]
Secondary	21.7 [21.7,21.7]	6.7 [6.7,6.7]
Higher	28 [28.0,28.0]	14 [14.0,14.0]
Respondent's occupation		
Not working	24.6 [24.6,24.6]	8.5 [8.5,8.5]
Working	21.7 [21.7,21.7]	12.3 [12.3,12.3]
Wealth index		
poorest	17 [17.0,17.0]	14.5 [14.5,14.5]
poorer	13.4 [13.4,13.4]	8.5 [8.5,8.5]
middle	25.4 [25.4,25.4]	11.3 [11.3,11.3]

Variable	Sought any help % [95% CI]	Took medication % [95% CI]
richer	25.6 [25.6,25.6]	8.2 [8.2,8.2]
richest	25.6 [25.6,25.6]	13.3 [13.3,13.3]
Current marital status		
Never married	20.9 [20.9,20.9]	7.8 [7.8,7.8]
Ever married	24.3 [24.3,24.3]	13 [13.0,13.0]
Religion		
Catholic	19.7 [19.7,19.7]	11.4 [11.4,11.4]
Others	24.6 [24.6,24.6]	10.5 [10.5,10.5]
Mass media exposure		
No	20.9 [20.9,20.9]	10.1 [10.1,10.1]
Yes	23.3 [23.3,23.3]	11 [11.0,11.0]
Owns a mobile telephone		
no	25.9 [25.9,25.9]	17 [17.0,17.0]
yes	22.3 [22.3,22.3]	9.6 [9.6,9.6]
Tobacco habit		
No	23.4 [23.4,23.4]	9.4 [9.4,9.4]
Yes	21.4 [21.4,21.4]	14.5 [14.5,14.5]
Number of household members		
>=4	20 [20.0,20.0]	10.3 [10.3,10.3]
< 4	25.7 [25.7,25.7]	11.4 [11.4,11.4]
Place of residence		
Urban	23.7 [23.7,23.7]	10.3 [10.3,10.3]
Rural	21.7 [21.7,21.7]	11.6 [11.6,11.6]
Administrative district		
Butha-buthe	49.5 [49.5,49.5]	9.5 [9.5,9.5]
Leribe	29.3 [29.3,29.3]	14.2 [14.2,14.2]
Berea	19.9 [19.9,19.9]	15 [15.0,15.0]

Variable	Sought any help % [95% CI]	Took medication % [95% CI]
Maseru	23.6 [23.6,23.6]	9.5 [9.5,9.5]
Mafeteng	30.5 [30.5,30.5]	14.9 [14.9,14.9]
Mohale's hoek	7.1 [7.1,7.1]	2.5 [2.5,2.5]
Quthing	12.7 [12.7,12.7]	14.6 [14.6,14.6]
Qacha's nek	19.5 [19.5,19.5]	0
Mokhotlong	7.5 [7.5,7.5]	0
Thaba-tseka	43.6 [43.6,43.6]	26.2 [26.2,26.2]

Discussion

In this study, we aimed to provide a comprehensive assessment of the mental health landscape in Lesotho, with a specific focus on MDD. Our findings contribute valuable insights into the prevalence, associated factors, and care-seeking behaviours related to depressive symptoms within this population. The observed prevalence of MDD in our sample was 6.3%, which closely aligns with previous estimates from rural Lesotho (6.0%) as reported in a previous study [36]. This figure is also comparable to nationally representative surveys from Nepal and Bangladesh, which reported MDD prevalence of 6.0% and 5.0%, respectively [37, 38]. These consistent findings across diverse LMICs reinforce the reliability of our prevalence estimates and underscore the global relevance of MDD in similar socio-economic contexts. In addition to prevalence, our study identified several factors significantly associated with depressive symptoms. These included sex, place of residence, number of household members, tobacco use, and administrative district, highlighting the multifaceted and context-specific nature of depression in Lesotho. Notably, our analysis also explored care-seeking behavior among individuals with depressive symptoms, an often-overlooked dimension in mental health research. The identification of key disparities in help-seeking and medication use offers critical evidence to inform targeted interventions and mental health service planning in the country.

