

RESEARCH

Open Access



Staff burnout and its risk factors at King Faisal Hospital Rwanda: a cross-sectional survey

Gaston Nyirigira^{1,6*}, Jonathan G. Bailey⁴, Felix Rutayisire¹, Kara L. Neil^{1,6}, M. Dylan Bould³, Rulinda Kwizera¹, Jackson Kwizera Ndekezi^{1,6}, Michel R. Gatera^{1,6}, Eugene Tuyishime⁵, Belise S. Uwurukundo^{1,6} and Rex Wong²

Abstract

Background There is limited research on burnout among healthcare providers in sub-Saharan Africa. One prior study of Rwanda anesthesia providers found a moderate level of burnout, and several qualitative studies have highlighted significant stressors. This study aims to evaluate the prevalence of professional fulfillment, burnout, and fatigue among healthcare providers at King Faisal Hospital Rwanda (KFH), a tertiary-level teaching hospital in Kigali, Rwanda.

Methods A cross-sectional, quantitative study was conducted from August to November 2023 at KFH. Participants included all staff employed at KFH at the time of survey distribution, including both non-clinical and clinical staff. Burnout, fatigue, and professional fulfillment were assessed using validated tools (Professional Fulfillment Index, Burnout Scale, and Fatigue Assessment Scale).

Findings Two hundred ninety-four respondents completed the survey. 47.1% reported professional fulfillment, while over half (57.0%) experienced burnout, and the majority experienced fatigue (71.0%). Years of experience and profession were found to be risk factors for burnout and low fulfillment. Age and profession were risk factors for fatigue. The highest levels of burnout were among doctors, nurses, and midwives.

Discussion Burnout rates and fatigue were high among healthcare providers. They were highest among those professions with direct patient contact. There are several evidence-based institutional interventions for burnout, but most evidence comes from settings outside of sub-Saharan Africa. Future research should assess the effectiveness of interventions specific to this setting.

Keywords Burnout, Professional fulfillment, Fatigue, Rwanda, Health care setting

Background

Studies have shown that burnout is a prevalent threat to the healthcare workforce globally. For example, in the United States, over half of physicians and one-third of nurses' experience burnout symptoms [1]. In Europe, one study found that 43.2% of healthcare professionals (HCPs) experienced burnout, with emergency physicians in Germany experiencing the highest prevalence rate (72.0%) [2]. In sub-Saharan Africa (SSA), the burnout rate was also reported as high as 81% among physicians in South African rural district hospitals, and 65.2% of physicians in southern Ethiopia [3, 4]. Studies conducted

*Correspondence:

Gaston Nyirigira
gaston.nyirigira@kfhkigali.com

¹King Faisal Hospital Rwanda, KG 544 Street 10, Kacyiru, Gasabo, Kigali, Rwanda

²University of Global Health Equity, Butaro, Rwanda

³Department of Anesthesia and Pain Medicine, SickKids Hospital, University of Toronto, Toronto, Canada

⁴Department of Anesthesia, Pain Management & Perioperative Medicine, Dalhousie University, Halifax, NS, Canada

⁵Department of Anesthesia, Critical Care, and Emergency Medicine, University of Rwanda, Kigali, Rwanda

⁶Africa Health Sciences University, Kigali, Rwanda



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

in Rwanda found a burnout rate of 61.7% among doctors and nurses working in the intensive care unit and emergency department of referral hospitals, and 26.3% among anesthesia providers across Rwanda, with more than 50% experiencing emotional exhaustion [5, 6].

Some scholars suggest that although burnout manifests in individuals, it is also fundamentally rooted in systems [7]. Dubale et al. [3] demonstrated that burnout is highly prevalent across sub-Saharan Africa, driven predominantly by systemic factors, including staffing shortages, insufficient institutional support, and excessive workloads. For instance, Ethiopian physicians reported burnout rates exceeding 65%, with these high levels linked to structural deficiencies, such as resource limitations and underdeveloped healthcare infrastructure. Similarly, MacKanga et al. [8] identified excessive workloads, inadequate staffing, and insufficient administrative support as significant determinants of burnout in a Gabonese healthcare setting. Furthermore, Moses et al. [9] highlighted the exacerbation of emotional exhaustion among healthcare providers in rural South Africa due to systemic challenges, notably elevated patient volumes and suboptimal working conditions. Regardless of the manifestation, burnout poses a significant threat to patient safety, as many medical errors causing preventable deaths were attributed to HCP exhaustion [10]. Workplaces must acknowledge and address burnout to ensure high-quality care and adequate functionality of the healthcare system.

There is limited research on burnout among healthcare providers conducted in the SSA region, including in Rwanda, yet this information has the potential to transform health systems and improve the well-being of HCPs. While there are some papers examining burnout in SSA, this is a small fraction of the burnout literature, mainly focusing on North America and Europe. In one systematic review focusing on postgraduate trainees, 60 studies (14,004 trainees) were from North America, 24 studies (12,782 trainees) from Europe, and only 2 studies (86 trainees) from SSA [11]. While some conclusions can be extrapolated from other studies in SSA, there is a risk of making false assumptions when applying findings from a distinct culture or healthcare system. To our knowledge, while some studies have been carried out in other countries targeting specific groups of healthcare providers, there has been limited institutional-level research in Rwanda examining burnout, professional fulfillment, and fatigue among all hospital staff and healthcare providers from diverse backgrounds. To date, there have been four papers published on healthcare provider burnout in Rwanda. Three of these were qualitative studies that did not measure burnout quantitatively [5, 12, 13]. Two were small scale, involving 12 nurses, and 22 cancer providers [5]. One study of 99 Rwandan anesthesia providers

measured found that 26% were experiencing burnout [6]. Another paper from the same group presented qualitative data from 63 Rwandan healthcare providers [14]. All of the qualitative papers highlighted significant stressors on providers working in the Rwandan healthcare system.

