

BMJ Open Compassion fatigue and coping strategies among healthcare providers in Central Uganda: a facility-based cross-sectional study

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ABSTRACT

Objective This study aimed to investigate the relationship between coping strategies and compassion fatigue among healthcare professionals in Central Uganda.

Design A facility-based cross-sectional study conducted between June and July 2023. Three tools were used for data collection: a socio-demographic survey, the Professional Quality of Life Scale (ProQOL-5) and the Brief-Coping, Orientation to Problem Experienced tool. Participants were asked to recall experiences from the previous 30 days.

Setting The study was conducted in five prominent hospitals in Central Uganda.

Participants A total of 548 healthcare providers, including 191 physicians, 256 nurses and 103 technicians.

Main outcome measures Compassion fatigue scores.

Results Most participants were under 29 years old (50.9%) and women (62.0%). High levels of compassion fatigue were reported by 37.8% of participants. Active coping, self-distraction and denial were associated with higher compassion fatigue, while informational support, positive reframing and venting were linked to lower fatigue levels. Seeking social support effectively reduced compassion fatigue.

Conclusion The findings highlight significant compassion fatigue among healthcare providers in Central Uganda, impacting their well-being and patient care. Coping strategies like active problem-solving and social support are promising in mitigating compassion fatigue. Interventions should focus on reducing self-distraction, enhancing problem-solving skills and fostering supportive work environments to improve healthcare workers' well-being and patient care quality.

INTRODUCTION

Compassion fatigue, originally associated with nursing, is now recognised as a critical issue across the healthcare sector. It refers to the emotional and physical exhaustion experienced by healthcare providers due to prolonged exposure to patients' suffering, trauma and distress.^{1 2} Given the demanding nature of healthcare roles, professionals face an increased risk of developing compassion

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Uses validated tools, enhancing reliability and validity of the data.
- ⇒ Identifies specific coping strategies linked to different levels of compassion fatigue.
- ⇒ Relies on a single 10-item subscale, which may not fully capture the multidimensional nature of compassion fatigue (emotional, physical, cognitive aspects).
- ⇒ Cross-sectional design limits the ability to establish causality.
- ⇒ Self-reported data may introduce bias.

fatigue, particularly in resource-limited regions such as sub-Saharan Africa, where high patient loads, understaffing and limited resources exacerbate the issue.³ A systematic review found the pooled overall prevalence of compassion fatigue in sub-Saharan Africa to be 70%, with the highest prevalence in Eastern Africa at 74%, compared with 64% in Southern Africa.⁴ Despite ongoing mitigation efforts, its prevalence remains a serious concern.⁵ This phenomenon comprises two key components: burnout and secondary traumatic stress, which can occur either simultaneously or independently.⁶ Burnout is characterised by emotional exhaustion, depersonalisation and diminished professional fulfilment due to prolonged occupational stress, while secondary traumatic stress arises from exposure to trauma and fear in the workplace.⁷

The symptoms of compassion fatigue not only impair job performance but also contribute to burnout and turnover within the healthcare workforce.^{4 8–10} Moreover, compassion fatigue can erode empathy and compassion, thereby undermining the essential patient-provider relationship crucial for effective healthcare delivery.^{3 10 11} Compassion fatigue is characterised by a reduced sense of

enjoyment or satisfaction in work, increased absenteeism, emotional exhaustion and impaired decision-making when caring for patients.¹² Common care contexts associated with compassion fatigue include emergency departments, oncology units, intensive care units, palliative care and mental health settings. These environments often expose providers to repeated cases of trauma, high patient acuity and frequent end-of-life care, all of which intensify emotional demands.⁷ The detrimental effects of caregiving are exacerbated by the severity of the traumatic material to which the caregiver is exposed, especially in instances of direct contact with victims, particularly when the exposure involves graphic or emotionally intense content.⁴ In addition, broader structural and organisational factors such as inadequate staffing, weak referral systems, heavy workloads, lack of psychosocial support and systemic inefficiencies also contribute to compassion fatigue, especially in overburdened health systems such as Uganda's.^{4 8 10} Thus, understanding the relationship between compassion fatigue and coping strategies is paramount for addressing this pervasive issue.

