MAGNITUDE AND ASSOCIATED FACTORS OF DEPRESSION AMONG ADULTS CHRONIC SKIN DISEASE AT TERTIARY HOSPITALS IN ADDIS ABABA, ETHIOPIA: A CROSS-SECTIONAL STUDY

Kidist Gezahegn[1], Teshome Habte Wurjine[1]*, Zeleke Argaw[2] and Workinesh Sinishaw[3]

[1]Lecturer, Department of Nursing, College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia.
[1]*Assistant Professor of Adult Health Nursing in Addis Ababa University.
[2]Assistant Professor, Department of Nursing College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia.
[3]Lecturer, Department of Nursing College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia.

ABSTRACT

Objective: This study aimed to evaluate the prevalence and factors associated with depression in adults suffering from chronic skin diseases in Tertiary hospitals in Addis Ababa, Ethiopia. **Methods:** An institution-based cross-sectional study was conducted with 314 participants from outpatient dermatology clinics across three randomly selected Tertiary hospitals. Data were gathered using a semi-structured questionnaire, and both bivariate and multivariate analyses were performed to identify associations, with a significance threshold set at p < 0.05. **Results:** The study revealed a depression prevalence of 32.8% among these adults. Significant associations with depression were identified, particularly with female sex, younger age, monthly income, a family history of mental illness, and body image disturbance. **Conclusion and Recommendations:** The findings underscore the critical nature of depression in adults with chronic skin diseases and highlight key risk factors. The study advocates for regular depression screenings at care points, the formation of multidisciplinary teams that include dermatologists and mental health professionals, and the development of mental health policies tailored to the needs of this patient population.

KEYWORDS: Depression, chronic skin disease, magnitude, associated factors, Adults, Tertiary Hospitals.

Brief information on the study
What is already known in this topic?
Literatures suggest that the severity of skin symptoms, psychosocial stressors, and demographic variables like age and socioeconomic status are critical in understanding the prevalence of depression among these patients. Additionally, cultural attitudes towards skin diseases in Ethiopia may impact treatment-seeking behavior and mental health outcomes.

What this study adds?
The study enriches the understanding of the mental health implications of chronic skin diseases in Ethiopia, providing a foundation for improved clinical practices and patient support.

How this study might affect research practice, or policy?
This study has the potential to enhance understanding and support for individuals with chronic skin diseases,

ultimately influencing both research methodologies and healthcare policies to create a more integrated and effective healthcare system.

1. INTRODUCTION
1.1. Background
Skin disease is a broad term that encompasses any condition affecting the skin. Its causes are varied and include autoimmune diseases, infections, allergies, systemic illnesses, and genetic factors. Skin diseases can be classified into two categories: acute and chronic. Chronic skin conditions persist for more than six months and are often relapsing. These conditions can occur at any age.[1]

According to the Global Burden of Disease (GBD) report, over one-third of the world's population suffers from skin problems, making skin disease the fourth most prevalent cause of human ailments. The burden of skin illnesses is particularly high in low- and middle-income countries (LMIC).[2]

Depression is one of the most common mental illnesses, characterized by low energy, a gloomy mood, loss of interest or pleasure, feelings of shame or inadequacy, disrupted sleep or appetite, and impaired concentration. It is categorized into three levels: mild, moderate, and severe, based on symptom severity.[3] Currently, more than 300 million people worldwide suffer from depression, with a lifetime risk of 7%. The prevalence of depression in LMIC ranges from 11.1% to 53%, with the highest burdens observed in Afghanistan, the Middle East, and North and Sub-Saharan Africa.[4] In Ethiopia, the prevalence of depression is reported to be 6.8%.[5]

The skin is the largest and most visible organ of the human body. In many cultures, healthy skin is often viewed as a standard of beauty, leading individuals to desire a beautiful and attractive appearance. Skin problems can elicit feelings of stigma, rejection, worthlessness, decreased attractiveness, low self-esteem, and diminished self-confidence.[6,7] These negative feelings can contribute to mental health issues. The skin not only serves as a protective barrier but also expresses individual identity. As such, it is not surprising that skin problems can significantly impact mental health. Depression and anxiety disorders are the two most common mental health issues, with patients suffering from skin diseases experiencing mental health disorders more frequently than the general population.[8]

Depression is a common comorbid mental illness among individuals with skin disease, as supported by various studies.[9] Research conducted in Saudi Arabia, Germany, Egypt, and Ethiopia has reported depression prevalence rates of 15.8%, 42.5%, 39.2%, and 23%, respectively.[10–13] Despite these findings, few studies have specifically investigated depression among patients with chronic skin diseases. This study aims to contribute

to the limited evidence on the prevalence and associated factors of depression in this population.

1.2 Statement of the problem
Globally, depression is the leading cause of disability and significantly contributes to the burden of disease. It accounts for 7.5%, 7.9%, and 10% of all years lived with disability (YLD) worldwide, in Africa, and in Ethiopia, respectively. In low- and middle-income countries (LMIC), the prevalence of mental illness is rising rapidly.[4] The burden of skin disease is comparable to that of serious conditions like meningitis, hepatitis B, obstructed labor, and rheumatic heart disease.[8] The skin serves as a sensory organ and plays a crucial role in how individuals perceive and interact with others. Misconceptions that skin diseases are contagious, due to poor hygiene, or a result of moral failings contribute to feelings of loneliness and depression among those affected. Consequently, chronic skin disorders have implications that extend beyond dermatology.[14]

Numerous studies indicate a high prevalence of depression among individuals with skin diseases. For instance, a study in Pakistan found that 91.9% of skin disease patients experienced varying stages of depression.[15] In India, 33.3% of dermatological outpatients reported depression, while in Nigeria, 49% of leprosy patients had co-morbid depression.[16,17] In Sudan, the prevalence was found to be 21.9%, and in Ethiopia, it was reported at 23.6%.[18]

Chronic skin disease and depression together create a complex negative impact on an individual's physical, social, economic, mental, and emotional health. Physically, depression can lead to pain, fatigue, decreased libido, insomnia, and changes in appetite. This cycle can exacerbate feelings of shame and isolation.[3,5]

Additionally, psychosocial factors such as depression can influence inflammatory and immune responses, potentially triggering or worsening skin disorders. This exacerbation can result in increased economic costs, wasted time, and prolonged treatment durations. Employees may lose interest in their work, housewives may neglect daily tasks, and students may disengage from their studies. Overall, individuals with depression utilize more healthcare resources and experience decreased productivity.[19,20]

In people with skin diseases, depression is significantly linked to factors such as female sex, low educational attainment, poor social support, and decreased quality of life, stigma, and body image issues. The impact of untreated depression can be severe, particularly in LMICs like Ethiopia, where treatment and support services are often lacking. It is estimated that around 85% of individuals with mental disorders in these countries do not receive treatment.[5]

Despite the high prevalence and serious effects of depression among those with chronic skin diseases, this issue has received limited attention from researchers and stakeholders in Ethiopia. Existing studies have primarily focused on a narrow range of skin conditions in single institutions. Therefore, this study aims to provide more comprehensive information on the prevalence and associated factors of depression in individuals with chronic skin diseases.

