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Prevalence and factors associated with diabetes distress in northwest Ethiopia: a cross-sectional study

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Living with diabetes over an extended period impacts not only physical health but also the psychosocial well-being of patients. Diabetes distress is a widespread concern affecting individuals with diabetes mellitus across all age groups, cultures, and populations. Given its significance in effective disease management, identifying modifiable factors that contribute to diabetes distress is essential for developing targeted interventions. This study was therefore undertaken to examine the prevalence and associated determinants of diabetes distress among patients receiving care at the University of Gondar Comprehensive Specialized Referral Hospital in northwest Ethiopia. An institution-based cross-sectional study was conducted from August to September 2021. A systematic random sampling technique was employed to select 376 diabetes patients. A structured, pretested, interviewer-administered questionnaire was used to collect data. The data was entered in Epi Info version 7, analyzed using SPSS version 21, and presented using frequencies, percentages, tables, and graphs. Bivariable and multivariable analyses were investigated using a binary logistic regression model. Finally, variables with a P value < 0.05 were declared statistically significant. A total of 364 diabetes patients participated in the current study, making a response rate of 96.8%. Of the 364 participants, 45.6% (95% CI (40.1–50.8%)) of them had moderate to high levels of diabetes distress. Having type 1 DM [AOR = 3.03, 95% CI (1.71, 5.37)], rural residency [AOR = 2.73, 95% CI (1.55, 4.79)], insulin injection only [AOR = 2.38, 95% CI (1.73, 4.39)], and poor family support [AOR = 2.76, 95% CI (1.73, 4.39)] were associated with increased odds of diabetes distress. The prevalence of diabetes distress among diabetes patients was high. Having type 1 DM, rural residency, using insulin injection only, and having poor family support were significantly associated with diabetes distress. It is better to combine the assessment for diabetes distress as part of regular actions for diabetes care and give attention to modifiable factors like family support. To improve outcomes, healthcare policies should prioritize integrating psychosocial support into diabetes management programs, especially in rural settings, and train providers to routinely screen for diabetes distress.

Keywords Diabetes mellitus, Psychological distress, Patients, Prevalence, Ethiopia

Abbreviations
AOR	Adjusted odds ratio
CI	Confidence interval
DD	Diabetes distress
DDS	Diabetes distress scale
DM	Diabetes mellitus
IDF	International diabetes federation
SD	Standard deviation
SPSS	Statistical product and service solutions

The worldwide prevalence of diabetes mellitus (DM) is increasing rapidly, making it a challenging chronic condition for both patients and caregivers[1]. According to the International Diabetes Federation (IDF), the number of people living with DM is projected to rise by approximately 54.7% by 2040 compared to 2015[2]. This growing burden brings numerous challenges, including adapting to a new diagnosis, diabetes distress (DD) that undermines self-management, psychological insulin resistance (reluctance to initiate insulin therapy), and fear of hypoglycemia[3].

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Living with DM over time affects not only physical health but also psychosocial well-being. Complications such as microvascular (e.g., retinopathy, nephropathy) and macrovascular (e.g., heart attack, stroke, and peripheral arterial disease) are linked to increased DD and can trigger significant emotional strain, especially when compounded by negative life events[4]. The long-term nature of the disease, risk of complications, and social burden contribute to emotional distress and reduced quality of life[5].

Diabetes distress refers to the emotional turmoil, such as intense anxiety, shame, or sadness, that arises when individuals feel overwhelmed by the daily demands of managing diabetes[6]. It reflects the emotional burden and negative reactions associated with self-management, including feelings of hopelessness and psychological strain caused by constant monitoring, treatment routines, and persistent fears about complications[7]. Diabetes distress encompasses four interrelated domains: emotional burden, regimen-related distress, stress from social relationships, and strain in patient-provider interactions[8]. It has been associated with increased glycated hemoglobin levels, elevated diastolic blood pressure, and higher low-density lipoprotein cholesterol levels[9,10].