The current study offers a distinct contribution compared to previous works from the regional context [8, 15], which largely focus on broader regional burnout factors or specific healthcare worker subsets. Unlike these studies, which assess burnout and quality of life or compassion fatigue across various facilities and contexts, this research investigates burnout, professional fulfillment, and fatigue comprehensively within a single institution, King Faisal Hospital Rwanda (KFH), across diverse staff categories. The use of validated tools like the Professional Fulfillment Index ensures methodological rigor. This approach not only highlights institution-specific factors but also offers a replicable framework for targeted interventions in similar settings.

Methods

Study setting and design

The primary objective of the study was to assess the baseline prevalence of burnout, professional fulfillment, and fatigue among hospital employees at a single teaching hospital in Rwanda. The secondary objective was to examine demographic risk factors for burnout in this population.

A cross-sectional, survey-based quantitative study was conducted from August to November 2023 at KFH. Before data collection, the study was approved by the KFH Institutional Review Board (Ref: KFH/2023/080B), and participants provided informed consent before participating in the study. As a teaching hospital, KFH hosts some of the country's most specialized services, including a catheterization laboratory, kidney transplantation, and cardiothoracic surgery. The hospital also hosts a range of health professional students, including nursing and medical students, residents, and fellows. No previous studies on burnout have been conducted at KFH, with this study aiming to fill that gap.

Several commonly cited causes of workplace stress have been previously identified in the Rwandan healthcare setting [12]. Workload in terms of total hours and patient load during those hours is a contributor. Inadequate resources is another, although this is mitigated at KFH since this hospital is generally well resourced in comparison to others. A highly demanding medical culture with a steep hierarchy was also identified as a potential contributor to burnout in the context [12]. However, by supporting wellbeing workshops and this research, KFH demonstrates a commitment to workplace wellbeing.

Participants and sample

The survey was circulated to all staff employed at KFH at the time of survey distribution, including both non-clinical and clinical staff. As such, all employees with an email address in the KFH server were eligible to participate. Those without an active email address (e.g. hourly employees or visiting volunteers) were not eligible to participate. At the time of data collection, KFH had 580 included staff members, including 103 full-time doctors, 34 part-time doctors, 197 nurses, 118 medical support staff, and 128 non-medical staff meeting the study criteria [16]. Of the 580 staff, 294 (50.6%) participated in the survey. This study estimated burnout prevalence at 50.6%. This estimate aligned with previous research in Rwanda, which reported burnout rates of 61.7% among doctors and nurses in intensive care and emergency departments, and 26.3% among anesthesia providers [1, 2]. Furthermore, it is consistent with broader SSA studies indicating burnout rates as high as 81% among physicians in South African rural hospitals and 65.2% in southern Ethiopia [3].

Sample size calculation

Since our primary objective in this study was to estimate the proportion of the hospital staff experiencing lack of fulfilment, burnout, and fatigue, we based our sample size calculation on estimating proportions within a desired precision of $\pm 5\%$. As stated in the introduction, burnout rates are approximately 60–80% in SSA healthcare populations. Using Cochran's sample size formula for finite populations [17, 18], assuming a proportion of 60%, an alpha of error of 0.05% and a margin of error of 5%, the calculated sample size was 226. To increase response rates, multiple reminders were sent through various communication channels, including emails, meetings, and WhatsApp groups. Additionally, researchers emphasized confidentiality and streamlined the survey process to facilitate participation.

Data collection tool and procedures

The data collection tool was developed to assess demographics (age, gender, years of experience, profession, and marital status) and three outcome measures. Burnout, fatigue, and professional fulfillment were based on the previously validated Professional Fulfillment Index (PFI) [19] and Fatigue Assessment Scale (FAS) [20, 21]. The PFI includes three subscales: professional fulfillment (6 items), work exhaustion (4 items), and professional disengagement (6 items). Each of the subscales is rated using a 5-point Likert scale from 0 to 4, with higher scores indicating higher levels of fulfillment, exhaustion, and disengagement. Professional fulfillment was categorized into “no professional fulfillment” if the mean score was < 3 , and “professional fulfillment” if ≥ 3 [19]. Work

exhaustion and professional disengagement can be averaged together as an overall measure of burnout. Burnout was categorized into “no burnout” if the mean score was < 1.33 , and “burnout” if ≥ 1.33 [19]. Finally, the FAS assessed symptoms of exhaustion across ten statements with a five-point Likert scale. The statements focused on perceived feelings of exhaustion (physical and mental), focus, concentration, and overall activity or desired activity. Fatigue had a sum of scores across the 10 statements ranging from 10 to 50. This was then categorized into “no fatigue” if the score was ≤ 21 , and “fatigue” if > 21 [22]. The PFI and FAS were tested before their use for validation, and there was no culture concept adaptation needed for the Rwandan culture context.