The current study found that women were more likely to experience depressive symptoms than men. Specifically, biological factors, such as variations in sex hormones, are probably the cause of this discrepancy [39]. Gender differences in stress experiences and stress reactivity could be another reason for this finding [40]. However, a study conducted in rural Lesotho also found that women had a higher risk of depressive symptoms than men [41]. A recent meta-analysis on infertility revealed that women have a considerably a higher risk of getting depression [42]. This reinforces the general knowledge that major health and life obstacles may cause women to experience a disproportionate psychological burden. Additionally, this result aligned with similar studies conducted in different countries [43–46]. However, one study reported that men had a higher risk of depression than women [47].

Moreover, number of household members also played a crucial role in determining depressive symptoms among the Lesotho population. The likelihood of experiencing depressive symptoms was higher for respondents with less than four household members compared to four or more. This finding was consistent with some previous studies that found the number of household members to be a risk factor for depression [48–50]. However, a study conducted in South Africa found that depressive symptoms were higher among respondents with more household members [51].

This study also revealed an important association between tobacco use and a higher odds of MDD. This finding is consistent with that of other studies that identified tobacco use as a risk factor for depression [38, 52–54]. According to a comprehensive study, there is strong evidence linking smoking to depression, with current smokers having a 1.3–2.3-fold higher prevalence of depression [55]. The primary explanation for the observed link may be attributed to various factors, including the neurobiological impact of nicotine on the brain, psychological behaviour of smoking as a coping mechanism, and social and contextual factors associated with smoking behaviour and mental health outcomes [55]. Additionally, smoking may be used by depressed individuals as a stress-reduction or self-medication strategy, which may worsen their symptoms over time [55, 56].

The present study found that residing in Mohale's Hoek district was associated with significantly higher odds of experiencing depressive symptoms compared to the capital, Maseru, while living in Mokhotlong was linked to reduced odds. These findings underscore the considerable geographic variation in mental health outcomes within Lesotho. Several factors may explain the elevated risk of depression in Mohale's Hoek. Previous literature highlights that rural and remote districts in Lesotho often face greater socioeconomic challenges, including higher rates of poverty, food insecurity, and limited employment opportunities, all of which are well-established risk factors for depression [57–59]. Mohale's Hoek, being a predominantly rural and mountainous district, may have fewer economic opportunities and greater barriers to accessing health care, including mental health services, compared to urban centers like Maseru [60]. Additionally, stigma surrounding mental illness, lack of mental health professionals, and limited awareness further compound the problem in rural areas, potentially leading to higher prevalence and lower rates of diagnosis and treatment [57, 60]. The finding that Mokhotlong residents had reduced odds of depressive symptoms is noteworthy and may be attributed to several contextual factors. While Mokhotlong is also a remote and mountainous district, recent interventions, such as community-based mental health programs and integration of mental health care into primary services, may have contributed to improved mental health outcomes [61]. Adapted mental health promotion and resilience-building interventions piloted in Mokhotlong have emphasized community education, early detection, and support, which could mitigate the risk of depression despite ongoing socioeconomic adversity [60, 61]. Social cohesion and strong community networks, which have been shown to be protective against depression, may also play a role in this setting.[59, 60]