1.3 Significance of the study
The early detection and treatment of mental illness have far-reaching implications, including a reduction in morbidity and mortality associated with chronic skin diseases, especially in developing countries. This study aims to evaluate the prevalence of depression among patients with chronic skin conditions, as understanding the extent of the issue is essential for formulating timely and effective interventions.

Additionally, the study will identify the factors linked to the high prevalence of depression, providing insights that can inform potential strategies to improve the mental health of these patients. The findings will be valuable for policymakers and intervention designers in developing targeted mental health services within dermatological clinics. Furthermore, this research will offer baseline data and recommend intervention methods for addressing the underlying factors contributing to these illnesses. Ultimately, this study will help lay the groundwork for future research and contribute to the limited literature on the prevalence of depression among Ethiopian patients with chronic skin diseases.

1.4 Conceptual framework
This conceptual framework outlines various literature studies conducted in different countries regarding individuals with chronic skin disease and the factors associated with depression, as **shown in Fig.1 below**. It illustrates the effects of independent variables on the dependent variable.[10,13,19]
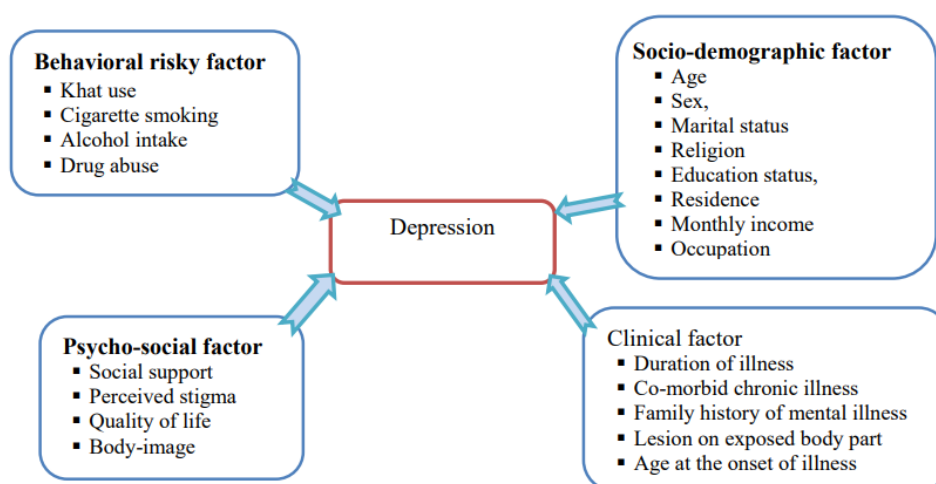
Figure 1 Conceptual frame work for the assessment of magnitude and associated factors of depression among adults with chronic skin disease.

2. Objectives of the study
2.1. General objective: To assess the magnitude and associated factors of depression among adults with chronic skin disease in Tertiary hospitals in Addis Ababa, Ethiopia.

2.2. Specific objectives
- To determine the prevalence of depression among adults with chronic skin disease in Tertiary hospitals.
- To identify the factors associated with depression in adults with chronic skin disease at Tertiary hospitals.

3. METHODS AND MATERIALS
3.1 Study area
The study was conducted in Addis Ababa, Ethiopia, the capital city and headquarters for several international organizations, including the African Union and the United Nations Economic Commission for Africa. As of the latest estimates, the population of Addis Ababa is approximately 5,227,794.[21]

The city is home to five Tertiary hospitals, and this study specifically took place in the dermatology units of three randomly selected hospitals: Tikur Anbesa Specialized Hospital (TASH), Saint Peter's Specialized Hospital, and the All Africa Leprosy, Tuberculosis and Rehabilitation Training Centre (ALERT). All these facilities provide care for both acute and chronic skin diseases.[22]

Tikur Anbesa Specialized Hospital (TASH) is one of Ethiopia's largest and oldest hospitals, offering specialized services not available at other Tertiary and private health institutions. Annually, TASH treats and

diagnoses approximately 370,000 to 400,000 patients. The hospital has over 1,000 beds and 130 specialists. The dermatology clinic sees about 600 patients each month, with around 250 of those diagnosed with chronic skin diseases.[23]

Saint Peter's Specialized Hospital is another referral hospital in Addis Ababa, known for its treatment of tuberculosis and leprosy. This hospital treats about 600 patients with various skin diseases each month, with nearly 200 of them suffering from chronic skin conditions.

ALERT is a referral teaching hospital originally known as the All Africa Leprosy and Rehabilitation Training Centre. It has since expanded its focus to include tuberculosis. ALERT features 240 beds and offers departments for surgery, dermatology, and ophthalmology, along with an orthopedic workshop and a rehabilitation program. Each month, ALERT provides care for approximately 3,500 patients with various skin diseases, including about 1,200 with chronic conditions.[24]

3.2 Study design and period
A prospective, institution-based cross-sectional study was conducted from March 21 to April 21, 2023, among adults with chronic skin disease at selected Tertiary hospitals in Addis Ababa.

3.3. Study population
The study population consisted of all patients with chronic skin diseases attending the selected Tertiary hospitals in Addis Ababa.

3.4. Eligibility Criteria
Inclusion Criteria
- Adults aged 18 years and older.
- Patients diagnosed with chronic skin diseases (lasting more than six months).
- Patients attending the selected Tertiary hospitals in Addis Ababa during the study period.
- Individuals who provide informed consent to participate in the study.

Exclusion Criteria
- Patients with acute skin conditions or those undergoing treatment for less than six months.
- Individuals with cognitive impairments that prevent them from understanding the study or providing informed consent.
- Patients with severe comorbid medical conditions that may affect mental health independently of skin disease.

- Individuals who are not residents of Addis Ababa or are temporarily visiting.

3.5 Sample size calculation
The sample size was calculated using the single proportion population formula, assuming a 23.6%[13] prevalence of depression among individuals with chronic skin disease, based on a study conducted in Boru Meda, Amhara region, Ethiopia. A 95% confidence interval and a 0.05 margin of sampling error were used in the calculation.

$$n = z\alpha/2 \times p \times (1-p)/d^2$$

Where: n= number of sample size
d= margin of error
$Z\alpha/2$= the reliability coefficient corresponding to 95% confidence level (Z= 1.96)
P= 23% prevalence of depression among people with chronic skin disease taken from study conducted in Boru Meda, Amhara region Ethiopia
$n = (1.96)^2 \times 0.23 \times (1-0.23)/(0.05)^2 = 277.06$ by adding 15% non-respondent rate, the total sample size was 318.

3.6 Sampling technique and procedure
In Addis Ababa, there are five Tertiary hospitals that provide dermatological services to the Tertiary. Three of these hospitals were selected using a lottery method. The selected hospitals were Tikur Anbesa Specialized Hospital (TASH), Saint Peter's Specialized Hospital, and ALERT as **shown in Fig. 2 below**. The study was conducted in the dermatology outpatient clinics of these facilities. The number of study participants from each hospital was proportionally allocated based on the patient visit load over the previous six months, as recorded in the hospital registers.