Patients with diabetes are at heightened risk of psychological stress due to lifestyle changes, physical limitations, and vision problems[11]. Nearly one-third of individuals with diabetes experience psychological and social challenges that interfere with effective self-management[12]. Those with high levels of DD have been found to have a 1.8 times higher mortality rate, a 1.7 times increased risk of cardiovascular disease, and a significantly reduced quality of life[13,14]. It also impairs problem-solving skills essential for diabetes self-care, often resulting in poor glycemic control, increased morbidity and mortality, and higher healthcare costs[15].

Diabetes distress is a global issue affecting individuals of all ages and has been documented across diverse populations and cultures[16]. In the United States, 15–20% of patients with diabetes experience clinically significant DD[17]. Globally, DD prevalence among adults ranges from 18.0 to 76.2%[17–31], with African studies reporting rates between 44.0 and 51.9%[32,33], and Ethiopia showing a prevalence of 36.8%[34]. Risk factors include age[19,24,25,32,33], sex[19,21,33], occupation[17,25,33], educational level[22,28,34], duration of DM[19,21,24,25,27,32], diabetic complications[21,22,25,34], type of treatment[25,27,32], comorbidity[17,21,22,28], type of DM[32], and family/social support[34].

Psychological and social assessments, including screening for DD, are recommended by the American Diabetes Association as part of comprehensive diabetes care[35]. Despite this, psychosocial support remains underutilized in many settings. In Ethiopia, more than one-third of adults with diabetes experience DD, which exacerbates complications, impairs adherence, and worsens outcomes. Yet emotional support is often overlooked. This study was therefore conducted to assess the prevalence and associated factors of diabetes distress among patients attending the University of Gondar Comprehensive Specialized Referral Hospital in northwest Ethiopia, with the goal of informing culturally appropriate interventions and improving health outcomes.

Methods and materials
Study design and period
A hospital-based cross-sectional study was conducted from August 1 to September 30, 2021.

Populations
All diabetes patients who attend the diabetic follow-up clinic of the University of Gondar Comprehensive Specialized Referral Hospital were considered as source populations of the study. Those diabetes patients who attended the diabetic follow-up clinic during the study period were study populations.

Eligibility criteria
All diabetes patients aged 18 years and older who attended the follow-up clinic at the University of Gondar Comprehensive Specialized Referral Hospital during the study period were eligible for inclusion. However, patients were excluded if they were severely ill, unable to communicate effectively, or had a previously diagnosed psychiatric condition.

Sample size and sampling procedure
The sample size was calculated using a single population proportion formula by considering the following assumptions: proportion of diabetes distress 36.8%[34], 95% confidence interval, and a 5% margin of error. The final sample size was 376 after adding a 5% non-response rate. A systematic random sampling technique was employed to select study participants. The total estimated population during the two-month data collection period was 1600, based on records from the chronic disease follow-up clinic. To determine the sampling interval, the value of k was calculated as k = 1600/376 ≈ 4. This means every 4th individual was selected from the population list. To ensure randomness, the first participant was selected using a random starting point between 1 and 4. From that starting point, every 4th individual was included in the sample until the required sample size of 376 was reached. This approach maintained both systematic structure and randomization, reducing selection bias and enhancing representativeness.

Variables of the study
Dependent variable Diabetes distress.

Independent variables socio-demographic factors (age, sex, marital status, educational status, occupation, and residence); clinical factors (type of DM, duration of DM, family history of DM, comorbidity, diabetic complications, and type of treatment); personal factor (family support).

Operational definitions
Diabetes distress A form of emotional distress, which is specific to diabetes and reflects the emotional reactions of all aspects of diabetes and diabetes care. It was categorized as < 2.0 = no distress and ≥ 2.0 = distress. Among

those with distress, scores between 2.0 and 2.9 were classified as moderate distress, and scores of 3.0 or higher were categorized as high distress[36].

