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Dongola University

Faculty of Medicine and Health Sciences

Department of Community Medicine

RESEARCH PROPOSAL

Prevalence and Associated Factors of Social Anxiety Among Medical Students at the University of Dongola, Northern State, Sudan, 2026

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1. Introduction

Social anxiety , also known as social phobia, is characterized by persistent fear or anxiety in social or performance situations where a person may be observed, judged, or negatively evaluated by others. It may interfere with academic activities, social relationships, and participation in everyday situations [1,2].

Medical students may be particularly vulnerable to social anxiety because their education involves frequent social and performance-related situations. These include oral examinations, case presentations, bedside teaching, ward rounds, physical examinations performed under observation, and interactions with patients, colleagues, and senior healthcare professionals [2].

A global meta-analysis including 40,348 medical students from 69 studies reported an overall prevalence of anxiety of 33.8%, with higher rates reported in some regions, particularly the Middle East and Asia [3]. This finding reflects the burden of anxiety among medical students generally and should not be interpreted as the prevalence of social anxiety specifically.

In Sudan, a multi-institutional study conducted among medical students from six medical schools in Khartoum State reported a prevalence of social anxiety of 61.3% [4]. Similarly, a study among medical students at Sultan Qaboos University in Oman reported a prevalence of 64% and identified significant associations with age, gender, and phase of medical education [5].

Although these studies indicate that social anxiety may be an important concern among medical students, evidence from Sudanese medical students outside Khartoum State remains limited. To the best of our knowledge, no published study has specifically assessed social anxiety among medical students at Dongola University.

Global Burden

Anxiety disorders are among the most common mental health conditions worldwide and represent an important public health concern. The Global Burden of Disease Study 2019 estimated that anxiety disorders affected approximately 301 million people globally and accounted for a substantial burden of disability-adjusted life years [6]. The burden is particularly relevant among adolescents and young adults, who constitute a large proportion of university and medical students.

Recent evidence also indicates a substantial global burden of anxiety and depressive disorders, particularly following the COVID-19 pandemic, with important consequences for young people and populations in low- and middle-income countries [7]. These findings highlight the importance of assessing anxiety-related conditions among university students, including social anxiety among students enrolled in demanding academic programs such as medicine.

2. Problem Statement

Social anxiety may be an important but under-recognized mental health problem among medical students. Social anxiety disorder is a common and often chronic condition that typically begins by early adulthood and may increase the risk of subsequent depression and substance use disorders [1]. Medical education involves frequent social and performance-related situations, including patient interaction, case presentations, oral examinations, ward rounds, and evaluation by teachers and senior healthcare professionals, and substantial levels of social anxiety have been reported among medical students in the Middle East [5,8].

In Sudan, a study conducted among medical students from six medical schools in Khartoum State reported a social anxiety prevalence of 61.3% [4]. Social anxiety has also been investigated among medical and health science students in other African settings, including Ethiopia and Somalia [9-11]. However, there is limited evidence regarding social anxiety among medical students in other regions of Sudan.

To the best of our knowledge, no published study has specifically assessed the prevalence, severity, and associated factors of social anxiety among medical students at Dongola University. Social anxiety may interfere with students' participation in patient interactions, case presentations, oral examinations, and other academic or clinical activities, and may also affect their social functioning and quality of life [2].

In addition, since the 2023 conflict, Sudanese medical students have faced further stressors, including displacement and disruption of medical education. These circumstances may contribute to anxiety and other forms of psychological distress among medical students [14].

In the absence of local data, the magnitude of social anxiety and its associated factors among medical students at Dongola University remain unclear. Therefore, this study will assess the prevalence, severity, and associated factors of social anxiety among medical students at Dongola University.

3. Justification

Social anxiety is particularly relevant to medical students because medical education involves frequent social and performance-related activities, including oral examinations, clinical presentations, bedside teaching, patient interactions, and evaluation by faculty members. In higher education settings, social anxiety can inhibit students' participation in academic activities and presentations and may negatively affect their social functioning and quality of life [2]. It is also associated with an increased risk of subsequent mental health and substance-use problems [1].

Previous studies have reported considerable levels of social anxiety among medical students in different settings. In Sudan, a study conducted across six medical schools in Khartoum State reported a prevalence of 61.3% [4]. Studies in Oman and Saudi Arabia have also reported substantial levels of social anxiety among medical students [5,8], while studies from Ethiopia and Somalia have examined social anxiety among medical and health science students [9-11].