The six-month follow-up data for chronic skin disease patients in the dermatology clinics are as follows: ALERT had 1,350 patients, Tikur Anbesa Specialized Hospital (TASH) had 1,150 patients, and Saint Peter's Specialized Hospital had 8,000 patients.

The formula for proportion allocation is: $n = nf \times nk/Nk$

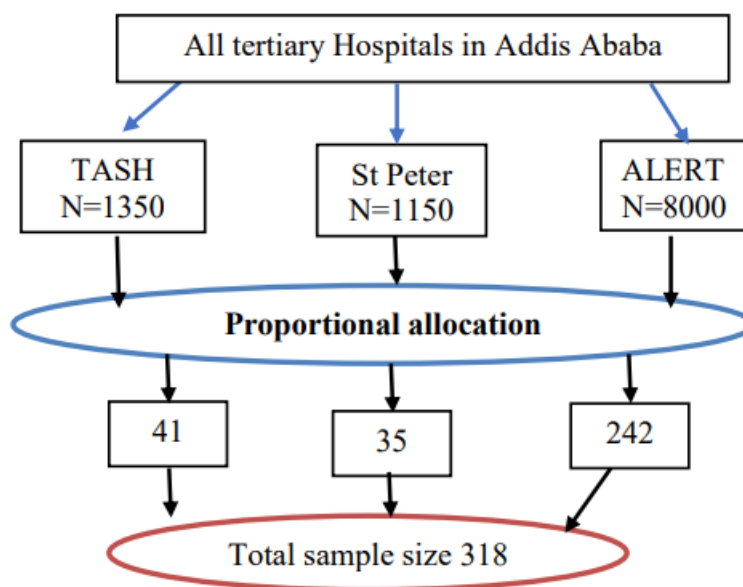Where n = is the required sample size in specific hospital
n_f= is the total sample size
n_k= is one month patient flow in specific hospital
N_k= is the total population number
n for ALERT= $318 \times 8000/10500 = 242$
n for TASH = $318 \times 1350/10500 = 41$
n for St Peter = $318 \times 1150/10500 = 35$

Figure 1: Schematic presentation of sampling procedure for the assessment of depression and associated factors among adults with chronic skin disease in Addis Ababa.

Due to the absence of a sampling frame for participant selection, a systematic random sampling procedure was employed. The interval was calculated by estimating the expected number of patients for one month and then dividing that number by the required sample size. Once the interval was determined, participants were selected from the clinic at each observed interval. The starting point was chosen randomly.

The calculated intervals (K) for each hospital were as follows:
- **ALERT Hospital:** K=1,500242≈6.1K=2421,500 ≈6.1 (rounded to 6)
- **Saint Peter's Hospital:** K=20035≈5.7K=35200≈5.7 (rounded to 6)
- **TASH Hospital:** K=25041≈6.1K=41250≈6.1 (rounded to 6)

Thus, all hospitals had the same interval of 6. A number between 1 and 7 was randomly selected using the lottery method, and participants were chosen every 6 intervals from the selected number until the required sample size was reached.

3.7. Operational Definitions
- **Depression:** A score greater than or equal to 5 on the PHQ-9 scale.[25]
- **Social Support:** Measured by the Oslo 3-item social support scale[26]:
  - Poor: Score 3-8
  - Moderate: Score 9-11
  - Strong: Score 12-14
- **Self-Image Disturbance:** Assessed using a 7-item body image disturbance scale (dermatological version).[27] Participants scoring above the mean indicate high body image disturbance.

- **Perceived Stigma:** Defined as having at least one positive score among the six questions on the dermatologically specific perceived stigma scale.[27]
- **Poor Quality of Life:** A score greater than or equal to 10 on the Dermatological Life Quality Index (DLQI).[13]
- **Chronic Skin Disease:** Patients presenting with a chronic and relapsing skin condition, defined as having at least one repeated visit.
- **Co-Morbid Chronic Illness:** The presence of at least one chronic medical condition (such as diabetes, hypertension, or HIV/AIDS) coexisting with chronic skin disease.[28]
- **Visible Lesions:** Lesions affecting the head, neck, upper extremities, and lower extremities.[27]
- **Family History of Mental Illness:** At least one family member diagnosed with a mental illness.[28]
- **Family Monthly Income:** Based on the World Bank poverty line cut-off, individuals with an average monthly family income of less than $1.90 per day (less than 2,394 Ethiopian Birr per month) are considered below the poverty line, while those with an income of $1.90 or more per day (2,394 Ethiopian Birr or more per month) are above the poverty line.[29]
- **Current Use of Substance:** Participants who have used specific substances (such as khat, tobacco, alcohol, etc.) in the past three months.[28]
- **Previous Substance Consumers:** Participants who have consumed substances in the past but have not done so in the last 12 months.[29]

3.8 Study variables
3.8.1 Dependent variable: Magnitude of depression
3.8.2 Independent variables
Socio-demographic factors: (Age, sex, religion, educational level, marital status, occupation, family

monthly income, living area)
Psycho-social factors (perceived stigma, social support, self-image, quality of life)
Clinical factors: (family history of mental illness, co-morbid chronic medical illness, age at the onset of illness, duration of illness, and lesion involving the exposed body part).
Individual characteristics: (alcohol, cigarette smoking, khat use and other).

3.9 Data collecting instrument
The data collection utilized structured and semi-structured questionnaires to assess both dependent and independent variables. The questionnaires were adapted from a similar study conducted in Ethiopia.[13] They included the following components:

1. **Socio-Demographic Characteristics:** This section collected information on age, religion, sex, education level, marital status, monthly income, occupation, and living area.

2. **Depression Assessment:** Depression was evaluated using a structured Patient Health Questionnaire (PHQ-9), which serves as both a diagnostic tool and a measure of depression severity. Developed according to the Diagnostic and Statistical Manual of Mental Disorders—IV, the PHQ-9 is preferred by clinicians and researchers. Each question is rated on a four-point Likert scale (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day). The total score indicates the severity of depression, categorized as follows:
   o No depression: 0-4
   o Mild depression: 5-9
   o Moderate depression: 10-14
   o Moderately severe depression: 15-19
   o Severe depression: 20-27

The PHQ-9 is a reliable and valid tool for measuring Major Depressive Disorder (MDD) among adults, with a sensitivity of 86% and specificity of 67%. It has good internal consistency (Cronbach's alpha = 0.81) and test-retest reliability (intra-class correlation coefficient = 0.92). A cutoff score of >5 provides optimal discrimination for determining depression.[29]

3. **Clinical Characteristics:** This section included questions about illness duration, the presence of co-morbid chronic medical conditions, visible lesions on exposed body parts, age at the onset of illness, and family history of mental illness, using a modified questionnaire from previous studies.[13]

4. **Body Image Disturbance:** Body image disturbance was assessed using the standardized 7-item Body Image Disturbance Questionnaire (BIDQ), which evaluates dissatisfaction, distress, and dysfunction related to body image.[27] The BIDQ demonstrates strong internal consistency (Cronbach's alpha = 0.92), with higher scores indicating greater body image disturbance.[27]

5. **Quality of Life:** The Dermatologic Life Quality Index (DLQI) was used to assess quality of life. Each question is scored as follows: 0 = not at all, 1 = a little, 2 = a lot, 3 = very much. The total score can range from 0 to 30. The quality of life outcomes are categorized as:
   o 0–1: No effect on the patient's life
   o 2–5: Small effects
   o 6–10: Moderate effects
   o 11–20: Very large effects
   o 21–30: Extremely large effects.

