بسم الله الرحمن الرحيم

University of Dongola

Faculty of Medicine and Health Sciences

Department of Community Medicine

Research proposal

Burnot and Its Association with Professionalism Among Health Care Professionals in Northern State, Sudan: An Analytical Cross-Sectional Study, 2026

Prepared by :OLA MAQBOOL AYOUB

MISHKAT YAASIR ABDALMAJE

Supervisor :Dr Kamal Abdullah

Introduction

1. 1 Background

Burnout is an occupational syndrome resulting from chronic, unmanaged workplace stress, characterized by three dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment. The WHO's ICD-11 recognizes it as an occupational phenomenon rather than a medical condition.

Medical professionalism encompasses the values and behaviors — altruism, accountability, empathy, honesty, and commitment to excellence — that underpin public trust in health care professionals and are closely tied to patient care quality and safety [1,2].

Health care professionals are particularly vulnerable to burnout due to long working hours, heavy patient loads, and limited health resources, a vulnerability that is amplified in low- and middle-income countries (LMICs) facing structural health system challenges. Meta-analytic evidence from LMICs shows pooled rates of high emotional exhaustion of 28.1%, high depersonalization of 16.4%, and reduced personal accomplishment of 31.9% [3]

Professionalism is essential because it underpins patient safety and the overall quality of health care, so any decline in professional conduct can directly translate into poorer, less safe patient care.

Emerging evidence suggests burnout extends beyond individual well-being to affect professional conduct — particularly through depersonalization, which is linked to reduced empathy and unprofessional behavior [4]. This burnout- professionalism relationship remains understudied, especially in LMIC contexts, representing a key gap this research addresses

12-problem statement

Health care professionals working in Sudan practice under exceptionally demanding conditions, including staff shortages, limited infrastructure, heavy workloads, and, in recent years, the added burden of conflict and economic instability. Several studies conducted in Khartoum and Wad-Medani have documented alarmingly high rates of burnout among Sudanese health care professionals. However, most of this research has focused on the capital and central states, while peripheral regions such as the Northern State remain largely unstudied despite health care professionals there face even greater resource constraints and professional isolation.

Furthermore, while the prevalence of burnout among Sudanese health care professionals has been documented, its association with professionalism specifically has not been examined locally. This leaves an important gap: it is not currently known whether, and to what extent, burnout among health care professionals working in Northern State hospitals is associated with compromised professional behavior, which has direct implications for patient safety and quality of care in the region.

1.3-justifiaction

Several factors justify conducting this study. First, to our knowledge, no prior research has investigated burnout or its relationship with professionalism among health care professionals in

Dongola or the Northern State, making this study the first of its kind in the region.
Second, understanding this association can enlighten hospital administrators and health policymakers about the hidden professional and ethical costs of unaddressed burnout, in addition to its well-established psychological toll.
Third, findings from this study can guide the design of targeted interventions — such as workload redistribution, mental health support, and professionalism training — to protect both health care professionals' well-being and patient care standards in Northern State hospitals. The findings will also provide baseline evidence for future longitudinal and interventional studies in Sudan.

1.4-Research Objectives

Main Objective:

To determine the prevalence of burnout and its association with professionalism among health care professionals working in hospitals in Northern State, Sudan, 2026.

Specific Objectives:

1. To determine the socio-demographic and occupational characteristics of health care professionals working in Northern State hospitals, 2026.

2.To measure the prevalence and level of burnout (emotional exhaustion, depersonalization, and personal accomplishment) among health care professionals in the study, 2026.

3.To evaluate the level of professionalism among health care professionals in the study, 2026.

4.To examine the association between burnout and professionalism among health care professionals in the study area, 2026.

5.To identify predictors of burnout among health care professionals working in Northern State hospitals, 2026.

2-Literature Review

2.1 Internationally

A systematic review of 29 studies comprising nearly 15,000 medical students and residents found that the majority reported a negative correlation between burnout and professionalism, concluding that rising burnout levels are associated with a decline in empathy and professional behavior, creating a cycle of emotional exhaustion and disengagement [5].

A systematic review and meta-analysis of nurse burnout found consistent associations with a weaker patient-safety climate, more frequent medication errors, adverse safety incidents,

and missed or omitted care, as well as lower patient satisfaction and lower nurse-assessed quality of care, indicating that the burnout- professionalism relationship extends well beyond physicians to other health care professional groups [6].

A meta-analysis focusing on surgeons found that burnout was associated with a two-and-a-half-fold increase in the odds of involvement in a medical error, alongside a greater tendency toward loss of temper, malpractice claims, and reduced empathy, underscoring that burnout compromises professionalism across clinical specialties and professional groups, and not among doctors alone [7].