Help-seeking for depressive symptoms in Lesotho remains low, with fewer than one in four individuals with depression reporting that they sought any form of assistance and an even smaller proportion using medication. This limited engagement with mental health care is consistent with findings from other

studies in Lesotho and sub-Saharan Africa, where both structural barriers, such as limited service availability, cost, and workforce shortages, and attitudinal barriers, including stigma and lack of mental health literacy, impede access to both informal and formal support [59, 62]. Women were somewhat more likely than men to seek help, but overall rates of care engagement were modest for both sexes [59, 63]. Socioeconomic status, education, and marital status were also important, with higher help-seeking and medication use among wealthier, more educated, and ever-married individuals, while adolescents, the poorest groups, and never-married participants were less likely to engage with care [63]. Geographic disparities were pronounced, with some districts reporting substantially higher rates of help-seeking and medication use than others, likely reflecting differences in service availability and community attitudes[63]. These findings highlight the urgent need for targeted public health strategies in Lesotho to reduce stigma, expand mental health literacy, and improve access to both informal and formal mental health services, particularly for underserved groups and regions.

Strengths and limitations

This study addresses the prevalence, associated factors and care-seeking behaviour for MDD among the population of Lesotho. These findings provide consistent and generalizable insights into the prevalence of MDD and factors in the region using data from a large, nationally representative sample of 6,481 people. Furthermore, the multilevel mixed-effects logistic regression explains individual and community-level differences, providing a more elegant understanding of depression. These methodological attributes make the results statistically robust and beneficial for mental health policy and intervention in Lesotho. Our study also included the respondents' care-seeking behavior, which can be highly useful in identifying gender disparities in mental health responses and developing specific interventions.

Despite its strengths, this study has several limitations. A major drawback of our study is the cross-sectional design of the LDHS, which inhibits our ability to draw causal inferences. Furthermore, the utilization of self-reported data about depressive symptoms and care-seeking behaviors may result in reporting bias, including stigma or misinterpretation of survey items. However, the assessment of depressed symptoms was based on self-reported severity rather than clinical diagnosis, potentially influencing prevalence estimates for clinically diagnosed MDD. Additionally, the LDHS dataset's absence of contextual or psychosocial factors, such as trauma exposure, social support, and mental health services, may have omitted critical variables.

Conclusion

This study highlights a considerable mental health burden in Lesotho, with depressive symptoms affecting diverse segments of the population. Increased risk was evident among women, tobacco users, and those living in smaller households, while residing in Mohale’s Hoek district emerged as a particular vulnerability. The persistently low rates of help-seeking and medication use, coupled with notable disparities across districts, underscore the urgent need for comprehensive mental health strategies. To address these challenges, it is essential for policymakers in Lesotho to strengthen community-based

mental health services and integrate mental health into primary care, ensuring that support is accessible in both urban and rural areas and tailored to the needs of high-risk groups. Raising public awareness through nationwide campaigns can help reduce stigma and encourage early help-seeking, while targeted interventions should be developed for vulnerable populations such as women and tobacco users. Improving the accessibility and affordability of services and medications, particularly in underprivileged and remote regions, is also critical. Additionally, fostering collaboration between government, non-governmental organizations, and community leaders, alongside establishing robust monitoring and evaluation systems, will be crucial for the effective delivery and continuous improvement of mental health care throughout Lesotho.

Declarations

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Availability of data and material: Data are available on request from the DHS program website.

Ethics approval and consent to participate: We do not need ethical approval as we used the secondary data from DHS. However, details of ethical approval for DHS are available at: https://dhsprogram.com/Methodology/Protecting-the-Privacy-of-DHS-Survey-Respondents.cfm. The survey was approved by the Ethics Committee of the ICF International at Rockville, Maryland, USA, and by the Ministry of Health and Family Welfare Ethics Committee. The study is conducted using the principles of the Declaration of Helsinki. All LDHS participants provided written informed consent before participation, and all information was collected confidentially.

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Author Contribution: S.T.A.N. conceived the study, developed the methodology, conducted formal analysis, supervised the project, administered the project, and wrote the original draft. S.S. curated the data, contributed to the methodology, and wrote the original draft. S.Y. performed formal analysis, created visualizations, and contributed to the original draft. O.D. provided resources, curated data, and contributed to the original draft. S.U.A.T. managed software, curated data, and contributed to the original draft. R.B.I. contributed to methodology, validation, and investigation, reviewed and edited the manuscript, and provided supervision. All authors reviewed and approved the final manuscript.