A higher score indicates more impaired quality of life. The DLQI has shown high internal consistency in Ethiopia (Cronbach's alpha = 0.90), with a mean score of 8.42 among patients.[29]

6. **Perceived Stigma:** Perceived stigma was measured using a stigma scale for skin disease, consisting of 6 items rated on a 4-point scale (0 = never, 1 = occasionally, 2 = frequently, 3 = always). The total score ranges from 0 to 18, with a higher score indicating greater perceived stigma. The stigma scale has demonstrated good reliability (Cronbach's alpha = 0.88 in psoriasis patients and 0.81 in atopic dermatitis patients).[27]

7. **Social Support:** The Oslo Social Support Scale (OSS-3) was used to assess participants' social support levels. This scale includes three questions and has an internal consistency (Cronbach's alpha) of 0.756. The total score ranges from 3 to 14, where a higher score indicates greater social support. The interpretation of scores is as follows:
   o Poor support: 3–8
   o Moderate support: 9–11
   o Strong support: 12–14 (30)

3.10. Data collecting procedure
Data collection was conducted after participants completed their clinical assessments and consultations with their physicians. A structured and semi-structured questionnaire was administered through face-to-face interviews by three nurses not affiliated with the study facilities. To oversee the data collection process, three supervisors were recruited, with one supervisor assigned to each hospital. The supervisors were second-year MSc nursing students. The principal investigator (PI) managed the overall data collection process to ensure consistency and adherence to the study protocol.

Interviews with eligible participants were conducted in a confidential setting. If a selected patient declined to participate, the next qualified respondent was contacted for an interview.

3.11. Data quality assurance
To ensure the quality of the data, the validity and reliability of the adopted Amharic questionnaire will be assessed by experts. Prior to the actual data collection,

the data collectors received two days of training on the study's objectives, data collection procedures, and the specific measurements to be taken. The supervisors and the principal investigator (PI) monitored the data collection process on a daily basis. Collected data were checked for completeness, accuracy, clarity, and consistency by the data collectors, supervisors, and the PI each day.

3.12. Data processing and analysis

The collected data were coded, edited, cleaned, and entered into Epi Data v7.1 for analysis using SPSS v27. Prior to the actual data analysis, necessary processing steps such as re-coding, categorizing, computing, and counting were performed. Descriptive results were summarized as means, percentages, and standard deviations. Categorical variables were represented using frequency tables, pie charts, and bar charts, depending on the type of data. To assess significance, beta estimates (β) and p-values with 95% confidence intervals were calculated. A bi-variate analysis was conducted for each independent variable in relation to the outcome variable to determine eligibility. Variables with a p-value of less than 0.2 were then entered into a multivariate analysis. In this analysis, variables with a p-value of less than 0.05 were considered to have a significant association with the dependent variable, as determined by logistic regression.

4 RESULTS

4.1 Socio-Demographic Characteristics

A total of 314 adult patients with chronic skin diseases were enrolled in the study, yielding a response rate of 98.7%. Among the participants, 58% were female and 42% were male. The mean age of the respondents was 36.44 years (SD ± 13.12), with ages ranging from 18 to 74 years. The largest age group comprised 36.4% of respondents who were between 18 and 27 years old. In terms of geographic background, close to two-thirds (65.9%) of the patients came from rural areas. Nearly half of the subjects (47.5%) were married. **As shown in Table 1**, most respondents identified as Orthodox Christians (67.8%).

Regarding education and income, 93.9% of participants had received formal education, and over three-fourths of the subjects had a monthly income above the poverty line.

Table 1: below provides a detailed description of the socio-demographic characteristics of the respondents with chronic skin disease at Tertiary hospitals in Addis Ababa, Ethiopia (n=314).

Variables	Variable category	Frequency(n=314)	Percent(%)
Sex	Male	132	42
	Female	182	58
Age category	18-27	114	36.4
	28-37	51	16.2
	38-47	76	24.2
	≥48	73	23.1
Religion	Protestant	40	12.8
	Orthodox	213	67.8
	Muslim	61	19.4
Marital status	Single	126	40.1
	Married	149	47.5
	Divorced	29	9.2
	Widowed	10	3.2
Residency	Urban	107	34.1
	Rural	207	65.9
Education status	No formal education	19	6.1
	Primary education (1-8)	85	27.1
	Secondary and preparatory (9-12)	107	34.1
	diploma graduate/degree and above	103	32.7
Occupation	Government employ	65	20.7
	Non-Government employed	50	15.9
	Housewife	34	10.8
	Student	38	12.1
	Own business	54	17.2
	No job	73	23.3
Average family monthly income	Under poverty line	69	22
	Above poverty line	245	78

4.2. Clinical Characteristics of Respondents

The mean age at which chronic skin disease onset occurred was 32.63 years. Close to two-thirds of patients (64.3%) experienced onset between the ages of 21 and 40 years. Additionally, 47.1% of respondents reported a duration of illness of one year or less. The majority of

subjects (67.2%) had lesions affecting visible body parts. Furthermore, 26.8% of participants reported a family history of mental illness, and 41.1% of the respondents had other chronic comorbidities. Notably, over three-fourths of participants were using more than one medication.

4.3 Psychosocial characteristics
Among the total study participants, 44.6% reported experiencing body image disturbance. Despite this, a significant majority 87.6% of the subjects indicated having an adequate quality of life. In terms of social support, 30.6% of participants reported strong support, 58.8% reported intermediate support, and 10.5% reported poor support.

4.4 Magnitude of Depression
Out of the 314 participants who completed the PHQ-9 questionnaire at baseline, as depicted in **Fig. 3 below**, the prevalence of depression was found to be 32.8%. Among those with depression: **29.7%** experienced moderate depression, **2.5%** had moderately severe depression, and **0.6%** was classified as having severe depression.