The survey was circulated via staff emails and professional WhatsApp groups as an anonymous online survey in KoboToolBook [23], with both English and Kinyarwanda options (the local language). KoboToolBook was chosen as the survey platform due to its accessibility, user-friendliness, and demonstrated reliability in collecting data in resource-limited research settings. Two bilingual research assistants validated the Kinyarwanda translation through forward and back-translation and then compared their translations for consistency. Regular reminders were sent to participants. A detailed explanation of the purpose of the survey was included on the main page of the online survey, and participants who indicated their written consent to participate could proceed to the questionnaire. The survey was open from August 12 to November 21, 2023.

Data analysis

Due to the nature of the PFI items, non-clinical staff left blank any questions related to patient care that didn't apply to them. This meant that 94 of the 294 respondents had missing disengagement data, making calculation of burnout scores not possible. For these respondents, average scores were calculated using the other items and imputed for the missing patient-related disengagement questions. A sensitivity analysis was performed including only those patients with complete outcomes data.

Descriptive statistics were used to summarize all demographics and key measures. Chi-squared tests were employed to examine the associations between binary variables (e.g., age category, sex) and key outcomes (e.g., burnout, fatigue, and professional fulfillment). Logistic regression was used to assess the strength and direction of relationships between categorical risk factors (profession, years of experience, marital status) and key outcomes. Multivariate estimates were adjusted for age, sex, profession, marital status and experience. Because the cutoff scores provided for the PFI and FAS scales are not validated for our context, we included a sensitivity analysis analyzing the relationship between risk factors and

Table 1 Summary of participant demographics

| Characteristic | N = 293 | Range |
|-----------------------------------|--------------|-------|
| Age (years), Median [IQR] | 35.0 [31–40] | 23–61 |
| Experience (years), Median [IQR] | 8.0 [5–13] | 0–40 |
| Female, n/total N (%) | 132 (45.1%) | |
| Profession, n/total N (%) | | |
| Nurse | 123 (42.0%) | |
| Support staff (cleaning, laundry) | 69 (23.5%) | |
| Medical Doctor | 35 (11.9%) | |
| Administrative, non-clinical | 29 (9.9%) | |
| Allied health professional | 28 (9.6%) | |
| Midwife | 9 (3.1%) | |
| Marital status, n/total N (%) | | |
| Married/partnered | 190 (64.8%) | |
| Single | 86 (29.4%) | |
| Widow/separated/divorced | 16 (5.5%) | |
| Other | 1 (0.3%) | |

Table 2 Baseline exhaustion, disengagement, professional fulfilment, burnout, and fatigue

| Outcome | Respondents N = 293 |
|---------------------------------------|------------------------|
| Professional fulfilment, median [IQR] | 2.8 [2.5–3.2] |
| Fulfilled, n (%) | |
| Yes | 138 (47.1%) |
| No | 155 (52.9%) |
| Exhaustion, median [IQR] | 1.8 [1.3–2.5] |
| Disengagement, median [IQR] | 1.3 [0.3–2.0] |
| Burnout, median [IQR] | 1.5 [1.0–2.2] |
| Burned out, n (%) | |
| Yes | 167 (57.0%) |
| No | 126 (43.0%) |
| Fatigue, median [IQR] | 25.0 [20.0–29.0] |
| Fatigue, n (%) | |
| Yes | 208 (71.0%) |
| No | 85 (29.0%) |

key outcomes (e.g., burnout, fatigue, and professional fulfilment), treating outcomes as continuous data. In these analyses, Spearman correlation was used for continuous risk factors (age), Wilcoxon rank sum test was used for binary risk factors (sex), and Kruskal-Wallis rank sum test was used for categorical risk factors (profession, years of experience, marital status).

All analyses were performed in R statistical software. Statistical significance was set at a *p*-value threshold of < 0.05 for all tests.

Results

A total of 294 respondents completed the survey, representing 50.6% of the total KFH staff pool meeting the inclusion criteria. The age entered for one respondent was implausible, so they were excluded from analyses. The demographics of the respondents are outlined in Table 1.

Summary scores for each subscale of the PFI and the FAS are listed in Table 2. Item summaries are available in Appendix 1. Among all respondents, 155 (52.9%) felt professionally unfulfilled, while 167 (57.0%) experienced burnout, and 208 (71.0%) experienced fatigue (Table 2).

Years of professional experience were also found to be statistically associated with burnout and fatigue (Table 3). More experience increased the likelihood of burnout and lack of fulfilment (i.e. decreased fulfilment). Certain professions were associated with differences in fulfilment, burnout, and fatigue when compared to medical doctors. Lack of fulfilment was more common among midwives, allied health, and support staff. Allied health professionals had lower risk of burnout and fatigue. Administration staff had lower risk of fatigue.

Analyzing the data treating the outcomes measures as continuous variables did not substantially change the results (Appendix 2). Years of experience and profession were significant with all outcome variables (fulfilment, burnout, and fatigue). Excluding patients with missing outcome data changed some outcomes Appendix 3. When excluding patients with missing outcome data, respondents over 36 had less fulfilment, years of experience was not significantly related to burnout, male respondents were less likely to be burned out and married/partnered respondents were less professionally fulfilled. The relationships between profession and outcomes were unchanged, except that there were insufficient data to draw conclusions about support staff and administrative staff.