Comorbidity A diabetic patient who had a known additional disease other than DM was considered as having comorbidity[37].

Diabetic complications A diabetic patient who had one of the following (retinopathy, nephropathy, neuropathy, myocardial infarction, and stroke) was considered to have diabetes complications[38].

Family support participants who scored at or above the mean of the family APGAR score were considered to have good family support, while those who scored below the mean were categorized as having poor family support.

Data collection tools and procedures

Data was collected using a structured, pre-tested, interviewer-administered questionnaire. The questionnaire contains 38 questions arranged in four parts: Part I: seven socio-demographic questions; Part II: nine clinically related questions; Part III: seventeen questions to assess diabetes distress; and Part IV: five questions to assess family support. Diabetes distress was measured by using the Diabetes Distress Scale (DDS)[36]. This scale contains 17 items that use the Likert scale. Items associated with distress experienced over the past month were scored from 1 (not a problem) to 6 (a very serious problem). It measures emotional burden, physician-related distress, regimen-related distress, and interpersonal distress. Each item was rated considering the degree to which each of the 17 items may have distressed or bothered the diabetic patients during the past month. The total possible scores for DDS-17 were 17–102 (average 1–6), and it was calculated by summing the 17 items' results and dividing them by 17. The DDS has been validated, and its Cronbach's alpha was satisfactory (0.93)[36]. Family support was measured using the Family APGAR (adaptation, partnership, growth, affection, and resolve) scale, which consists of 5 items scored from 0 (hardly ever) to 2 (almost always)[39]. The total score range is from 0 to 10. The larger the score, the greater the amount of satisfaction with family functioning. The Cronbach's alpha of the subscale was 0.86[40].

Data processing and analysis

Following data collection, each questionnaire was reviewed for completeness and consistency, and possible corrections were done by investigators. Data was entered into Epi-info version 7 and transferred into SPSS version 21, and then data cleaning and coding were done to make it ready for analysis. The results of the descriptive statistics were expressed as mean, standard deviation, percentage, and frequency using tables and graphs. Binary logistic regression was employed to identify factors associated with diabetes distress. Those variables with a p-value less than or equal to 0.2 from the bivariable analysis were candidates for multivariable analysis. The multivariable analysis was used to control for potential confounders, and a *p* value of < 0.05 was used to declare the significance of the association. Moreover, the strength of the association between different independent variables with the dependent variable was measured using odds ratios with a 95% confidence interval. Multicollinearity was checked using the variance inflation factor (VIF), and a variable is considered to be multi-collinear if its VIF score is 10 or more. However, in this investigation, all variables had VIF values ranging from 1 to 10.

Data quality management

The data collection instrument was prepared in English and translated into the local language, Amharic, and back-translated to English by language experts to check for consistency. A pretest was done on 5% of the total sample size at Debre Tabor Referral Hospital. Necessary modifications were made upon the identification of ambiguity in the questionnaire. We recruited, trained, and assigned three diploma nurses and one MSc nurse for data collection and supervision, respectively. The one-day training was given to both the data collectors and supervisor about the objective of the study, the technique of data collection, the content of the questionnaire, and the issue of confidentiality of the participants.

Results

Socio-demographic characteristics of the respondents

A total of 364 diabetic patients participated in the current study, making a response rate of 96.8%. The mean age of the participants was 49.7 ± 16.0 (SD) years, and 30.8% of them fell in the range of 50–64 years. More than half (50.8%) of the respondents were male, and 59.7% of them were married. Regarding the educational status, 24.5% of the participants couldn't read and write, and 34.3% of them completed primary education. More than two-thirds (67.1%) of diabetic patients were Orthodox in terms of religion, and only 8.0% of them were students. Concerning their place of residence, more than three-fourths (78.6%) of the respondents were urban dwellers (Table 1).