However, the prevalence and associated factors of social anxiety may differ according to geographical, cultural, educational, and demographic characteristics. Therefore, findings from other regions cannot necessarily be generalized to students at Dongola University. Up-to-date local data are particularly important in the current Sudanese context, where the 2023 conflict has disrupted medical education and displaced many students, creating additional challenges for medical education and student well-being [14].

There is currently limited evidence about social anxiety among medical students in Northern State and no published study specifically addressing this problem at Dongola University. This study will therefore provide local evidence on the prevalence, severity, and factors associated with social anxiety among medical students and may help inform appropriate student counseling, psychological support, and academic interventions.

4. Literature Review

Social anxiety (Snxiety (SA), also known as social phobia, is characterized by marked fear or anxiety in social or performance situations where an individual may be observed or evaluated by others. It may affect academic participation, interpersonal relationships, and quality of life [1,2]. Medical students may be particularly vulnerable because of frequent assessments, clinical presentations, patient interactions, and high academic expectations.

The prevalence of social anxiety varies across different populations and settings. Differences in study populations, cultural backgrounds, measurement tools, and definitions may contribute to variation in reported prevalence.

A global meta-analysis involving 40,348 medical students from 69 studies reported a high burden of anxiety among medical students [3]. However, this study assessed anxiety generally rather than social anxiety specifically.

Studies from Asia have reported social anxiety among university and medical students. A study among medical undergraduates in Ahmedabad, India, found that moderate social phobia was the most common severity category and that tobacco use, type of accommodation, socioeconomic class, and involvement in sports were significantly associated with the severity of social phobia [12]. A study among university students in Türkiye also reported associations between social anxiety and factors including female gender, family history of mental illness, academic failure, and physical activity [13].

Studies from the Middle East have also reported considerable levels of social anxiety among medical students. In Saudi Arabia, Al-Johani et al. conducted a large cross-sectional study among medical students and reported a prevalence of social anxiety of approximately 51% [8]. In Oman, a study among medical students at Sultan Qaboos University reported a prevalence of 64% and found significant associations with age, gender, and phase of medical education [5].

In Africa, studies among university and health science students have reported social anxiety and social phobia in different populations. A study conducted among undergraduate health science students in Gondar, Ethiopia, investigated the prevalence and correlates of social phobia [9]. Another study among undergraduate students of the College of Medicine and Health Sciences at Hawassa University, Ethiopia, investigated social anxiety disorder and associated factors [10]. More recently, a study among undergraduate medical students in Mogadishu, Somalia, investigated the distribution of social anxiety symptoms and associated factors [11]. These studies demonstrate that social anxiety is relevant to university and

medical students in African settings.

In Sudan, evidence on social anxiety among medical students remains limited. Suleiman et al. reported a prevalence of 61.3% among medical students from six medical schools in Khartoum State [4]. However, evidence from other regions of Sudan remains limited, particularly in Northern State.

Associated Factors of Social Anxiety

Previous studies suggest that social anxiety may be associated with a combination of socio-demographic, academic, family-related, and lifestyle factors. However, the strength and significance of these associations vary between populations [5,8-13].

Female gender has been reported as an associated factor in several studies. Other reported factors include age, academic year, academic performance, family history of mental illness, physical activity, tobacco use, type of accommodation, and socioeconomic class [5,12,13].

In Oman, social anxiety was significantly associated with age, gender, and phase of medical education [5]. In Ethiopia, female sex, first year of study, rural residence, and poor social support were significantly associated with social phobia [9]. The Somali study found several factors associated with social anxiety in bivariate analysis, while sex and physical activity remained independently associated after multivariable analysis [11].

These findings indicate that social anxiety is influenced by multiple factors and that associations may differ according to the population and educational setting. Therefore, local studies are needed to identify factors associated with social anxiety among medical students at Dongola University.

Research Gap

Although several studies have investigated social anxiety among medical and university students internationally and in some African countries, evidence from Sudan outside Khartoum State remains limited. To the best of our knowledge, no published study has specifically assessed the prevalence, severity, and associated factors of social anxiety among medical students at Dongola University.