Healthcare workers experiencing compassion fatigue face risks such as decreased job performance, burnout, turnover and erosion of empathy and compassion, all of which undermine effective healthcare delivery.^{1 7} While there is a significant body of research on compassion fatigue and coping strategies in various global contexts, these studies often focus on high-income countries^{13 14} or non-high-income nations¹⁵ with different healthcare systems and cultural dynamics. The specific stressors, resource limitations and socio-cultural factors in Central Uganda may influence the effectiveness of coping strategies differently, making it imperative to investigate this context specifically. Additionally, existing research in Uganda primarily addresses the prevalence and predictors of compassion fatigue, focusing mainly on nurses,^{3 16} rather than other healthcare professionals. Furthermore, limited engagement with the multidimensional drivers of compassion fatigue such as institutional culture, clinician-patient dynamics, health infrastructure challenges and cumulative exposure to suffering has narrowed understanding of the phenomenon in Ugandan contexts.¹⁶ Furthermore, there is a notable research gap in the relationship between compassion fatigue and coping strategies in sub-Saharan Africa. Exploring this within Uganda's socio-cultural framework is essential to develop targeted interventions and support systems tailored to the unique challenges faced by healthcare providers in this region. Through this study, we aim to investigate compassion fatigue and coping strategies among healthcare providers in Central Uganda.

METHODS

Study design and settings

A cross-sectional study was conducted in five healthcare facilities across Central Uganda between June and July 2023. The study was carried out in a range of healthcare

settings—both public and private—encompassing urban and rural areas, including the capital city, Kampala. Central Uganda's healthcare workforce is diverse, comprising professionals from various cadres working in both government and private institutions, which together play a critical role in service delivery. The setting was selected due to the high prevalence of compassion fatigue among healthcare workers in Central Uganda.¹⁶ Central Uganda comprises over 50 hospitals, including national referral hospitals, regional referral hospitals, general hospitals and private not-for-profit facilities. The five hospitals included in this study were selected purposively to represent this diversity in facility type, size and geographical location. These hospitals serve a combined catchment population of approximately 3 million people and vary in bed capacity from 100 to over 500 beds. The selection of hospitals was based on a purposive sampling approach to ensure inclusion of diverse facility types, including referral, general and private hospitals, reflecting a range of service levels and workforce compositions.

Study participants

The study employed a multistage sampling approach. Stage 1 involved cluster sampling at the facility level, selecting five prominent hospitals in Central Uganda to represent a diverse range of healthcare settings, including both public and private institutions. Stage 2 used a stratified random sampling technique based on healthcare provider job categories including physicians, nurses and technicians to ensure proportional representation within each facility. To determine the proportion of each job role to recruit, staffing records from each hospital were reviewed. Based on the distribution of the eligible population, the sample was proportionally allocated as follows: 191 physicians, 256 nurses and 103 technicians. These proportions guided participant selection within each facility, ensuring that the final sample accurately reflected the overall distribution of job categories across the hospitals. Eligible participants were practicing healthcare providers involved in direct patient care, with at least 1 year of experience. Those on extended leave or in administrative-only roles were excluded. The sampling frame for each facility included updated lists of eligible healthcare workers categorised by job roles, which guided the stratified random selection. The final sample size of 550 was determined by calculating a minimum required sample of 384 using the single population proportion formula (at a 95% CI, 5% margin of error and an assumed population proportion of 50%),¹⁴ and then increasing it to 550 to enhance representativeness across subgroups and account for potential variability across study sites.

Patient and public involvement

Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of our research.

Study instruments

Three tools were used for data collection: a socio-demographic survey, the Professional Quality of Life (ProQOL-5) in English, and the Brief-COPE (Coping, Orientation to Problem Experienced). Both ProQOL-5 and Brief-COPE have been previously used in studies conducted in Uganda.^{3 16}

The Brief-COPE¹⁷ is a widely used 28-item questionnaire that assesses coping strategies. The questionnaire consists of 14 subscales, each with 2 items.¹⁷ These 14 subscales cover a range of coping strategies, including active coping ($\alpha=0.92$), use of informational support ($\alpha=0.90$), positive reframing ($\alpha=0.90$), planning ($\alpha=0.89$), emotional support ($\alpha=0.89$), venting ($\alpha=0.89$), humour ($\alpha=0.89$), acceptance ($\alpha=0.89$), religion ($\alpha=0.89$), self-blame ($\alpha=0.91$), self-distraction ($\alpha=0.91$), denial ($\alpha=0.90$), substance use ($\alpha=0.92$) and behaviour disengagement ($\alpha=0.91$). Each item is rated on a 4-point Likert scale, ranging from 1 (I have not been doing this at all) to 4 (I have been doing this a lot). The scale anchors for the items are as follows: 0='Not at all', 1='Rarely', 2='Sometimes' and 3='Often'. The overall reliability of the Brief-COPE tool in this study was 0.79.