Clinical and personal-related characteristics of the participants

Of the total participants, about 42.3% of them were not sure of the type of DM they had. More than half (55.5%) of the participants lived with DM for five years and below. About 22.5%, 18.4%, and 13.5% of the respondents had a family history of DM, comorbidities, and diabetic complications, respectively. More than three-fourths (76.1%) and 38.8% of diabetic patients had hypertension and nephropathy, respectively. Regarding the type of treatment, 46.4% of the respondents used injections only. More than half (58.2%) of the participants had poor family support (Table 2).

Variables	Category	Frequency (n = 364)	Percentage (100%)
Age (in years)	20–34	73	20.1
	35–49	100	27.5
	50–64	112	30.8
	≥65	79	21.6
Sex	Male	185	50.8
	Female	179	49.2
Marital Status	Single	58	15.9
	Married	217	59.7
	Widowed	46	12.6
	Divorced	43	11.8
Educational status	Can't read and write	89	24.5
	Primary	125	34.3
	Secondary	80	22.0
	College and above	70	19.2
Religion	Orthodox	244	67.1
	Muslim	97	26.6
	Protestant	17	4.7
	Others*	6	1.6
Occupation	Farmer	59	16.2
	Merchant	97	26.6
	Gov't employee	66	18.1
	Private employee	54	14.8
	Student	29	8.0
	Others**	59	16.3
Residence	Urban	286	78.6
	Rural	78	21.4

Table 1. Socio-demographic characteristics of diabetic patients at the University of Gondar Comprehensive Specialized Referral Hospital, northwest Ethiopia, 2021 (n = 364). *Catholic; ** Retired, Housewife, daily laborer.

Prevalence of diabetes distress

The mean ± SD of total diabetes distress was 2.07 ± 0.84. The mean score for each domain of DD, such as emotional burden, interpersonal distress, physician-related distress, and regimen-related distress, was (2.47 ± 1.06), (1.94 ± 1.01), (1.67 ± 0.79), and (2.80 ± 1.0), respectively (Fig. 1). The overall prevalence of diabetes distress was 45.6% [95% CI (40.1%, 50.8%)] (Fig. 2), of which 33.2% (2–2.9) and 12.4% (≥3) of them had moderate and high-level distress, respectively.

Factors associated with diabetes distress

Using bivariable analysis, factors like age of patients, residence, type of DM, family history, diabetic complication, type of treatment, and family support were eligible for multivariable analysis. In the final model, residence, type of DM, type of treatment, and family support were statistically significant factors associated with DD. Accordingly, patients with type one DM were three times more likely to have DD compared with those patients who didn't know the type of DM they had [AOR = 3.03, 95% CI (1.71, 5.37)]. The odds of having DD were 2.7 times higher among diabetes patients who came from rural areas than patients who came from urban areas [AOR = 2.73, 95% CI (1.55, 4.79)]. Moreover, diabetes patients who used insulin injection only were 2.38 times more likely to have DD compared with patients who used pills only [AOR = 2.38, 95% CI (1.35, 4.18)]. Similarly, the odds of having DD were nearly three times higher among patients who had poor family support than their counterparts [AOR = 2.76, 95% CI (1.73, 4.39)] (Table 3).

Discussion

Diabetes distress involves negative emotional responses to all features of diabetes and diabetes care, including DM diagnosis, risk of complications, self-management difficulties, management, or uncooperative social structures surrounding the disease[41]. Although it has recently been demonstrated that self-monitoring is common among diabetes patients in low-resource nations, diabetes-related distress has a negative impact on self-care and glucose control[42,43]. The current study was intended to assess the prevalence and associated factors of DD among diabetes patients in northwest Ethiopia. In the present study, 45.6% of the patients had DD. This finding was relatively consistent with studies conducted in South Africa (44%)[33], Malaysia (49.2%)[17], Tehran, Iran (48.6%)[21], China (42.1%)[31], and Bangladesh (48.5%)[25]. However, the current finding was higher than studies conducted in southwest Ethiopia (36.8%)[34], Singapore (21%)[30], Saudi Arabia (22.3% and 25%)[18,19], Haryana, India (18.0%)[22], Greece (24.4%)[26], Jilin province of China (26.8%)[28], and Chi Minh City, Vietnam