All three key measures were significantly correlated with each other (Table 4). Having professional fulfilment was inversely associated with experiencing burnout and experiencing fatigue in the univariate analysis (Table 4). However, this effect was not significant when adjusting for age, sex, profession, experience and marital status. Meanwhile, fatigue was strongly associated with higher odds of burnout. Adjusting for age, sex, profession, experience and marital status did not substantially change the relationship between burnout and fatigue. A sensitivity analysis (treating all key measures as continuous variables) found that all three measures were associated with each other, even when adjusting for age, sex, profession, experience and marital status (Appendix 3). Professional fulfilment was inversely associated with burnout and fatigue, while fatigue was positively associated with burnout.

Discussion

This study aimed to assess the prevalence of staff burnout at KFH. The results reveal that more than half of the staff experienced burnout. This result is consistent with the high prevalence among the healthcare workforce globally, including SSA [3]. Burnout is a negative response to

Table 3 Associations for professional fulfillment, burnout, and fatigue

| Sample | Lack of Professional Fulfillment | | | Burnout | | | Fatigue | | |
|----------------------------|----------------------------------|----------------------|---------|-------------|--------------------|---------|-------------|--------------------|---------|
| | N = 293 | OR [95% CI] | P-value | N = 293 | OR [95% CI] | P-value | N = 293 | OR [95% CI] | P-value |
| Age (years) | | | | | | | | | |
| 35 years and less | 73 (49.3%) | Reference | 0.215 | 85 (57.4%) | Reference | 0.879 | 112 (75.7%) | Reference | 0.074 |
| 36 years or more | 82 (56.6%) | 1.34 [0.84 – 2.12] | | 82 (56.6%) | 0.96 [0.61 – 1.53] | | 96 (66.2%) | 0.63 [0.38 – 1.05] | |
| Experience (years) | | | | | | | | | |
| less than 5 | 22 (38.6%) | Reference | | 26 (45.6%) | Reference | | 39 (68.4%) | Reference | |
| 5 to 10 years | 59(55.1%) | 1.96[1.02 – 3.80] | 0.045 | 70(65.4%) | 2.71[1.41 – 5.30] | 0.003 | 84 (78.5%) | 1.69 [0.81 – 3.48] | 0.158 |
| More than 10 years | 74(57.4%) | 2.14[1.14 – 4.09] | 0.019 | 75(58.1%) | 1.91[1.02 – 3.62] | 0.045 | 85 (65.9%) | 0.89 [0.45 – 1.72] | 0.736 |
| Profession | | | | | | | | | |
| Medical doctor | 12 (34.3%) | Reference | | 22 (62.9%) | Reference | | 25 (71.4%) | Reference | |
| Nurse | 55 (44.7%) | 1.55 [0.72 – 3.48] | 0.273 | 81 (65.9%) | 1.14 [0.51 – 2.46] | 0.743 | 97 (78.9%) | 1.49 [0.62 – 3.44] | 0.357 |
| Midwife | 8 (88.9%) | 15.33[2.41 – 302.26] | 0.015 | 6 (66.7%) | 1.18 [0.26 – 6.35] | 0.832 | 6 (66.7%) | 0.80 [0.17 – 4.36] | 0.780 |
| Allied health professional | 17(60.7%) | 2.96[1.07 – 8.55] | 0.039 | 10(35.7%) | 0.33[0.11 – 0.91] | 0.035 | 12 (42.9%) | 0.30[0.10 – 0.84] | 0.024 |
| Support staff | 49(71.0%) | 4.70[2.00 – 11.53] | <0.001 | 39 (56.5%) | 0.77 [0.33 – 1.76] | 0.536 | 55 (79.7%) | 1.57 [0.60 – 4.00] | 0.345 |
| Admin, non-clinical | 14 (48.3%) | 1.79 [0.66 – 4.99] | 0.258 | 12 (41.4%) | 0.42 [0.15 – 1.13] | 0.089 | 13(44.8%) | 0.33[0.11 – 0.90] | 0.034 |
| Sex | | | | | | | | | |
| Female | 72 (54.5%) | Reference | | 84 (63.6%) | Reference | 0.078 | 97 (73.5%) | Reference | 0.394 |
| Male | 83 (51.6%) | 0.89 [0.56 – 1.41] | 0.609 | 86 (53.4%) | 0.66 [0.41 – 1.05] | | 11 (68.9%) | 0.80 [0.48 – 1.33] | |
| Marital status | | | | | | | | | |
| Single | 41 (47.7%) | Reference | | 48 (55.8%) | Reference | | 63 (73.3%) | Reference | |
| Married/partnered | 106 (55.8%) | 1.39 [0.83 – 2.31] | 0.211 | 113 (59.5%) | 1.16 [0.69 – 1.94] | 0.568 | 132 (69.5%) | 0.83 [0.46 – 1.45] | 0.523 |
| Widowed/separated/divorced | 8 (50.0%) | 1.10 [0.37 – 3.24] | 0.864 | 9 (56.2%) | 1.02 [0.35 – 3.09] | 0.974 | 13 (81.2%) | 1.58 [0.46 – 7.35] | 0.503 |

Percentages indicate the percentage of respondents experiencing the key outcomes (i.e. burned out versus not experiencing burnout)