Compassion fatigue was assessed using the secondary traumatic stress (STS) scale of the professional ProQOL-5. The ProQOL-5 comprises 30 items divided into 3 subscales: burnout, secondary traumatic stress and compassion satisfaction, with each subscale containing 10 items.¹⁸ Scores on the STS subscale were used to determine levels of compassion fatigue: scores of 22 or below indicate a low level, 23–41 represent an average level and scores of 42 or higher reflect a high level of compassion fatigue.¹⁹ In this study, the ProQOL-5 demonstrated strong internal consistency, with a Cronbach's alpha of 0.89.

Procedure

After obtaining ethical approval, five research assistants with research experience underwent training on data collection tools, study objectives and ethical considerations. Outreach was made to officers from various health facilities in Central Uganda, including public and private, rural and urban establishments, to inform their healthcare staff about the study and request collaboration. The surveys in our study were administered in person to the healthcare providers in Central Uganda. Participants were provided with printed copies of the questionnaire and were guided on how to complete it during face-to-face sessions. Participants were briefed on the study's objectives and provided with a self-administered questionnaire. A trained psychologist was available for assistance if needed. On average, the survey took approximately 26 min to complete.

Data analysis

In our study, data analysis began with data entry and initial cleaning in Microsoft Excel 2013, followed by formal analysis in Stata V.17. We employed descriptive

Table 1 Demographic characteristics of respondents (n=548)

Variable	Frequency (n)	Percentage (%)
Age		
<29 years	279	50.9
29–38 years	193	35.2
>39 years	76	13.9
Sex		
Female	340	62.0
Male	208	38.0
Marital relationship		
Yes	287	52.4
No	261	47.6
Working experience		
<5 years	242	44.2
5–10 years	140	25.6
>10 years	166	30.3
Job category		
Physician	190	34.7
Nurse	255	46.5
Technician	103	18.8

statistics to summarise all variables, reporting frequencies and proportions for categorical variables and means with SD for continuous variables. For bivariate analysis, we performed Pearson product-moment correlation for variables with normally distributed residuals and Spearman rank-order correlation for those with skewed data, recognising that skewness alone should not dictate the use of non-parametric tests. Our decision to use these methods was also based on the need to handle non-linear relationships and heteroscedasticity. Specifically, we evaluated normality using Q-Q plots and skewness tests, identifying which variables met these criteria and reporting the results accordingly. The correlation analysis results, including details on normally distributed and skewed variables, are now clearly stated in the manuscript. We then used multiple linear regression to explore the relationships between coping strategies and compassion fatigue, incorporating predictors with a bivariate p value<0.2 to control for confounding and interaction effects,²⁰ ensuring robust results by verifying assumptions such as linearity, multicollinearity, homoscedasticity and the absence of outliers.

RESULTS

Demographic characteristics of the respondents

This study encompassed 548 healthcare providers, resulting in a robust response rate of 99.6%. As outlined in [table 1](#), the majority of participants were under the age of 29 (279, 50.9%). A significant portion of the participants identified as women (340, 62.0%). Regarding

Table 2 Level of compassion fatigue among healthcare providers (n=548)

Compassion fatigue	Frequency (n)	Percentage (%)	Mean (SD) compassion fatigue
Low	161	29.4	32.35 ($\pm$ 11.16)
Average	180	32.8	
High	207	37.8	
Total	548	100	

marital status, 287 participants (52.4%) reported being in a marital relationship. Additionally, a substantial number of participants had less than 5 years of work experience (242, 44.2%). Concerning job categories, nurses constituted the largest group with 255 participants (46.5%), followed by physicians (190, 34.7%) and technicians (103, 18.8%).

Level of compassion fatigue

Table 2 illustrates that the majority of participants 207 (37.8%) experienced a high level of compassion fatigue, while only 161 (29.4%) had a low level. The tool demonstrated a satisfactory scale reliability coefficient of 0.93. The mean compassion fatigue score was 32.35 with an SD of 11.16.