Hence, the total prevalence of depression among the participants was 32.8%, which includes 29.7% with moderate depression, 2.5% with moderately severe depression, and 0.6% with severe depression.
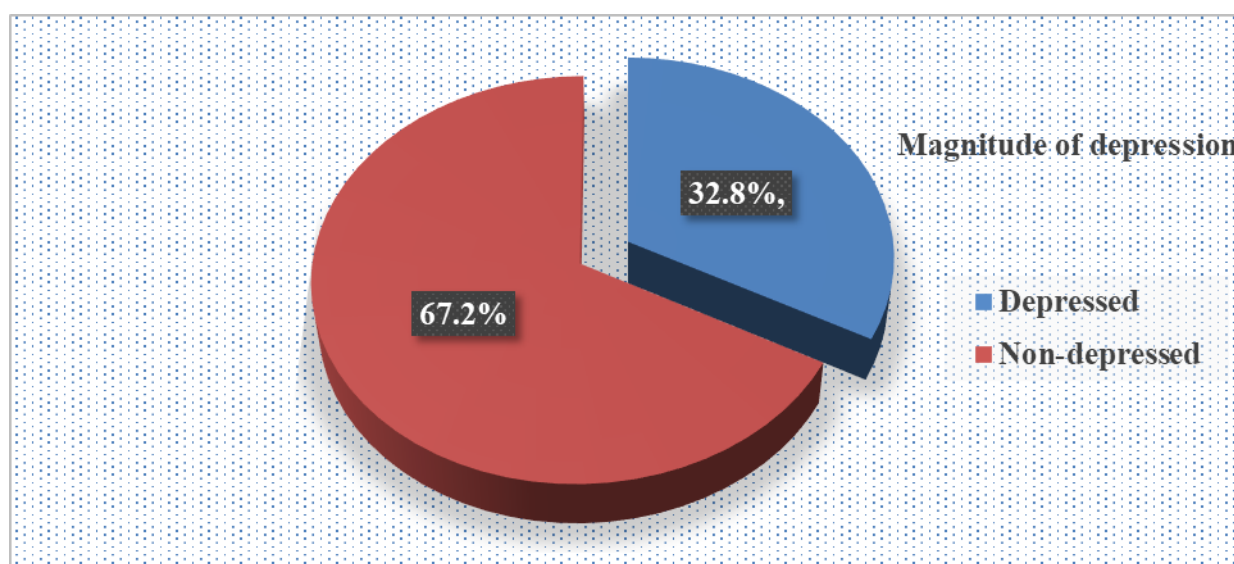
Figure 3: Magnitude of Depression among Adult Skin Disease Patients at Tertiary Hospitals in Addis Ababa, Ethiopia (n=314)

4.5. Substance use associated with Depression
In the binary analysis, several variables were associated with depression at a significance level of p < 0.25. These variables included sex, age group, income, number of medications, family history of mental illness, age at the onset of illness, involvement of body parts, chronic disease comorbidities, quality of life, social support, and body image disturbance.

To identify significant variables and control for confounding factors, a multivariate analysis using the backward Wald technique was applied. As shown in **Table 2,** multiple logistic regressions were conducted on variables that had a p-value of less than 0.25 in the bivariate analysis. In the final model, variables with a p-value of less than 0.05 were considered significantly associated with depression. The key findings from the final model include:

- **Gender Distribution**: Male patients had 78.6% lower odds of developing depression compared to female patients (Adjusted Odds Ratio [AOR] 0.214, 95% Confidence Interval [CI]: 0.070-0.659).

- **Age Distribution**: Participants aged 18-27 had approximately 12 times higher odds of developing depression compared to those aged over 48 (AOR 12.108, 95% CI: 1.361-107.686).
- **Income**: Patients living below the poverty line were four times more likely to develop depression than those above it (AOR 4.444, 95% CI: 1.346-14.672).
- **Family History of Mental Illness**: Individuals with a family history of mental illness were 67 times more likely to be associated with depression compared to those without such a history (AOR 67.037, 95% CI: 14.66-306.531).
- **Visible Body Lesions**: Individuals with visible body lesions had five times higher odds of being depressed compared to those without visible lesions (AOR 5.594, 95% CI: 1.331-23.51).
- **Body Image Disturbance**: Patients without body image disturbance were 94.3% less likely to be depressed compared to those with body image disturbance (AOR 0.057, 95% CI: 0.015-0.208).

These findings underscore the significant factors associated with depression among adults with chronic skin diseases.

Table 2: Bivariate and Multivariable Logistic Regression on Factors Associated with Depression among Patients with Chronic Skin Disease at Tertiary Hospitals in Addis Ababa, Ethiopia (n=314)

Variables	Category	No=211 N(%)	Yes=103 N(%)	COR (95% CI)	AOR (95% CI)
Sex	Male	113(53.6)	19(18.4)	0.196(0.111-0.346) *	0.214(0.070-0.659) **
	Female	98(46.4)	84(81.6)	1	1
Age category	18-27	41(19.4)	73(70.9)	9.550(4.51-20.192)*	12.108(1.361-07.686) **
	28-37	50(23.7)	6(5.8)	0.644(0.222-1.865)	0.321(0.031-3.292)
	38-47	61(28.9)	13(12.6)	1.143(0.475-2.753)	0.478(0.062-3.683)
	≥48	59(28)	11(10.7)	1	1
Educational status	No formal education	11(5.2)	8(7.8)	2.530(0.910-7.029)	
	Primary (1-8)	49(23.2)	36(35)	2.555(1.358-4.81)	
	Secondary (9-12	71(33.7)	36(35)	1.764(o.955-3.256)	
	College diploma and above	80(37)	23(22.2)	1	
Religion	Orthodox	144(68.2)	69(67)	1.432(0.665-3.108)	
	Muslim	37(11.5)	24(23.3)	1.946(0.806-4.696)	
	Protestant	30(14.2)	10(9.3)	1	
Marital status	Single	76(36)	50(48.5)	0.658(0.181-2.390)	
	Married	108(51.2)	41(39.8)	0.380(0.104-1.380)	
	Divorced	22(10.4)	7(6.8)	0.318(0.071-1.431)	
	Widow	5(2.4)	5(4.9)	1	
Occupation	Nongovernmental employee	46(21.8)	19(18.4)	0.592(0.291-1.203)	
	Governmental employ	38(18)	12(11.7)	0.453(0.204-1.006)	
	Housewife	16(7.6)	18(17.5)	1.613(0.711-3.6580	
	Student	29(13.7)	9(8.7)	0.445(0.184-1.074)	
	Business owner	39(18.5)	15(14.4)	0.551(0.259-1.174)	
	No job	43(20.4)	30(29.1)	1	
Residence	Urban	67(31.8)	40(38.8)	1.365(0.835-2.230)	
	Rural	144(68.2)	63(61.)	1	
Family monthly income	Under poverty line	23(10.9)	50(48.5)	7.711(4.316-13.777) *	4.44(1.34-14.672) **
	Above poverty line	188(89.1)	53(51.5)	1	
Age at the onset of illness	>20	26(12.3)	22(21.4)	2.339(1.058-5.174) *	0.372(0.036-3.866)
	21-40	138(65.4)	64(62.1)	1.282(0.684-2.405)	0.509(0.091-2.80)
	41-60	47(2.3)	17(16.5)	1	1
Co-morbidity	Yes	76(36)	53(51.5)	1.883(1.168-3.036) *	1.272(0.402-4.03)
	No	135(64)	50(48.5)	1	1
Family history of mental illness	Yes	14(6.6)	70(68)	29.84(15.09-59.037) *s	67.037(14.66-306.531) **
	No	197(93.4)	33(32)	1	1
Body part	Visible	121(57.3)	90(87.4)	5.149(2.709-9.78) *	5.594(1.331-23.51) **
	Other	90(42.7)	13(12.6)	1s	1
No of medications	One	48(22.7)	10(9.7)	0.365(0.176-0.756) *	0.56(0.72-4.358)
	>one	163(77.3)	93(90.3)	1	1
Self-image	Good	162(76.8)	12(11.7)	0.040(0.02-0.079) *	0.057(0.015-0.208) **
	Poor	49(23.2)	91(88.3)	1	1
Quality of life	Good	205(97.2)	70(68)	0.062(0.025-0.154) *	0.334(0.070-1.583)
	Poor	6(2.8)	33(32)	1	1
Perceived	Have no	141(66.8)	59(57.3)	0.666(0.410-1.080)	