95% CI 95% confidence interval, OR Odds ratio

Table 4 Associations across key measures

| | Burnout OR [95% CI], <i>p</i> | Fatigue |
|---------------------------------|--|--|
| Lack of Professional fulfilment | 2.10 [1.31–3.36], <i>p</i>=0.002 aOR 1.66 [0.88–3.17], <i>p</i> =0.118 | 1.82 [1.09–3.03], <i>p</i>=0.022 aOR 0.91 [0.46–1.80], <i>p</i> =0.778 |
| Burnout | | 21.83 [10.74–44.39], <i>p</i><0.001 aOR 18.58 [7.83–44.10], <i>p</i> <0.001 |
| Fatigue | | |

Multivariate analyses adjusted for age, sex, profession, experience, and marital status

95% CI 95% confidence interval, aOR Adjusted odds ratio, OR Odds ratio

workplace stress, characterized by various signs [24]. In Rwanda, to strengthen the health workforce and increase the number of HCPs, there are national programs and strategies towards this, including the 4 × 4 national strategy led by the Ministry of Health [25] to address the health workforce shortage by quadrupling the health workforce by 4 in 4 years to come. As of 2018, per 10,000 population, Rwanda was reported to have 1 physician, 7 nurses and midwives, and 3 other health workers [26], which is below the World Health Organization (WHO) recommended critical minimum threshold of 44.5 doctors, nurses, and midwives per 10,000 people [27]. This shortage of HCPs represents a significant challenge to the workload of hospital staff. Many studies have shown a high correlation between workload and emotional exhaustion, with high job demands often progressively leading to emotional exhaustion [28, 29]. It is critical to address staff burnout, as studies have shown associations between patient safety and burnout, especially related to staff emotional exhaustion [30]. Staff with higher levels of burnout often display lower performance and take more sick leave [28, 29].

The three key measures of this study (burnout, professional fulfillment, and fatigue) were found to be interrelated. Similar findings of such close inter-relationship of the three variables were found in many other studies [9, 31]. Collectively, these findings emphasize the complex interplay among burnout, professional fulfillment, and fatigue.

The findings show the areas that our respondents felt the least fulfilled, including a perceived lack of control when dealing with difficult problems at work, or that they did not feel satisfied, happy, or worthwhile. Many previous studies have found that healthcare workers in high-workload environments often feel a loss of control over work processes, scheduling, and conflicting roles and relationships with leadership [32, 33]. Future studies to identify the specific aspects in which the respondents did not feel they had control would provide insights to generate effective interventions.

From our study, it is evident that experienced healthcare workers have developed resilience and effective coping strategies over time, enabling them to manage stressors more effectively compared to less experienced

colleagues. For instance, senior healthcare providers reported a better familiarity with navigating the healthcare system, enabling them to navigate potential resource shortages and high patient loads more adaptively. This is supported by a study conducted in China which showed that more years of experience and an increase in aging being at work among nurses working in the emergency and intensive care departments was associated with burnout [34, 35]. This is different from the studies [36, 37] which revealed that work experience in years didn't show any statistical correlation with burnout among nurses in Iran and Romania respectively. Previous studies have not generated conclusive results [38, 39]. However, other in-depth burnout studies indicated that nurses at different stages of their careers were susceptible to various dimensions of burnout [40–42]. Further studies to further investigate various aspects of burnout and root causes by professions may generate useful insights to formulate targeted interventions [8].

The results of this study not only have shown that most of the respondents in our study setting experienced burnout, fatigue, and lack of professional fulfillment, but it has also provided some positive insights. While it is critical to address the factors causing burnout, it is equally important to identify the positive deviants. Most respondents, although fatigued or burnt out, indicated they were contributing professionally in the ways they value most and felt their work was meaningful [43]. A systematic review highlighted the scarcity of studies on burnout in SSA, and it showcased the need for further studies about burnout in Africa [3, 43, 44]. This study is part of a larger ongoing project at KFH to understand and address burnout and its risk factors among its healthcare workers. After this initial baseline measurement, there was an intervention phase utilizing Vital Anesthesia Simulation Training (VAST) Wellbeing Courses [45] to raise awareness of burnout, educate personnel about factors contributing to burnout, and as a forum to discuss factors specific to KFH. Once the majority of employees have been offered this course, a follow up survey will assess whether burnout, fatigue, and fulfillment have changed at an institutional level.

Limitations

The study was conducted in a single hospital, which inherently limits the extrapolation of its findings to the broader spectrum of HCPs across Rwanda or the region. However, the primary objective of this study was not to produce universally applicable or generalizable conclusions. Instead, this study aimed to concentrate on understanding the intricacies of the burnout issue within the hospital. Other limitations of this study include the self-reported nature of the data, which may introduce response biases such as social desirability, where participants may have responded in ways they believed were more socially acceptable, or recall bias, where participants inaccurately remembered or misreported past events or experiences. Both potential biases can distort the accuracy of the data. Using validated measures helps to decrease these possible limitations. The cutoff scores in this study were based on validation studies from the United States (PFI) and the Netherlands (FAS). Unfortunately, no cross-cultural validation studies have been done for the East African population. We recognize that there are nuances when translating burnout and related concepts [46]. This highlights the need for validation studies for commonly used mental health measures in Rwanda. The wide confidence intervals for the burnout odds ratios indicate some variability, which may be attributed to sample size constraints or model instability. This variability should be considered when interpreting the findings, as it may affect the precision and generalizability of the reported associations. However, this study was mainly exploratory in nature being was conducted to establish a baseline for burnout and fatigue in our population and to identify important risk factors. Knowing important risk factors and expected response rates will help plan multivariate analyses in future studies.