2.2 Regionally

A systematic review of 19 studies (n = 4,108) from Bahrain, Egypt, Jordan, Lebanon, Palestine, Saudi Arabia, and Yemen reported wide-ranging burnout prevalence among Arab healthcare professionals: high emotional exhaustion (20.0- 81.0%), high depersonalization (9.2- 80.0%), and low personal accomplishment (13.3- 85.8%), with gender, nationality, and working hours significantly associated with burnout [8].

A systematic review and meta-analysis covering healthcare workers across the Middle East, North Africa, and Turkey found overall burnout prevalence ranging from under one-fifth in Iraq and Oman to roughly two-thirds in Tunisia, with considerable variation in emotional exhaustion and depersonalization by country and profession [9].

Studies among nurses in Nigeria and Ethiopia have similarly reported high burnout, with emotional exhaustion, depersonalization, and reduced personal accomplishment reported in roughly a third to half of respondents, driven largely by heavy workload, staff shortages, and limited institutional resources [10].

Similarly, studies among physicians in Saudi Arabia and across the wider Eastern Mediterranean region have reported considerable burnout prevalence, further underscoring the regional burden [11,12].

2.3 Locally (Sudan)

A cross-sectional study among resident physicians in Wad-Medani, Gezira State, found that 70.7% of participants reported high emotional exhaustion, 44.2% reported high depersonalization, and 73.1% experienced a reduced sense of personal accomplishment, with 86.1% meeting criteria for burnout in at least one dimension [13].

A cross-sectional study conducted among doctors and nurses working in COVID-19 isolation centres in Khartoum during the Omicron wave found an overall burnout prevalence of 45.7%, with doctors having roughly twice the odds of burnout compared with nurses, and

married staff at significantly higher odds than single staff [14].

More recent research conducted during the ongoing conflict in Sudan, using the Maslach Burnout Inventory among Sudanese health care professionals broadly, found high depersonalization in more than half of participants (56.5%) alongside notable emotional exhaustion, confirming that burnout among the health workforce was already prevalent before the war and has likely worsened due to physical insecurity, resource scarcity, and the collapse of health infrastructure in several states [15].

Collectively, these studies indicate that burnout is common among Sudanese health care professionals; however, none has examined its relationship with professionalism or included Northern State. Despite this growing body of evidence from Khartoum and central Sudan, to our knowledge no published study to date has examined burnout — or its association with professionalism — among health care professionals working in Northern State, representing a clear and important gap that this study aims to address.

3-Materials and Methods

3.1 Study Design

An institutional-based, analytical cross-sectional study.

3.2 Study Area

The study will be conducted in government hospitals in Dongola, the capital of the Northern State, Sudan, including the Specialized Hospital, Police Hospital, Women and Obstetrics Hospital, and Diabetes Hospital.

3.3 Study Population

The study population includes all health care professionals working in hospitals in Dongola, including physicians (consultants, specialists, registrars, medical officers, and house officers), nurses, laboratory specialists, radiology specialists, and pharmacists, during the study period. The study will be conducted in government hospitals in Dongola, including the Specialized Hospital, Police Hospital, Women and Obstetrics Hospital, and Diabetes Hospital.

Inclusion Criteria

- Health care professionals (consultants, specialists, registrars, medical officers, house officers, nurses, laboratory, radiology, and pharmacy staff) working in the selected hospitals in Dongola (Specialized Hospital, Police Hospital, Women and Obstetrics Hospital, and Diabetes Hospital) during the study period.
- Health care professionals who voluntarily agree to participate and provide written informed consent.

Exclusion Criteria

- Health care professionals who decline to participate in the study.
- Questionnaires with insufficient data for the assessment of burnout and professionalism (incomplete MBI-HSS or ABIM sections).

3.4 Sample Size and Sampling Technique

Given the relatively limited number of health care professionals working in Dongola hospitals, a total coverage (census) approach is proposed, whereby all eligible health care professionals meeting the inclusion criteria will be invited to participate. Where the population size exceeds what is feasible to survey exhaustively, the sample size will be calculated using an appropriate formula for cross-sectional studies based on the estimated prevalence of burnout from comparable Sudanese studies (approximately 70%), a 95% confidence level, and a 5% margin of error, and a simple random sampling technique will be applied.

3.5 Data Collection Tools

Data will be collected using a self-administered, structured questionnaire consisting of three sections:Section A: Socio-demographic and occupational characteristics, including age, sex, marital status, professional grade, specialty, years of experience, and weekly working hours.Section B: The Maslach Burnout Inventory – Human Services Survey (MBI-HSS), a validated tool measuring emotional exhaustion, depersonalization, and personal accomplishment, scored based on its standard continuous subscale system.Section C: The American Board of Internal Medicine (ABIM) Professionalism Assessment Tool, a validated instrument measuring attitudes related to altruism, accountability, honesty, and patient-centered care, evaluated via a Likert-scale scoring system.