stigma	Have	70(33.2)	44(42.7)	1	
Social support	Poor	50(23.7)	46(44.7)	4.140(1.568-10.932) *	5.415(0.374-78.465)
	Intermediate	134(63.7)	51(49.5)	1.713(0.668-4.391)	2.046(0.157-26.574)
	Strong	27(12.8)	6(5.8)	1	1
Substance use	Alcohol	30(14.2)	17(16.5)	1.238(0.644-2.380)	
	Cigarette	3(1.4)	2(3.5)	1.456(0.238-8.895)	
	Khat	12(5.7)	8(7.8)	1.456(0.577-3.709)	
	None	166(78.7)	76(73.8)	1	

5. DISCUSSION

In this study, the prevalence of depression among people with chronic skin disease was found to be 32.8%. These findings align with a cross-sectional study conducted in Korea, which reported a prevalence of 31%[31], and another study in Ethiopia, which reported a prevalence of 30%.[32] However, this prevalence is lower than that reported in India, where rates varied from 48.8% to 89%.[33] The discrepancies may stem from differences in study settings, measurement tools, and the populations studied. For instance, one study used the Beck Depression Inventory (BDI) and focused on individuals aged 13-50, who may be more concerned about their appearance compared to other age groups. Another study, also utilizing the BDI[32], had a small sample size and included only female participants, which may have influenced the higher rates of depression observed.

In contrast, studies reporting higher prevalence rates than the current study include those from Slovakia 37%[34], Pakistan 91%[35], and Korea 62%.[36] The study in Pakistan focused on individuals aged 13 to 30, demographic particularly sensitive to appearance-related issues, as this age group is often preoccupied with their looks and social acceptance. The Slovakian study used the BDI, while the Korean study focused on geriatric patients using the Geriatric Depression Scale.

Regarding gender differences, the likelihood of developing depression was higher among females than males, with male patients being 78.6% less likely to experience depression compared to females (AOR 0.184, 95% CI: 0.055-0.616). This finding is consistent with studies conducted in Brazil[37], India[38], China[39], and Nigeria.[40] The higher prevalence of depression among females may be attributed to greater self-consciousness about their appearance and the societal pressures they face, leading to increased stress, body dissatisfaction, and low self-esteem.[41] Additionally, societal expectations regarding household responsibilities and biological factors, such as hormonal fluctuations, may contribute to this disparity.

The study also indicated that individuals aged 18–27 had a 12 times higher likelihood of developing depression compared to those aged over 48. This is supported by studies in Brazil[37] and Nigeria[42], suggesting that younger individuals may be more sensitive to societal ideals of physical attractiveness. The pressure to conform to these ideals can lead to stress and depression when individuals feel they fall short.

Chronic skin disease patients living below the poverty line were found to be four times more likely to experience depression than those above it (AOR 4.44, 95% CI: 1.346-14.672). This finding aligns with studies conducted in India[43] and Brazil[37], where the high cost of treatment and the need for ongoing care exacerbate the vulnerability of poorer individuals to mental health issues.

Patients with visible body lesions were five times more likely to develop depression (AOR 5.594, 95% CI: 1.331-23.51) compared to those without visible lesions. This aligns with research from India[44] and Egypt[43], suggesting that visible skin conditions can lead to social anxiety and withdrawal due to concerns about Tertiary perception and negative body image.

Furthermore, patients with a family history of mental illness were found to be 67.037 times more likely to experience depression than those without such a history, a finding consistent with studies in Oman.[44] This may be attributed to genetic predispositions and the influence of biological factors related to depressive disorders.

Lastly, respondents with a positive self-image were 94.3% less likely to experience depression compared to those with a negative self-image. This finding is supported by studies conducted in Poland[45] and Ethiopia[13], indicating that a healthy self-image can significantly influence mental well-being.

6. Strengths and Limitations
6.1. Strengths
- The study utilized the PHQ-9, a locally validated tool, to assess depressive symptoms.
- The quantitative nature of the study allows the results to be generalized to a similar population.
- In addition to prevalence, the study evaluated the severity of depression.
- Most independent variables were assessed using standardized tools.

6.2. Limitations
- The small sample size and cross-sectional design may limit the validity of conclusions regarding causality.
- There is potential for interviewer bias and social desirability effects.
- The PHQ-9 is not a diagnostic tool

8. CONCLUSION

This study highlights the significant prevalence of depression among adults with chronic skin diseases, revealing a rate of 32.8%. Factors such as sex, age, family income, family history of depression, involvement of visible body parts, and self-image were found to be closely associated with depression. The findings align with previous studies from different regions, though variations in prevalence rates can be attributed to differences in demographics, measurement tools, and cultural contexts.

Notably, females were more likely to experience depression than males, reflecting societal pressures related to appearance and self-esteem. Additionally, younger individuals, particularly those aged 18–27, showed a heightened vulnerability to depression, likely due to the stress of conforming to societal ideals of beauty. Patients living below the poverty line and those with visible skin lesions were also at significantly increased risk.

The study underscores the importance of understanding the multifaceted nature of mental health challenges faced by individuals with chronic skin conditions. It calls for targeted interventions that address both the physical and psychological needs of these patients, emphasizing the need for comprehensive care strategies that consider socio-demographic and cultural factors.

9. Recommendations

- **Establish a multidisciplinary care team**: multidisciplinary care team that includes dermatologists, psychologists, and social workers to address the holistic needs of patients, and advocate for mental health policies that specifically address the needs of patients with chronic skin diseases
- **Targeted Interventions for High-Risk Groups**: Focus on developing targeted mental health programs for vulnerable populations, particularly young adults (ages 18–27) and women, who are at a higher risk of depression due to societal pressures and self-image concerns.
- **Education and Awareness Campaigns**: Implement educational campaigns aimed at reducing stigma associated with skin diseases and mental health issues. These campaigns should promote understanding of the psychological impact of visible skin conditions and encourage seeking help.
- **Training for Healthcare Providers**: Provide training for healthcare professionals on the psychological aspects of chronic skin diseases, enabling them to recognize signs of depression and offer appropriate referrals for mental health support.
- **Screening Programs:** Implement regular depression screening for patients with chronic skin diseases at the point of care.
- **Research on Longitudinal Outcomes**: Encourage further research to explore the long-term mental health outcomes of individuals with chronic skin diseases and the effectiveness of different intervention strategies.