Conclusion

The results of this study showed more than half of the respondents experienced burnout, fatigue, and a lack of professional fulfillment, which highlights the need to implement institutional-level interventions to address this. Adapting evidence-based strategies from global best practices, including enhancing support systems, fostering work-life balance and a culture of professional fulfillment, and implementing targeted stress management programs, can mitigate burnout and promote professional fulfillment. In addition to the work already being done at KFH, additional targeted interventions are essential to protect staff well-being, sustain quality patient care, and prevent strain on the healthcare system.

Abbreviations

| | |
|-----|--------------------------|
| BS | Burnout scale |
| FAS | Fatigue assessment scale |
| HCP | Healthcare provider |

| | |
|-----|--------------------------------|
| IQR | Interquartile range |
| KFH | King Faisal Hospital Rwanda |
| OR | Odds ratio |
| PF | Professional fulfillment |
| PFI | Professional fulfillment index |
| SSA | Sub-Saharan Africa |
| WHO | World Health Organization |

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12913-025-12638-4>.

Supplementary Material 1.

Supplementary Material 2.

Supplementary Material 3.

Acknowledgements

We extend our sincere gratitude to all individuals and institutions that contributed to the successful completion of this study on staff burnout and its risk factors at King Faisal Hospital Rwanda. We are grateful to all the healthcare providers at KFH who participated in this study by completing the survey. Their valuable insights and responses were essential in generating meaningful data for analysis.

Authors' contributions

GN conceptualized the study and wrote the original draft. JB conceptualized the study and presented the data. FR curated the data and wrote the original draft. KN wrote the original draft and administered the project. RK wrote the original draft. RW analyzed and presented the data. All authors reviewed and edited the final draft.

Funding

This paper received no funding.

Data availability

The data is available upon reasonable request made to the Corresponding Author.

Declarations

Ethics approval and consent to participate

Ethics approval was obtained from the King Faisal Hospital Rwanda Institutional Review Board (Reference # KFH/2023/080/IRB). Participants provided informed consent before participating in the study. This study adhered to the Declaration of Helsinki.

Competing interests

The authors declare no competing interests.

Received: 8 October 2024 / Accepted: 21 March 2025

Published online: 07 April 2025

References

1. Reith TP, Burnout in United States Healthcare Professionals.: A Narrative Review. *Cureus*. 2018;10(12). Available from: <https://doi.org/10.7759/cureus.3681>.
2. Hiver C, Villa A, Bellagamba G, Lehucher-Michel MP. Burnout prevalence among European physicians: a systematic review and meta-analysis. *International Archives of Occupational and Environmental Health*. 2021;95(1):259–73. Available from: <https://link.springer.com/article/10.1007/s00420-021-01782-z>. [cited 2023 Apr 6].
3. Dubale BW, Friedman LE, Chemali Z, Denninger JW, Mehta DH, Alem A, et al. Systematic review of burnout among healthcare providers in sub-Saharan Africa. *BMC Public Health*. 2019;19(1):1–20. Available from: <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-019-7566-7>. [cited 2023 Apr 6].