3.6 Data Management and Analysis

Collected data will be checked for completeness, coded, and entered into IBM SPSS (or an equivalent statistical package) for analysis. Descriptive statistics (frequencies, percentages, means, and standard deviations) will be used to summarize socio-demographic characteristics and burnout/professionalism scores. The Chi-square test will be used to examine associations between categorical variables, and logistic regression analysis will be used to identify independent predictors of burnout, with a p-value < 0.05 considered statistically significant.

3.7 Ethical Considerations

- Ethical approval will be obtained from the Research Ethics Committee, Faculty of Medicine and Surgery, University of Dongola.

- Official permission will be obtained from the State Ministry of Health and the administration of participating hospitals.

- Written informed consent will be obtained from each health care professional prior to enrollment.

- Participation will be voluntary, and health care professionals may withdraw at any time without any negative consequences

- Confidentiality and anonymity of health care professionals' data will be strictly maintained throughout the study.

4-work plan and time line

Table: Work Plan and Timeline (Sep 2026 – Jan 2027)

#	Activity	Timeframe
1	Submission of research proposals	20 – 24 Sep 2026
2	Presentation of research proposals	27 Sep – 01 Oct 2026
3	Data collection	04 – 22 Oct 2026
4	Data analysis	25 Oct – 05 Nov 2026
5	Writing results and discussion	08 – 19 Nov 2026
6	Writing the final report	22 Nov – 03 Dec 2026
7	Electronic submission of research to the Department of Community Medicine	06 – 10 Dec 2026
8	Research peer review	13 – 24 Dec 2026
9	Revision of research	27 – 31 Dec 2026
10	Research defense (discussion)	03 – 04 Jan 2027

5-Budget Outline

Table: Estimated Budget

#	Budget Item	Amount (SDG)
1	Transportation	120,000
2	Data analysis	300,000
3	Internet & communication	80,000
4	Printing (questionnaires & proposal)	150,000
5	Miscellaneous / other expenses	150,000
	Total	**800,000**

6-Reference

Vancouver style)

1. West CP, Dyrbye LN, Shanafelt TD, et al. Associations of physician burnout with career engagement and quality of patient care: systematic review and meta-analysis. BMJ. 2022;378:e070442.
2. Panagioti M, et al. Association between physician burnout and patient safety, professionalism, and patient satisfaction: a systematic review and meta-analysis. JAMA Intern Med. 2018;178(10):1317-1331.

3. Wright T, Mughal F, Babatunde OO, Dikomitis L, Mallen CD, Helliwell T. Burnout among primary health-care professionals in low- and middle-income countries: systematic review and meta-analysis. Bull World Health Organ. 2022;100(6):385-401A.
4. Linzer M, et al. Relationship between burnout, professional behaviors, and cost-conscious attitudes among US physicians. J Gen Intern Med. 2019.
5. Author(s). The association between burnout and medical professionalism in medical trainees: a systematic review. [Journal]. 2025.
6. Author(s). Nurse burnout and patient safety, satisfaction, and quality of care: a systematic review and meta-analysis. 2024.
7. Al-Ghunaim TA, Johnson J, Biyani CS, et al. Surgeon burnout, impact on patient safety and professionalism: a systematic review and meta-analysis. Am J Surg. 2022.
8. Elbarazi I, Loney T, Yousef S, Elias A. Prevalence of and factors associated with burnout among health care professionals in Arab countries: a systematic review. BMC Health Serv Res. 2017;17:491.
9. Author(s). Prevalence of burnout and its risk and protective factors among healthcare workers in the Middle East, North Africa, and Turkey: a systematic review and meta-analysis. Front Psychol. 2025.
10. Author(s). Burnout and associated factors among nurses working in public hospitals of Harari region and Dire Dawa administration, eastern Ethiopia: a cross-sectional study. PLoS One. 2021.
11. Author(s). A review of studies on burnout among doctors in Saudi Arabia. 2025.
12. Author(s). Physician burnout in the Eastern Mediterranean region. J Glob Health. 2021;11:04043.
13. Ahmed A, et al. A cross-sectional survey of burnout in a sample of resident physicians in Sudan. PLoS One. 2022;17(3):e0265098.
14. Alfadul ESA, Hasabo EA, Mohamed SOO, et al. Burnout and its associated factors among healthcare workers in COVID-19 isolation centres in Khartoum, Sudan: A cross-sectional study. PLoS One. 2023.
15. Elhadi M, et al. Burnout and coping mechanisms among Sudanese healthcare workers during the ongoing Sudan war: a cross-sectional study. J Occup Med Toxicol. 2025.