Coping Strategies for compassion fatigue

As illustrated in table 3, the 28 items of the Brief-COPE tool were categorised into 14 subscales, as recommended. In the Brief-COPE measure, problem-solving coping strategies include active coping, planning and instrumental support-seeking, which involve directly addressing stressors or seeking solutions. Social support coping strategies encompass seeking emotional, informational and instrumental support—emphasising assistance, advice

or comfort from others. Avoidance coping strategies include self-distraction, denial and behavioural disengagement, which focus on evasion rather than confrontation of stressors. After conducting normality tests, scales with normal distributions were summarised using means and SDs, while non-normally distributed scales were summarised using medians and IQRs. Correlation analysis indicated that all coping subscales were significantly associated with compassion fatigue.

Relationship between coping strategies and compassion fatigue

Table 4 shows results of multiple linear regression analysis conducted between coping strategies and compassion fatigue score. Active coping, use of informational support, positive reframing, venting, self-distraction and denial were used while coping with compassion fatigue. The use of active coping, self-distraction and denial was associated with higher scores of compassion fatigue, whereas use of informational support, positive reframing and venting was associated with lower scores for compassion fatigue.

DISCUSSION

The aim of the study was to investigate compassion fatigue and coping strategies among healthcare providers in

Table 3 Relationship between compassion fatigue and coping strategies (n=548)

Coping strategies	Mean ($\pm$ SD)/median (IQR)	α (alpha)	P value
Active coping	3.0 (2.5–3.0)	0.92	<0.001
Use of informational support	2.5 (1.74–4.0)	0.90	<0.001
Positive reframing	2.73 ($\pm$ 0.99)	0.90	<0.001
Planning	2.0 (1.0–3.0)	0.89	<0.001
Emotional support	2.41 ($\pm$ 1.13)	0.89	<0.001
Venting	2.35 ($\pm$ 1.10)	0.89	<0.001
Humour	2.41 ($\pm$ 1.13)	0.89	<0.001
Acceptance	2.41 ($\pm$ 1.13)	0.89	<0.001
Religion	2.33 ($\pm$ 1.06)	0.89	<0.001
Self-blame	2.68 ($\pm$ 0.80)	0.91	<0.001
Self-distraction	2.80 ($\pm$ 0.76)	0.91	<0.001
Denial	2.5 (2.0, 3.0)	0.90	<0.001
Substance use	2.5 (1.0–3.5)	0.92	<0.001
Behavioural disengagement	2.63 ($\pm$ 0.80)	0.91	<0.001

Table 4 Multivariate analysis of compassion fatigue and coping strategies (n=548)

Coping strategies	β coefficient	SE	P value
Active coping	2.564	0.168	<0.001*
Use of informational support	–0.705	0.164	<0.001*
Positive reframing	–1.191	0.171	<0.001*
Planning	–0.535	0.316	0.091
Emotional support	–	–	–
Venting	–1.743	0.400	<0.001*
Humour	1.799	1.538	0.243
Acceptance	–3.097	1.582	0.051
Religion	0.221	0.302	0.463
Self-blame	–0.417	0.445	0.348
Self-distraction	5.262	0.238	<0.001*
Denial	0.743	0.266	0.005*
Substance use	0.184	0.102	0.072
Behaviour disengagement	0.098	0.417	0.815

*Significant variable.

Central Uganda. The study found that 37.8% of respondents experienced a high level of compassion fatigue, while 29.4% had a low level. Results from multiple linear regression analysis show that active coping, self-distraction and denial were linked to higher compassion fatigue scores, while the use of informational support, positive reframing and venting were associated with lower compassion fatigue scores. These findings shed light on the diverse coping mechanisms employed by healthcare providers in Central Uganda in response to varying levels of compassion fatigue. While the study primarily explores individual-level coping, these responses are also shaped by broader systemic and employment contexts. Notably, over half of the respondents were under the age of 29, and 44.2% had less than 5 years of work experience, suggesting a relatively young and early-career workforce that may reflect high staff turnover or limited retention within the health system. Such demographic patterns have important implications, as younger or less experienced providers may lack the resilience and institutional support systems that more seasoned professionals develop over time. Regarding the multivariable analysis, collinearity diagnostics showed no significant multicollinearity among coping domains, supporting the inclusion of all variables in the model. The full model was presented because removing non-significant covariates such as planning, humour, acceptance, religion, self-blame, substance use and behavioural disengagement did not meaningfully alter the findings or improve model fit. Additionally, covariates like age and professional role were examined for effect modification but did not significantly influence the relationships between coping strategies and compassion fatigue, although these factors may still have contextual relevance.