4. Lrago T, Asefa F, Yitbarek K. Physicians' Burnout and Factors in Southern Ethiopia Affecting It. *Ethiop J Health Sci*. 2018;28(5):589–98. Available from: <https://pubmed.ncbi.nlm.nih.gov/30607074/>. [cited 2023 Apr 6].
5. Cishahayo EU, Nankundwa E, Sego R, Bhengu BR. Burnout among nurses working in critical care settings: a case of a selected tertiary hospital in Rwanda. *Int J Res Med Sci*. 2017;5(12):5121–8. Available from: <https://www.ms-jonline.org/index.php/ijrms/article/view/4101>. [cited 2023 Apr 6].
6. Tuyishime E, Mclsaac DI, Mumbwe MC, Ruhato Banguti P, Mvukiyehe JP, Nzarora J, et al. Burnout Syndrome Among Anesthesia Providers Working in Public Hospitals in Rwanda: A Cross-Sectional Survey. *Anesth Analg*. 2022;135(4):820–8. Available from: <https://pubmed.ncbi.nlm.nih.gov/35452008/>. [cited 2023 Apr 6].
7. Murthy VH. Confronting Health Worker Burnout and Well-Being. *New Engl J Med*. 2022;387(7):577–9. Available from: <https://www.nejm.org/doi/full/10.1056/NEJMp2207252>. [cited 2023 Apr 6].
8. MacKanga JR, Mouendou Mouloungui EG, Iba-Ba J, Pottier P, Moussavou Kombila JB, Boguikouma JB. Burnout level and associated factors in a sub-Saharan African medical setting: Prospective cross-sectional survey. *BMC Med Educ*. 2020;20(1):1–9. Available from: <https://bmcmmeduc.biomedcentral.com/articles/>. [cited 2024 Aug 28].
9. Moses AC, Dreyer AR, Robertson L. Factors associated with burnout among healthcare providers in a rural context, South Africa. *Afr J Prim Health Care Fam Med*. 2024;16(1). Available from: <https://doi.org/10.4102/phcfm.v16i1.4163>. [cited 2024 Aug 28].
10. Shanafelt TD, Balch CM, Bechamps G, Russell T, Dyrbye L, Satele D, et al. Burnout and medical errors among American surgeons. *Ann Surg*. 2010;251(6):995–1000. Available from: <https://pubmed.ncbi.nlm.nih.gov/19934755/>. [cited 2023 Apr 6].
11. Naji L, Singh B, Shah A, Naji F, Dennis B, Kavanagh O, et al. Global prevalence of burnout among postgraduate medical trainees: a systematic review and meta-regression. *CMAJ Open*. 2021;9(1):E189–200. Available from: <https://pubmed.ncbi.nlm.nih.gov/33688027/>. [cited 2025 Feb 25].
12. Bould MD, Tuyishime E, Nkurunziza C, Mpirimbanyi C, Mutabezi G, Wiwchar L et al. Lived experience of burnout and fatigue in perioperative healthcare professionals in Rwanda: a qualitative study. *Br J Anaesth*. 2024;133(5). Available from: <https://pubmed.ncbi.nlm.nih.gov/39304463/>. [cited 2025 Mar 10].
13. Janosy NR, DeBoer EM, Prager JD, Vogeli J, Wine T, Beacham AO. Social support moderates the relationship between burnout and job satisfaction in aerodigestive team members. *Int J Pediatr Otorhinolaryngol*. 2023;170. Available from: <https://pubmed.ncbi.nlm.nih.gov/37224738/>. [cited 2025 Mar 10].
14. Bould MD, Tuyishime E, Nkurunziza C, Mpirimbanyi C, Mutabezi G, Wiwchar L et al. Lived experience of burnout and fatigue in perioperative healthcare professionals in Rwanda: a qualitative study. *Br J Anaesth*. 2024;133(5). Available from: <https://pubmed.ncbi.nlm.nih.gov/39304463/>. [cited 2025 Feb 25].
15. Kabunga A, Kigongo E, Musinguzi M, Tumwesigye R, Akello AR, Acup W, et al. Level of burnout and associated factors among healthcare workers in central Uganda: A facility-based cross-sectional study. *PLoS One*. 2024;19(10):e0309701. Available from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0309701>. [cited 2024 Dec 19].
16. Nursing Division - King Faisal Hospital- Kigali. Available from: <https://kfh.rw/nursing-division/>. [cited 2023 Apr 6].
17. Bartlett JE, Kotrlik JW, Higgins CC. Organizational research: determining appropriate sample size in survey research. *Inform Technol Learn Perform J*. 2001;19(1).
18. Nanjundeswaraswamy TS, Divakar S. Determination of sample size and sampling methods in applied research. *Proc Eng Sci*. 2021;03(1):25–32. Available from: <https://www.pesjournal.net>. [cited 2024 May 12].
19. Trockel M, Bohman B, Lesure E, Hamidi MS, Welle D, Roberts L, et al. A Brief Instrument to Assess Both Burnout and Professional Fulfillment in Physicians: Reliability and Validity, Including Correlation with Self-Reported Medical Errors, in a Sample of Resident and Practicing Physicians. *Acad Psychiatry*. 2018;42(1):11–24. Available from: <https://link.springer.com/article/>. [cited 2023 May 15].
20. Horisberger A, Courvoisier D, Ribi C. The Fatigue Assessment Scale as a simple and reliable tool in systemic lupus erythematosus: A cross-sectional study. *Arthritis Res Ther*. 2019;21(1):1–8. Available from: <https://arthritis-research.biomedcentral.com/articles/>. [cited 2024 Apr 13].
21. Michielsen HJ. STOP, THAT and one hundred other sleep scales. University of Pennsylvania School of Medicine; 2003.
22. De Vries J, Michielsen H, Van Heck GL, Drent M. Measuring fatigue in sarcoidosis: the Fatigue Assessment Scale (FAS). *Br J Health Psychol*. 2004;9(Pt 3):279–91. Available from: <https://pubmed.ncbi.nlm.nih.gov/15296678/>. [cited 2025 Feb 25].
23. KoboToolbox. Available from: <https://www.kobotoolbox.org/>. [cited 2024 Apr 13].
24. Heinemann LV, Heinemann T. Burnout research: Emergence and scientific investigation of a contested diagnosis. *Sage Open*. 2017;7(1). Available from: <https://doi.org/10.1177/2158244017697154>. [cited 2024 May 7].