Variables	Category	Frequency (n = 364)	Percentage (100%)
Type of DM	Type one	99	27.2
	Type two	111	30.5
	Not sure	154	42.3
Family history of DM	Yes	82	22.5
	No	282	77.5
Duration of DM	≤ 5 years	202	55.5
	6–10 years	118	32.4
	≥ 11 years	44	12.1
Comorbidity	Yes	67	18.4
	No	297	81.6
Type of comorbidity (n = 67)	Hypertension	51	76.1
	Heart failure	4	6.0
	Asthma	5	7.5
	Others*	7	10.4
Complications	Yes	49	13.5
	No	315	86.5
Type of complication (n = 49)	Nephropathy	19	38.8
	Neuropathy	15	30.6
	Retinopathy	15	30.6
Type of treatment	Injections only	169	46.4
	Pills only	164	45.1
	Both injection and pills	31	8.5
Family support	Good	152	41.8
	Poor	212	58.2

Table 2. Clinical and personal-related characteristics of diabetic patients at the University of Gondar Comprehensive Specialized Referral Hospital, northwest Ethiopia, 2021 (n = 364). *HIV/AIDS, skin infection, rheumatoid arthritis; DM: Diabetes Mellitus.

(29.4%)[24]. The possible justification for the higher prevalence of DD in the current study than in the study conducted in southwest Ethiopia might be due to differences in the study participants. The previous study was conducted among patients with type 2 DM only, whereas the current study incorporated patients with both type 1 and 2 DM. The higher prevalence in the current study than in other previous studies might also be due to the deprived quality of diabetes care provision, lower educational status, differences in the instruments used to measure the level of DD, and other forms of threats associated with living with diabetes. On the other hand, this finding was lower than studies conducted in southeast Nigeria (51.9%)[32], Pakistan (76.2%)[20], Iran (63.7%)[27], south India (77.5%)[23], and Canada (52.5%)[29]. The difference might be due to differences in study participants (most studies conducted among patients with type 2 DM), sampling technique (most studies used convenience sampling), and sample size (the Canadian study was conducted among only 41 individuals). The discrepancy might also be due to patients in the current study who might have underrated their level of distress and disparity in associated conditions in addition to DM among patients.

In the present study, having type 1 DM increases the risk of developing diabetes distress compared to those who didn't know the type of DM they had. Similar findings were reported by studies conducted in southeast Nigeria and Vietnam[32,44]. This could be attributed to type 1 DM being common in the younger age group (they may have fewer handling mechanisms), being treated by insulin (price of medications and a more demanding treatment), and living with diabetes for a long period (they might face numerous emotional and physical stressors). The "not sure (patients who didn't know the type of DM they had)" group included individuals who could not identify whether they had type 1 or type 2 DM, which may reflect limited health literacy, poor communication with healthcare providers, or gaps in diabetes education. This uncertainty can complicate analysis, as it introduces heterogeneity into the comparison group; some of these patients may have type 1 or type 2 DM but lack clarity about their diagnosis. Their lower reported distress may stem from reduced engagement in self-management or limited awareness of disease burden, rather than true emotional well-being. As such, interpreting results involving this group requires caution, since their distress levels may be underestimated due to informational gaps rather than actual clinical differences.