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Figures

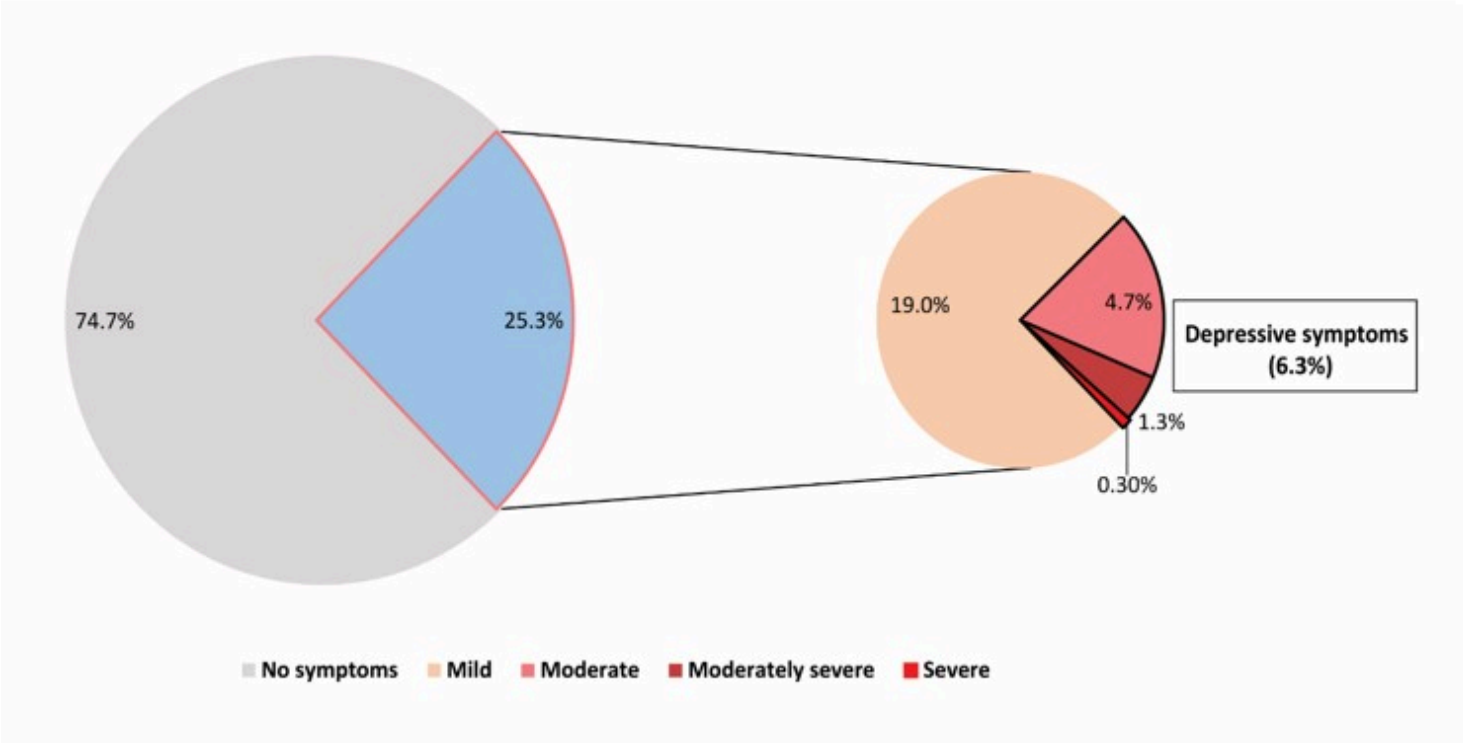


Figure 1

Distribution of Depressive Symptom Severity Among the Study Population in Lesotho (n= 6481).