By implementing these recommendations, healthcare systems can better address the complex interplay of physical and mental health challenges faced by patients with chronic skin diseases, ultimately improving their overall quality of life.

Acronyms and Abbreviations
AAU: Addis Ababa University; **ALERT:** All African Leprosy Tuberculosis Rehabilitation and Training center; **AD**: Atopic Dermatitis; **AOR**: Adjusted Odds Ratio; **BDI**: Beck Depression Inventory; **BIDI**: Body Image Disturbance; **COR**: Crude Odd Ratio; **DQOLI**: Dermatology Quality of Life Index; **HADS**: Hospital Anxiety Depression Scale; **LMIC**: Low- and Middle-Income Country; **MDD**: Major Depressive Disorder: **OPD**: Outpatient Department; **PHQ-9**: Patient Health Questioner-9; **PI**: Principal Investigator; **QOL**: Quality of Life; **SPSS**: Statistical Package for Social Science; **TASH:** TikurAnbesa Specialized Hospital.

Declarations
Ethics approval and consent to participate
Written ethical clearance was obtained from the Institutional Review Board (IRB) of Addis Ababa University (AAU), College of Health Sciences, School of Nursing and Midwifery. Written permission was obtained after providing a detailed explanation of the aim, procedure, potential risks, benefits, and participants' rights. *Informed consent was obtained* from all the study participants including illiterate and/ or their legal guardian (s). To respect the participants' dignity and maintain appropriate precautions against covid 19 the interview was conducted in a ventilated, lighted, clean, and quiet room attached to the unit. Confidentiality of information was maintained; no unauthorized person had access to the information and names or other identifiers were not recorded. The study was performed in accordance with the Declaration of Helsinki guidelines and regulations.

Consent for publication: Not-applicable.

Availability of data and materials
All the important data have been incorporated into the manuscript. If necessary, the corresponding author was contacted to obtain additional documents.

Authors' Contributions
This study is the result of joint research, and the contribution of each author is comparable to the others. The roles of each author are as follows:
1. **Kidist Gezahegn:** Conception, Design, Materials, Data Collection, data analysis, Literature Review and Writing.
2. **Teshome Habte:** Design, Supervision, Data Processing, Data Analysis, Interpretation and Critical Review.
3. **Zeleke Argaw:** Conception, Design, Supervision, Writing and Critical Review
4. Sr. Workinesh Sinishaw: Data Analysis, Supervision, Writing and Critical Review.

Finally, all authors read/reviewed and approved the final manuscript.

REFERENCES

1. David J. Gawkrodger MRA-J. Dermatology: An Illustrated Colour Text. Vol. 6, Churchill Livingstone/Elsevier, 2016; 141.
2. Hay RJ, Johns NE, Williams HC, Bolliger IW, Dellavalle RP, Margolis DJ, et al. The global burden of skin disease in 2010: An analysis of the prevalence and impact of skin conditions. J Invest Dermatol [Internet], 2014; 134(6): 1527–34. Available from: http://dx.doi.org/10.1038/jid.2013.446
3. Turkheimer E, Waldron M. Depression definition and DSM-5 Diagnostic criteria. Psychol Bull, 2019; 126(1): 21.
4. Depression and Other Common Mental Disorders: Global Health Estimates. Geneva World Heal Organ [Internet], 2017; 2(1): 10. Available from: https://creativecommons.org/ licenses/by-nc-sa/3.0/igo).
5. Bitew T. Prevalence and risk factors of depression in Ethiopia: a review. Ethiop J Health Sci., 2014; 24(2): 161–9.
6. Dalgard FJ, Bewley A, Evers AW, Gieler U, Lien L, Sampogna F, et al. Stigmatisation and body image impairment in dermatological patients: Protocol for an observational multicentre study in 16 European countries. BMJ Open, 2018; 8(12).
7. Kanji A. Perspective on Living With a Skin Condition and its Psychological Impact: A Survey. J Patient Exp., 2019; 6(1): 68–71.
8. Khan S M A H1, Shaikh M A K2 AMZ. Depression in Common Dermatological. KYAMC., 2012; 2(2): 164–71.
9. Dowlatshahi EA, Wakkee M, Arends LR, Nijsten T. The prevalence and odds of depressive symptoms and clinical depression in psoriasis patients: A systematic review and meta-analysis. J Invest Dermatol [Internet], 2014; 134(6): 1542–51. Available from: http://dx.doi.org/10.1038/jid.2013.508
10. Ahmed AE, Al-Dahmash AM, Al-Boqami QT, Al-Tebainawi YF. Depression, anxiety and stress among Saudi Arabian dermatology patients: Cross-sectional study. Sultan Qaboos Univ Med J., 2016; 16(2): e217–23.
11. Mavrogiorgou P, Mersmann C, Gerlach G, Herpertz S, Juckel G. Skin diseases in patients with primary psychiatric disorders. Psychiatry Investig, 2020; 17(2): 157–62.
12. Sorour, FadiaAbdelmoaty, AhmedBahary, Mohamed H.El Birqdar B. Psychiatric disorders associated with some chronic dermatologic diseases among a group of Egyptian dermatology outpatient clinic attendants. J Egypt Women's Dermatologic Soc [Internet], 2017; 14(1): 31–36. Available from: https://www.feandalucia.ccoo.es/docu/p5sd8462.pdf
13. Nurye Y. Depression and Associated Factors among People With Chronic Skin Disease in Boru Meda Hospital, Northeast Ethiopia. Dsp Institution's institutional Repos [Internet], 2021; 1(1): 20. Available from: http://ir.bdu.edu.et/handle/123456789/13300
14. Morrison I, Löken LS, Olausson H. The skin as a social organ. Exp Brain Res., 2010; 204(3): 305–14.
15. Haroon MZ, Alam A, Ullah I, Ali R, Taimur MF, Raza K. Quality Of Life And Depression Among Young Patients Suffering From Acne. J Ayub Med Coll Abbottabad, 2019; 31(3): 436–40.
16. Kumar A, Kumar K, Swarup P, Goel S, Tomar A. A study to find depression in patients attending dermatological OPD in a teaching hospital. J Fam Med Prim Care, 2016; 5(2): 449.
17. Attama C, Onyeama G, Igwe M, Uwakwe R. Psychiatric morbidity among subjects with leprosy and albinism in South east Nigeria: A comparative study. Ann Med Health Sci Res., 2015; 5(3): 197.
18. Mufaddel A, Abdelgani AE. Psychiatric Comorbidity in Patients with Psoriasis, Vitiligo, Acne, Eczema and Group of Patients with Miscellaneous Dermatological Diagnoses. Open J Psychiatry, 2014; 04(03): 168–75.
19. Kouris A, Platsidaki E, Kouskoukis C, Christodoulou C. Psychological parameters of psoriasis. Psychiatrike, 2017; 28(1): 54–9.