Similarly, rural dwellers were at a higher risk of DD in the present study. A study conducted in eastern Sudan reported a similar finding[45]. This might be due to rural–urban health disparities in Ethiopia because rural dwellers had limited access to health services, traveled long distances to access health services, and had lower education levels and more poverty compared with urban dwellers, which affected their self-management ability of diabetes and related comorbidities[46]. Early detection and intervention are hampered by inadequate rehabilitative services, a lack of qualified experts, and restricted access to basic care. Socioeconomic disadvantages and environmental factors that are common in rural areas exacerbate these difficulties. Targeted health system strengthening is
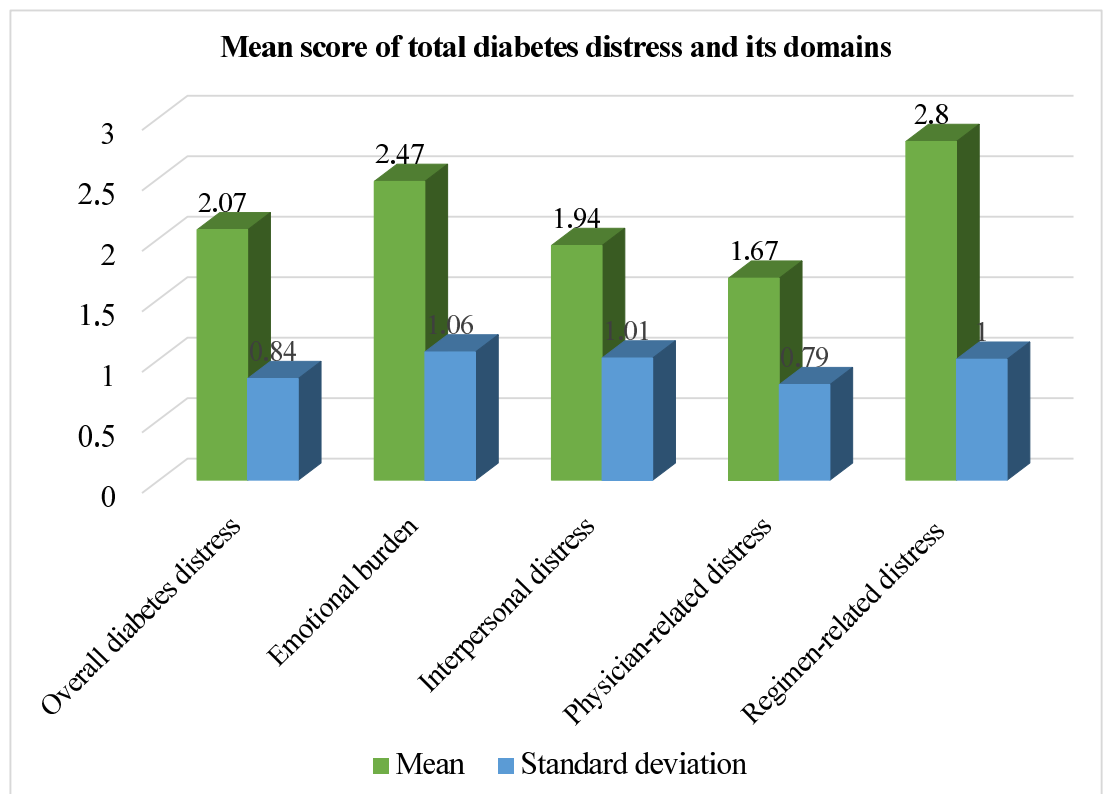
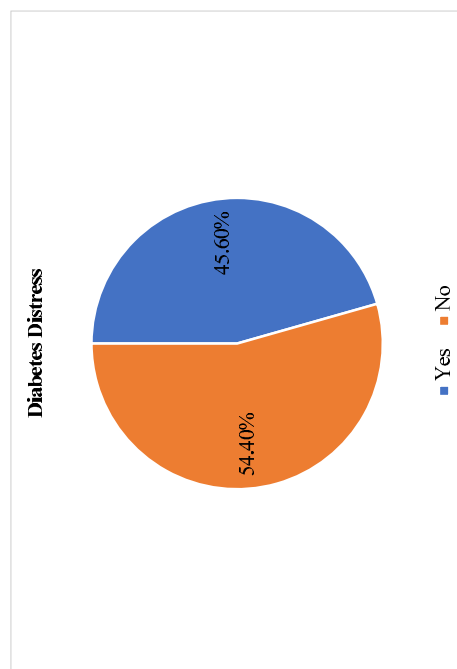**Fig. 1**. Mean scores of diabetes distress domains among patients, Gondar, 2021 (n = 364).