25. Ministry of Health. The 4x4 Reform: A Path to Quality Health Care in Rwanda. 2024. Available from: <https://www.moh.gov.rw/news-detail/the-4x4-reform-a-path-to-quality-health-care-in-rwanda>. [cited 2024 Aug 28].
26. National Academies of Sciences E and MH and MDB on GHC on the E of SHR for HC in the R of RU the PEP for AR (PEPFAR). Health Worker Production. Evaluation of PEPFAR's Contribution (2012–2017) to Rwanda's Human Resources for Health Program. 2020. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK558442/>. [cited 2024 May 12].
27. WHO. Human Resources for Health Observer. Health workforce requirements for universal health coverage and the Sustainable Development Goals. 2016. Available from: <https://www.who.int/publications/i/item/9789241511407>. [cited 2024 May 12].
28. Baeriswyl S, Krause A, Elfering A, Berset M. How workload and coworker support relate to emotional exhaustion: the mediating role of sickness presenteeism. *Int J Stress Manag*. 2017;24:52–73.
29. Oppenauer V, Van De Voorde K. Exploring the relationships between high involvement work system practices, work demands and emotional exhaustion: a multi-level study. *Int J Hum Resource Manage*. 2018;29(2):311–37.
30. Welp A, Meier LL, Manser T. Emotional exhaustion and workload predict clinician-rated and objective patient safety. *Front Psychol*. 2015;5:1573. <https://doi.org/10.3389/fpsyg.2014.01573>.
31. Guastello AD, Brunson JC, Sambuco N, Dale LP, Tracy NA, Allen BR, et al. Predictors of professional burnout and fulfillment in a longitudinal analysis on nurses and healthcare workers in the COVID-19 pandemic. *J Clin Nurs*. 2024;33(1):288–303. Available from: <https://doi.org/10.1111/jocn.16463>.
32. Bridgeman PJ, Bridgeman MB, Barone J. Burnout syndrome among healthcare professionals. *Am J Health Syst Pharm*. 2018;75(3):147–52. Available from: <https://pubmed.ncbi.nlm.nih.gov/29183877/>. [cited 2024 May 13].
33. Eftekhari Ardebili M, Naserbakht M, Bernstein C, Alazmani-Noodeh F, Hakimi H, Ranjbar H. Healthcare providers experience of working during the COVID-19 pandemic: A qualitative study. *Am J Infect Control*. 2021;49(5):547–54. Available from: <https://pubmed.ncbi.nlm.nih.gov/33031864/>. [cited 2024 May 13].
34. Wang J, Wang W, Laureys S, Di H. Burnout syndrome in healthcare professionals who care for patients with prolonged disorders of consciousness: A cross-sectional survey. *BMC Health Serv Res*. 2020;20(1):1–10. Available from: <https://bmchealthservres.biomedcentral.com/articles/>. [cited 2023 Apr 5].
35. Gómez-Urquiza JL, Vargas C, De la Fuente EI, Fernández-Castillo R, Cañadas-De la Fuente GA. Age as a Risk Factor for Burnout Syndrome in Nursing Professionals: A Meta-Analytic Study. *Res Nurs Health*. 2017;40(2):99–110. Available from: <https://pubmed.ncbi.nlm.nih.gov/27862065/>. [cited 2024 Aug 28].
36. Samadi S, Malekmohammadi R, Shahvari Z, Mireskandari SM, Amraei F, Bafrani MA. Burnout and Its Related Risk Factors: A Comparison Study of Nurses Working in Two Different Wards. *Arch Neurosci*. 2024;11(1):144286. Available from: <https://brieflands.com/articles/ans-144286>. [cited 2024 Aug 28].
37. Taranu SM, Ilie AC, Turcu AM, Stefanu R, Sandu IA, Pislaru AI, et al. Factors Associated with Burnout in Healthcare Professionals. *Int J Environ Res Public Health*. 2022;19(22):14701. Available from: <https://www.mdpi.com/1660-4601/19/22/14701/htm>. [cited 2024 Aug 28].
38. Brewer EW, Shapard L. Employee burnout: A Meta-Analysis of the relationship between age or years of experience. *Hum Resour Dev Rev*. 2004;3(2):102–23.
39. Dimunová L, Nagyová I. The Relationship between Burnout and the Length of Work Experience in Nurses and Midwives in the Slovak Republic. *Profese Online*. 2012. ISSN 1803-4330.
40. Aytekin A, Yilmaz F, Kuguoglu S. Burnout levels in neonatal intensive care nurses and its effects on their quality of life AUTHORS. *Australian J Adv Nurs*. 2013;31(2):38–47.
41. Karanikola MNK, Papathanassoglou EDE, Mpouzika M, Lemonidou C. Burnout syndrome indices in Greek intensive care nursing personnel. *Dimens Crit Care Nurs*. 2012;31(2):94–101. Available from: <https://pubmed.ncbi.nlm.nih.gov/22333719/>. [cited 2024 May 13].
42. Özden D, Karagözoğlu S, Yıldırım G. Intensive care nurses' perception of futility: job satisfaction and burnout dimensions. *Nurs Ethics*. 2013;20(4):436–47. Available from: <https://pubmed.ncbi.nlm.nih.gov/23411368/>. [cited 2024 May 13].
43. Georgios TAFSKVDDT. Nursing staff burnout: A critical review of the risk factors. *Int J Caring Sci*. 2022;15(1):668–79.

44. Owuor RA, Mutungi K, Anyango R, Mwita CC. Prevalence of burnout among nurses in sub-saharan africa: A systematic review. *JBISIR*. 2020;18(6):1189–207. Available from: https://journals.lww.com/jbisir/fulltext/2020/06000/prevalence_of_burnout_among_nurses_in_sub_saharan.3.aspx. [cited 2024 Sep 2].
45. Bailey JG, Mossenson AI, Whynot S, Nyirigira G, Gower S, Livingston PA. Mixed-Methods Cohort Study Evaluating the Impact of a One-Day Well-Being Course for Anesthesia Providers Working in Low-Resource Settings. *Anesth Analg*. 2024;139(2):375–84. Available from: <https://pubmed.ncbi.nlm.nih.gov/39008977/>. [cited 2024 Oct 7].
46. Squires A, Finlayson C, Gerchow L, Cimiotti JP, Matthews A, Schwendimann R, et al. Methodological considerations when translating burnout. *Burn Res*. 2014;1(2):59–68.

Publisher's note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.