20. Anderson ZT, Dawson AD, Slominski AT, Harris ML. Current Insights Into the Role of Neuropeptide Y in Skin Physiology and Pathology. Front Endocrinol (Lausanne), 2022; 13(March): 10–3.

21. Amy Tikkanen. Addis Ababa | History, Population, & Facts | Britannica [Internet]. Encyclopedia Britannica. 2021 [cited 2023 Jan 30]. Available from: https://www.britannica.com/place/Addis-Ababa

22. UN World Urbanization Prospects. Addis Ababa Population 2020. 2020 [cited 2023 Jan 30]; 3–4. Available from: https://worldpopulationreview.com/world-cities/addis-ababa-population

23. AAU. Background of Tikur Anbessa Hospital | College of Health Sciences [Internet]. 2020 [cited 2023 Jan 30]. p. 1. Available from: http://www.aau.edu.et/chs/tikur-anbessa-specialized-hospital/background-of-tikur-anbessa-hospital/

24. ALERT (medical facility) - Wikipedia [Internet]. 2022 [cited 2023 Jan 30]. Available from: https://en.wikipedia.org/wiki/ALERT_(medical_facility)

25. Chowdhury S, Chakraborty P pratim. Universal health coverage - There is more to it than meets the eye. J Fam Med Prim Care [Internet], 2017; 6(2): 169–70. Available from: http://www.jfmpc.com/article.asp?issn=2249-4863;year=2017;volume=6;issue=1;spage=169;epage=170;aulast=Faizi

26. Abiola T, Udofia O, Zakari M. Psychometric Properties of the 3-Item Oslo Social Support Scale among Clinical Students of Bayero University Kano, Nigeria. Malaysian J Psychiatry [Internet], 2013; 22(2): 32–41. Available from: http://www.mjpsychiatry.org /index.php/mjp/article/view/264/194

27. Bowe W. Winning poster: Body image disturbance in patients with acne vulgaris. J Drugs Dermatology, 2010; 9(6): 725.

28. Behera PR, Palepu S, Sirka CS, Ranjan R, Pradhan S, Singh AK. Psychosocial Distress and Quality of Life Among Patients With a Chronic Skin Disorder at a Tertiary Care Hospital in Eastern India: A Hospital-Based Case-Control Study. Cureus, 2022; 14(10).

29. Gelaye B, Williams MA, Lemma S et al. Validity of the Patient Health Questionnaire-9 for Depression Screening and Diagnosis in East Africa. BMC Psychiatry, 2013; 21(2): 1–7.

30. Kocalevent RD, Berg L, Beutel ME, Hinz A, Zenger M, Härter M, et al. Social support in the general population: Standardization of the Oslo social support scale (OSSS-3). BMC Psychol, 2018; 6(1): 4–11.

31. J. Katon W. Epidemiology and treatment of depression in patients with chronic medical illness. Dialogues Clin Neurosci, 2011; 13(1): 7–23.

32. Nurye Y, Tareke M, Tadesse M, Shegaw M, Mekonen T Depression among people with chronic skin disease at Boru Meda Hospital in Northeast Ethiopia. PLoS ONE, 2023; 18(2): e0282022. Available at: https://doi.org/10.1371/journal.pone.0282022

33. APPGS. Mental health and skin disease: a report of the all-party parliamentary group on skin [Internet]. 2020 [cited 2023 Jan 28]. Available from: http://www.appgs.co.uk/

34. Bakar RS, Jaapar SZS, Azmi AF, Aun YC. Depression and anxiety among patients with psoriasis: A correlation with quality of life and associated factors. J Taibah Univ Med Sci [Internet], 2021; 16(4): 491–6. Available from: https://doi.org/10.1016/j.jtumed.2021.02.008

35. Meng R, Yu C, Liu N, He M, Lv J. Europe PMC Funders Group Association between Depression and All-cause and Cardiovascular Mortality in Chinese Adults. JAMA Netw Open [revista en Internet] 2020 [acceso 10 de julio de 2021]; 3(2): 2-22. JAMA Netw open [Internet], 2020; 3(2). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC721 2017/pdf/EMS86328.pdf

36. Gascón MRP, Ribeiro CM, Bueno LM de A, Benute GRG, Lucia MCS de, Rivitti EA, et al. Prevalence of depression and anxiety disorders in hospitalized patients at the dermatology clinical ward of a university hospital. An Bras Dermatol, 2012; 87(3): 403–7.

37. Pollo CF, Miot HA, Matos TD de S, de Souza JM, Jorge MFS, Miot LDB, et al. Prevalence and factors associated with depression and anxiety in patients with psoriasis. J Clin Nurs. 2021; 30(3–4): 572–80.

38. Bharati DR, Kumari S, Kumar S, Jaykar KC, Singh KK. Prevalence and Correlates of Unrecognised Depression Associated with Common Skin Morbidities among Attendees in a Teaching Hospital Dermatology Outpatient's Department. Natl J community Med., 2017; 8(5): 262–7.

39. van Dorst MMAR, van Netten WJ, Waltz MM, Pandey BD, Choudhary R, van Brakel WH. Depression and mental wellbeing in people affected by leprosy in southern Nepal. Glob Health Action [Internet], 2020; 13(1). Available from: https://doi.org/10.1080/ 16549716.2020.1815275

40. Silpa-Archa N, Pruksaeakanan C, Angkoolpakdeekul N, Chaiyabutr C, Kulthanan K, Ratta-Apha W, et al. Relationship between depression and quality of life among vitiligo patients: A self-assessment questionnaire-based study. Clin Cosmet Investig Dermatol, 2020; 13(2): 511–20.

41. Shroff HP, Calogero RM, Thompson JK. Assessment of body image. Handb Assess methods Eat Behav Weight Probl Meas theory, Res., 2009; 4(1): 115–36.

42. AlShahwan MA. The prevalence of anxiety and depression in Arab dermatology patients. J Cutan Med Surg, 2015; 19(3): 297–303.

43. Mohammed N, Mohd B, Devnath S. "To Evaluate the Level of Anxiety and Depression in Chronic

Dermatological Disorder Patient with Socio-Economic Status by Using Data Collection Form in a Tertiary Care Teaching Hospital." IJPRA, 2021; 6(5): 761–5.

44. Al Alawi M, Al Sinawi H, Al Qasabi AM, Al Mamari AM, Panchatcharam SM, Al-Adawi S. Prevalence and predictors of depressive symptoms among attendees of a tertiary care dermatology clinic in Muscat, Oman. Int J Dermatol [Internet], 2018 Mar 1 [cited 2023 Jan 27]; 57(3): 284–90. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/ijd.13912

45. Hrehorów E, Salomon J, Matusiak L, Reich A, Szepietowski JC. Patients with psoriasis feel stigmatized. Acta Derm Venereol, 2012; 92(1): 67–72.