Fig. 2. Prevalence of diabetes distress among diabetes patients attending the University of Gondar Comprehensive Specialized Referral Hospital, northwest Ethiopia, 2021 (n = 364).

Variables		Diabetes distress		OR with 95% CI		P value
		Yes	No	Crude	Adjusted	
Age (years)	≥65	30	49	0.60 (0.31, 1.14)	0.73 (0.30, 1.78)	0.490
	50–64	48	64	0.73 (0.40, 1.32)	0.92 (0.40, 2.11)	0.841
	35–49	51	49	1.01 (0.55, 1.85)	1.26 (0.57, 2.78)	0.567
	20–34	37	36	1	1	
Family history	No	122	160	0.67 (0.40, 1.08)	0.65 (0.38, 1.11)	0.116
	Yes	44	38	1	1	
Type of DM	Type 1	51	48	1.86 (1.13, 3.06)	3.03 (1.71, 5.37)*	< 0.001
	Type 2	58	53	1.81 (1.08, 3.02)	1.48 (0.81, 2.70)	0.207
	Not sure	57	97	1	1	
Residence	Rural	50	28	2.62 (1.56, 4.40)	2.73 (1.55, 4.79)*	< 0.001
	Urban	116	170	1	1	
Diabetic complication	Yes	28	21	1.71 (0.93, 3.14)	1.49 (0.77, 2.90)	0.236
	No	138	177	1	1	
Type of treatment	Injections only	13	18	1.92 (1.24, 2.97)	2.38 (1.35, 4.18)*	0.003
	Both injection& pills	91	78	1.19 (0.55, 2.59)	1.28 (0.55, 2.96)	0.572
	Pills only	62	102	1	1	
Family support	Poor	119	93	2.86 (1.85, 4.43)	2.76 (1.73, 4.39)*	< 0.001
	Good	47	105	1	1	

Table 3. Bivariable and multivariable logistic regression analysis of factors associated with diabetes distress among diabetes patients attending the University of Gondar Comprehensive Specialized Referral Hospital, northwest Ethiopia, 2021 (n = 364). *Statistically significant at p value < 0.05; CI: Confidence Interval; OR: Odds Ratio.

needed to address these gaps, including workforce development, integrated care models, and investments in rural health infrastructure.

In addition, diabetes patients who used insulin injections only were at a higher risk of developing DD. This finding was supported by studies conducted in southeast Nigeria, Iran, and Vietnam[27,32,44]. This is because commencement of insulin therapy can make the patient recognize that his/her disease is becoming worse; therefore, this may lead to extreme anxiety, embarrassment, sadness, or rejection due to a perceived incapability to cope with the necessities of insulin therapy[47,48]. From an analytical perspective, this finding highlights the importance of considering treatment modality as a predictor of DD. It also suggests that patients on insulin may benefit from targeted psychosocial support and counseling to help manage the emotional challenges of their treatment regimen. Identifying and addressing distress in this group could improve both mental well-being and diabetes outcomes. While our study found that patients using insulin injections only were at higher risk of DD, it is important to consider the possibility of reverse causality, where distress itself may lead to poor adherence, resulting in worse glycemic control and ultimately necessitating insulin therapy. In this scenario, emotional distress could precede and contribute to treatment intensification, rather than being caused by insulin use alone. Patients experiencing high levels of distress may struggle with self-management, which can deteriorate their clinical outcomes and prompt a shift to insulin-based regimens. Therefore, interpreting the association between insulin use and DD requires caution, as the observed relationship may reflect a complex interplay of psychological and clinical factors rather than a direct causal link.