Our results show that over one-third of healthcare providers in Central Uganda are affected by high levels of compassion fatigue. This finding highlights that a substantial portion of the healthcare workforce is potentially at risk of diminished quality of care due to the cumulative stress and emotional strain associated with their work. This result aligns with a broader body of literature indicating the widespread prevalence of compassion fatigue among healthcare providers globally, highlighting a universal challenge in managing the emotional toll of caregiving.^{16 19 21} The factors such as systemic health infrastructure challenges, work culture, staffing shortages and the acuity of patient illness contribute significantly to the development of compassion fatigue.^{19 19} In resource-limited settings like Central Uganda, these health system issues exacerbate caregiver stress, increase workload burdens and limit access to support resources, intensifying vulnerability to compassion fatigue.^{16 19 21} Work environment factors such as inadequate supervisory support, lack of professional development opportunities and high patient mortality rates further amplify the risk.^{19 21} These findings emphasise the critical importance of implementing comprehensive, multilevel strategies to address compassion fatigue, including psychological support

services, fostering a supportive organisational culture, promoting resilience-building activities and addressing systemic constraints that impact healthcare workers' well-being in Central Uganda.

Our results indicate that avoidance coping strategies are positively associated with compassion fatigue, suggesting that methods like self-distraction and self-blame may offer short-term relief but do not address its underlying causes. This indicates that healthcare providers experiencing compassion fatigue may resort to self-distraction as a coping mechanism, which aligns with the notion that avoidance coping strategies may not effectively address the underlying causes of compassion fatigue. Additionally, our findings reveal a positive correlation between high levels of compassion fatigue and self-blame as well as self-distraction. These results align with prior research in similar contexts, suggesting that healthcare providers experiencing compassion fatigue may tend towards self-blame, possibly due to the emotional burden of their work.²² The strong association with self-distraction highlights a coping strategy that, while seemingly adaptive in the short term, may not effectively address the underlying causes of compassion fatigue. These findings stress the need for targeted interventions and support systems in healthcare settings in Central Uganda to mitigate compassion fatigue. Strategies focused on reducing self-blame and promoting more constructive coping mechanisms could be beneficial, such as peer-support programmes, regular mental health check-ins and training on stress management and resilience-building. By addressing these issues, healthcare organisations can better support their staff and improve the overall well-being of healthcare providers in the region.

Our findings reveal that active coping, typically involving problem-solving strategies, was unexpectedly associated with higher compassion fatigue scores. This suggests that relying solely on action-oriented solutions without adequately processing the emotional burden may be insufficient in alleviating compassion fatigue in this context. Our results indicate that healthcare providers experiencing higher levels of compassion fatigue are more likely to employ active coping mechanisms, actively seeking solutions to their challenges. Additionally, our findings, consistent with other studies,¹⁵ show a positive association between compassion fatigue and the use of informational support. This implies that seeking information and knowledge resources is a coping strategy employed by healthcare providers dealing with compassion fatigue. Furthermore, the positive association with self-distraction suggests that individuals experiencing compassion fatigue may use this as a temporary means to alleviate stress or emotional burden. Conversely, the negative association with self-blame implies that healthcare providers with higher levels of compassion fatigue are less likely to blame themselves for the difficulties they encounter. These findings align with previous research in similar settings, highlighting the relationship between coping strategies and compassion fatigue among

healthcare providers.²¹ Understanding these associations is crucial for developing targeted interventions to support the mental health and well-being of healthcare professionals.

Supported by our findings, social support coping strategies were negatively associated with compassion fatigue, indicating the effectiveness of seeking support from colleagues or peers in mitigating compassion fatigue in Central Uganda. Interestingly, our results revealed a positive association between low compassion fatigue and the use of informal support as well as self-distraction, consistent with prior studies indicating that seeking support from colleagues or engaging in activities to temporarily divert attention can mitigate feelings of compassion fatigue.¹⁴ However, the negative association between low compassion fatigue and the use of informational support and self-distraction is an interesting discovery. This suggests that while seeking information as a coping strategy may not be as effective in reducing compassion fatigue, perhaps due to overwhelming information overload, self-distraction could have varying effects depending on the nature of the distraction. These findings imply the need for tailored interventions and support systems within healthcare settings in Central Uganda, recognising that a one-size-fits-all approach to addressing compassion fatigue may not be effective.