The present study will therefore provide local evidence regarding the prevalence, severity, and associated factors of social anxiety among medical students at Dongola University.

5. Research Questions

What is the prevalence of social anxiety among medical students at Dongola University?

What is the distribution of social anxiety severity among affected students?

Which socio-demographic, academic, and other relevant factors are significantly associated with social anxiety in this population?

Research Hypotheses

Null hypothesis (H0): There is no significant association between social anxiety and selected socio-demographic, academic, and other relevant factors among medical students at Dongola University.

Alternative hypothesis (H1): There is a significant association between social anxiety and selected socio-demographic, academic, and other relevant factors among medical students at Dongola University.

6. Objectives

6.1 General Objective

To Study the prevalence and severity of social anxiety and identify its associated factors among medical students at Dongola University, Sudan, 2026.

6.2 Specific Objectives

1. To Study the prevalence of social anxiety among medical students at Dongola University.

2. To assess the severity distribution of social anxiety according to the predefined LSAS severity categories.

3. To determine the association between socio-demographic characteristics, including age, gender, academic year, marital status, and place of residence, and social anxiety.

4. To assess the association between academic and clinical factors, including anxiety related to oral examinations, case presentations, ward rounds, and interactions with patients and healthcare professionals, and social anxiety.

5. To identify factors independently associated with social anxiety among medical students using multivariable binary logistic regression analysis

7. Methodology

7.1 Study Design

An analytical cross-sectional study will be conducted to determine the prevalence of social anxiety and identify its associated factors among undergraduate medical students at Dongola University.

7.2 Study Area

The study will be conducted at the Faculty of Medicine, Dongola University, Northern State, Sudan.

7.3 Study Period

The study will be conducted over a period of three months, including questionnaire preparation and pre-testing, data collection, data entry and analysis, and report writing.

7.4 Study Population

The study population will include all undergraduate medical students from Levels 1–6 who are enrolled at the Faculty of Medicine, Dongola University, during the study period.

7.5 Inclusion and Exclusion Criteria

Inclusion criteria:

Regularly enrolled undergraduate medical students from Levels 1–6.

Students who are present during the data collection period.

Students who provide informed consent to participate.

Exclusion criteria:

Students who decline to participate.

Students who are unable to complete the questionnaire.

7.6 Sample Size and Sampling Technique

The sample size will be calculated using the single population proportion formula:

$n = Z^2P(1–P) / d^2$

Where:

Z = 1.96, corresponding to a 95% confidence level.

P = expected prevalence of social anxiety.

d = 0.05, representing a 5% margin of error.

Based on the most locally relevant available estimate, a study conducted among medical students from six medical schools in Khartoum State reported a prevalence of social anxiety of 61.3% [2]. Therefore, P will be set at 0.613.

Using the formula:

$n = (1.96)^2 \times 0.613 \times 0.387 / (0.05)^2 \approx 365$

Since the total number of eligible medical students at Dongola University is 712, a finite population correction will be applied:

$nf = n / (1 + n/N)$

$nf = 365 / (1 + 365/712) \approx 242$

A 10% allowance for non-response will then be added:

$242 \times 1.10 \approx 267$

Therefore, the minimum final sample size will be 267 students.

A stratified random sampling technique will be used to ensure adequate representation of students from all six academic levels. The required number of participants will be allocated proportionally according to the number of students in each

academic level. Within each level, students will be selected using simple random sampling from the official class roster.

7.7. Data Collection Tools

Data will be collected using a structured, self-administered questionnaire consisting of two main sections:

Socio-demographic, academic, and other relevant characteristics, including age, sex, academic level, residence, marital status, academic performance, and other selected factors.

The Liebowitz Social Anxiety Scale (LSAS), a 24-item instrument assessing fear/anxiety and avoidance in social interaction and performance situations [12,13]. Each item is scored from 0 to 3, giving a total score ranging from 0 to 144.

A cut-off score of ≥30 will be used to indicate the presence of clinically significant social anxiety [13], with severity further classified as mild (30–40), moderate (41–70), marked/severe (71–90), and very severe (>90), consistent with severity bands reported in prior LSAS-based studies [3]. The LSAS has demonstrated good internal consistency and validity in both clinical and student populations, with Cronbach's alpha typically exceeding 0.80 in previous validation studies [13]. The questionnaire will be administered in English, the official language of instruction at the Faculty of Medicine, Dongola University; if a validated Arabic translation of the LSAS is identified and adopted prior to data collection, it will be offered as an alternative to accommodate students who prefer to complete the questionnaire in Arabic.