The other factor associated with DD was family support, in which diabetes patients with poor family support had higher odds of developing distress. A study conducted in southwest Ethiopia, Norway, and Thailand supported this finding[4,34,49]. This is because when family members behave negatively, e.g., by irritating or criticizing specific health-related activities, individuals with diabetes may react by taking in higher levels of DD. Peer support was also effective in reducing diabetes-related distress[50]. This demonstrates how important family dynamics are in Ethiopian culture. Families have a crucial role in Ethiopian health decision-making, caring, and emotional fortitude. Patients may feel alone, have more emotional burden, and have trouble managing themselves when this assistance is lacking. Cultural customs like sharing meals might make it more difficult to follow a diet, particularly if family members are unaware of how to treat diabetes. Family-based diabetes self-management education and support programs have been found to dramatically increase supportive behaviors and decrease distress, according to studies conducted in Western Ethiopia[51]. These findings highlight the necessity of culturally sensitive interventions that actively involve families in diabetes care, foster empathy, and dispel myths in order to lessen suffering and enhance results.

To integrate DD screening into routine care in Ethiopia, health facilities should include the DDS-17 during regular follow-up visits, with trained nurses or health officers administering it. Results should be recorded and linked to referral options like counseling or peer support. Using task-shifting and existing clinic workflows makes this approach practical and scalable.

Strengths and limitations of the study

One of the key strengths of this study is its contextual relevance. Conducted in a setting where the psychological impact of chronic illnesses is underexplored, it fills a critical local knowledge gap while contributing valuable insights to the global literature. The focus on modifiable social factors, such as family support, also highlights opportunities for community-based interventions to reduce emotional distress and improve patient well-being.

However, several limitations should be acknowledged. First, since the study was facility-based, it may not fully capture the experiences of diabetes patients in the broader community, particularly those who rarely seek medical care. Second, reliance on self-reported data introduces potential recall bias, which may affect the accuracy of responses. Third, the cross-sectional design limits causal inference between diabetes distress and associated factors. Fourth, the study lacked clinical validation of self-reported diagnoses, including diabetes complications, which may reduce diagnostic precision. Additionally, a high proportion of participants were uncertain about their type of diabetes, which limits the interpretability of related findings. Finally, the use of interviewer-administered questionnaires may have introduced social desirability bias, potentially influencing how participants reported emotional distress and other sensitive information.

Conclusion

The study found a high prevalence of DD, with significant associations observed among patients with type 1 DM, rural residency, insulin-only treatment, and poor family support. These findings highlight the need to integrate DD screening into routine diabetes care using a holistic management framework. Special attention should be given to high-risk groups and modifiable factors like family support. Enhancing clinical awareness and providing regular health education on diabetes and its psychological impact can improve patient outcomes. From a policy perspective, prioritizing emotional well-being in chronic disease care and training healthcare providers to recognize and address DD are essential steps toward more responsive and inclusive health systems. Future research should prioritize longitudinal studies to clarify causal pathways and intervention trials to evaluate strategies for reducing diabetes distress, especially among high-risk and underserved populations.

Data availability

All data is available upon request. The reader could contact the corresponding author for the underlying data.

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Declarations

Competing interests

The author declared that no conflict of interest exists.

Ethics approval and consent to participate

Before conducting the study, ethical clearance was obtained from the Institutional Review Committee of the School of Nursing on behalf of the University of Gondar. A letter of permission was obtained from the University of Gondar Comprehensive Specialized Referral Hospital director. After the purpose and objective of the study had been explained, written informed consent was obtained from each study participant. All participants were also informed that participation was voluntary and they could withdraw from the study at

any time if they were not comfortable with the questionnaire. To keep the confidentiality of any information provided by study subjects, the data collection procedure was kept anonymous. The study has been performed in accordance with the Declaration of Helsinki.

Additional information

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