Scientific implications of findings

With 37.8% of respondents experiencing high levels of compassion fatigue, the study underscores the urgent need for targeted interventions to mitigate the emotional strain on healthcare providers. These results highlight the complexity of coping mechanisms and suggest that while some strategies might offer temporary relief, they may not address the underlying causes of compassion fatigue effectively. The positive correlation between active coping and higher compassion fatigue scores challenges the assumption that problem-solving approaches alone are sufficient, indicating the need for a more holistic strategy that includes emotional support.

Furthermore, the study reveals the critical role of social support in mitigating compassion fatigue, advocating for the integration of peer-support programmes, mental health check-ins and resilience training in healthcare settings. By recognising the diverse and context-specific coping mechanisms employed by healthcare professionals, these findings provide a foundation for developing tailored interventions that can enhance the well-being and effectiveness of the healthcare workforce in Central Uganda. The findings also have broader implications for health system policymakers and administrators, emphasising the importance of organisational strategies that promote a supportive work environment, address systemic stressors such as understaffing and resource limitations and prioritise mental health resources for frontline workers. This comprehensive approach is vital to sustaining workforce capacity, reducing turnover and ultimately improving patient care outcomes in resource-constrained settings.

Strengths and limitations of the study

Compassion fatigue is a significant concern for healthcare providers globally, and this study sheds light on its prevalence and coping strategies in a specific region with unique challenges. The study provides a strong theoretical framework for understanding the relationship between coping strategies and compassion fatigue, enhancing its credibility. The use of validated tools such as the ProQOL-5 and Brief-COPE adds to the reliability and validity of the data collected. However, an important criticism of the ProQOL for measuring compassion fatigue is its reliance on a single 10-item subscale to assess this complex phenomenon. This limited scope may not fully capture the multidimensional nature of compassion fatigue, which includes emotional, physical and cognitive aspects, along with secondary traumatic stress. Additionally, the ProQOL's categorisation of compassion fatigue into three levels (low, average, high) based on score ranges may oversimplify the varied manifestations in healthcare settings. While the ProQOL provides a basic assessment, it may not fully capture the complexity and variability of compassion fatigue, limiting its utility in research and clinical contexts. The study identified specific coping strategies associated with different levels of compassion fatigue, providing valuable insights for developing targeted interventions tailored to the needs of healthcare providers in Central Uganda.

However, the study had its limitations. The cross-sectional design limits the study's ability to establish causality. Moreover, reliance on self-reported data introduces potential biases, including recall bias where participants may inaccurately remember past experiences and social desirability bias, where participants may respond in ways they perceive as favourable. Furthermore, the study did not report information related to the sector (private or public) and setting (urban or rural) of the participants, which limits contextual understanding and generalisability. Future research should address these gaps by incorporating sector and setting variables and employing longitudinal designs to track changes in compassion fatigue and coping strategies over time. Comparative studies across different regions or countries would also be valuable to highlight variations in compassion fatigue prevalence and coping mechanisms, contributing to a more comprehensive global understanding of this phenomenon.

CONCLUSION

Healthcare providers in Central Uganda face significant levels of compassion fatigue, impacting their well-being and patient care. Coping strategies such as active problem-solving and seeking social support show promise in mitigating compassion fatigue. Tailored interventions focusing on reducing self-distraction, promoting effective problem-solving and fostering a supportive work environment are recommended to enhance healthcare providers' well-being and patient care quality in Central

Uganda. Further research should explore the efficacy of these interventions within the region's socio-cultural context.

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Patient consent for publication Consent obtained directly from patient(s).

Ethics approval This study received ethical approval from the Lira University Research Ethics Committee (LUREC 2023–24). Prior to data collection, all eligible participants were provided with detailed information about the study's purpose, procedures, potential risks, and benefits. Participation was entirely voluntary, and it was clearly communicated that refusal to participate would not result in any penalty or loss of benefits to which they were otherwise entitled. Written informed consent was obtained from each participant. The study was conducted anonymously, with strict measures taken to ensure confidentiality and protect participant identities. Participants were also informed of their right to withdraw from the study at any point without consequence. In addition, they were notified that findings would be disseminated through academic presentations and peer-reviewed publications.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. The data that support the findings of this study are available from the corresponding author upon reasonable request.

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