7.8 Data Collection Procedure

After obtaining ethical approval and institutional permission, trained data collectors will administer the questionnaires during scheduled non-examination academic sessions.

Students will receive a brief explanation of the study purpose, procedures, voluntary nature of participation, and confidentiality measures before completing the questionnaire.

Questionnaires will be completed anonymously and returned directly to the data collectors. Participants will not be required to provide their names or student identification numbers.

Completed questionnaires will be checked for completeness. Questionnaires with substantial missing information will be excluded from the final analysis, while minor missing data will be handled using an appropriate statistical method.

7.9 Study Variables

Dependent variable:

Social anxiety status, based on the predefined LSAS cut-off.

Independent variables:

Age

Sex

Academic level/year

Residence

Marital status

Academic performance

Family history of mental illness

Chronic disease

Socioeconomic status

Smoking status

Physical activity

Sleep quality

Perceived social support

Academic and situational factors, including fear of oral examinations, case presentations, and ward rounds..

7.10 Data Analysis

Data will be entered, coded, cleaned, and analyzed using IBM SPSS Statistics version 26.0 or later. Data will first be checked for completeness, consistency, and outliers. Continuous variables will be assessed for normality and summarized using means and standard deviations or medians and interquartile ranges, as appropriate. Categorical variables will be presented

as frequencies and percentages.

For Objective 1, the prevalence of social anxiety will be calculated as the proportion of students meeting the predefined LSAS cut-off, with a corresponding 95% confidence interval (95% CI).

For Objective 2, the severity of social anxiety will be described according to the predefined LSAS severity categories and presented as frequencies and percentages.

For Objectives 3 and 4, bivariate analyses will be conducted to assess the association between social anxiety and socio-demographic, academic, and clinical/situational factors. The Chi-square test or Fisher's exact test will be used for categorical variables, as appropriate. For continuous variables, the independent-samples t-test or Mann–Whitney U test will be used according to the distribution of the data.

For Objective 5, variables with a p-value<0.20 in the bivariate analysis, together with theoretically important potential confounders, will be considered for inclusion in a multivariable binary logistic regression model. Social anxiety status (present/absent), based on the predefined LSAS cut-off, will be the dependent variable. Adjusted odds ratios (AORs), 95% confidence intervals, and p-values will be reported for factors independently associated with social anxiety.

Potential multicollinearity among independent variables will be assessed before fitting the final model, and model fit will be evaluated using an appropriate goodness-of-fit assessment. A p-value<0.05 will be considered statistically significant in the final multivariable model.

7.11 Operational Definitions

Social anxiety: Social anxiety will be defined as a total LSAS score of ≥30, the cut-off recommended for screening for social anxiety disorder [13].

Severity of social anxiety: Severity will be classified according to the validated LSAS scoring categories used in the selected scoring reference. Participants scoring below the predefined cut-off will be classified as not having clinically significant social anxiety symptoms.

7.12 Ethical Considerations

- Ethical approval will be obtained from Faculty of Medicine, University of Dongola, and permission will be obtained from the Ministry of Health and relevant authorities.
- Participation will be voluntary, with the right to withdraw at any time without academic consequences.
- No identifying information will be collected, and all data will be kept confidential and accessible only to the research team.
- Electronic data will be password-protected, and paper questionnaires will be securely stored and destroyed after data verification.
- Participants who screen positive for significant social anxiety will be provided with information about available mental health services and offered referral when appropriate.

8. Work Plan

9. Estimated Budget

10. Reference

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Activity	Sep 2026	Oct 2026	Nov 2026	Dec 2026
Proposal writing and presentation and	✔■			
Training of data collectors and questionnaire pre-testing		✔■		
Data collection		✔■		

Activity	Sep 2026	Oct 2026	Nov 2026	Dec 2026
Data entry and analysis			✔■	
Report writing and submission				✔■

Item	Estimated Cost (SDG)
Transport	200,000
Printing and stationery	150,000
Internet and communication	100,000
Data analysis	200,000
Contingency	100,000
Total	750,000