

Assessment of burnout and the associated risks in intensive care unit nursing staff at Chris Hani Baragwanath Academic Hospital in Gauteng, South Africa



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Background: Burnout significantly impacts well-being and job performance. High burnout rates in healthcare providers affect patient care, job satisfaction, and staff retention. This is of particular concern in an intensive care unit (ICU). The first step in addressing burnout is to determine the extent of the problem.

Aim: This study explores burnout prevalence and risk factors among ICU nurses at an academic hospital in Gauteng, South Africa.

Setting: The study was conducted at Chris Hani Baragwanath Academic Hospital, Soweto, Gauteng province, South Africa.

Methods: A cross-sectional study design was employed in which a demographic questionnaire and the Maslach Burnout Inventory-Human Services Survey for Medical Personnel (MBI-HSS [MP]) were used.

Results: The study of 141 ICU nurses found that 51.1% exhibited burnout, characterised by high exhaustion and low personal accomplishment levels on the MBI-HSS (MP) (95% confidence interval 42.8% – 59.3%). Socio-demographic factors had minimal impact, but nurse category significantly influenced exhaustion levels ($\chi^2 = 11.74, df = 4, p = 0.019$), with professional and auxiliary nurses reporting higher exhaustion than staff nurses.

Conclusion: A moderate portion of the ICU nurses studied experience burnout, driven primarily by the demanding nature of the profession, while most socio-demographic factors show little impact.

Contribution: This study highlighted the rate of burnout among ICU nursing staff at an academic hospital, indicating the necessity of individual and institutional interventions to address this issue.

Keywords: burnout; ICU nursing staff; personal accomplishment; emotional exhaustion; risk factors; Tertiary Academic Hospital.

Introduction

Intensive care units (ICUs) are emotionally and physically taxing environments that can lead to high levels of stress and burnout among nursing staff.^{1,2} The ICU nurses frequently experience burnout, which is a serious concern because it affects not only the nurses' personal health but also patient care and overall health outcomes.^{1,3} Burnout has been a major concern for healthcare workers (HCWs) from an early stage, but especially during the coronavirus disease 2019 (COVID-19) pandemic.⁴ The HCWs faced unprecedented challenges, including increased workloads and emotional stress because of overcapacity.⁵ The burden placed on medical professionals during the pandemic resulted in greater awareness of the risk of burnout in HCWs.⁴ The shortage of nurses, particularly specialist nurses (SN), has contributed to the escalation of workplace stress within intensive care environments:

It is estimated that by 2030 there will be a global deficit of 4.8 million nurses and midwives, with the most significant shortages occurring in countries across Africa, South-East Asia, and the WHO Eastern Mediterranean Region, as well as certain regions of Latin America.⁶

Moreover, according to the Democratic Nursing Organisation of South Africa (DENOSA), from 2013 to 2022, the total number of nurses registered with the South African Nursing Council

(SANC) increased by merely 4% (from 260 000 to 271 000), despite the country's population expanding by 14% (from 52.9 million to 60.6 million) over the same period.⁷ In addition, ongoing budget reductions by the South African government project a 2.5% increase in healthcare funding for the 2024/2025 fiscal year; however, this is substantially overshadowed by the anticipated 6.5% inflation rate within the medical sector.⁸ Consequently, numerous healthcare providers, including nurses, are expected to face unemployment, leading to heightened nurse-to-patient ratios and an increased risk of burnout (DENOSA^{7,8}). Studies have shown that the ICU is considered one of the hospital's most challenging and stressful environments.⁹ The ICU environment can cause physical and mental health problems for patients and the healthcare team working there.¹⁰ The symptoms of burnout, such as diminished personal accomplishment (PA), depersonalisation (DP), and emotional exhaustion (EE), are common in healthcare settings.^{11,12} This is particularly true for ICU nursing staff, who face specific pressures such as challenging decision-making, high patient acuity, and end-of-life care. Alarming high burnout rates among ICU nurses have been reported globally, with negative impacts on patient safety, job satisfaction, and staff turnover rates.¹³ A recent meta-analysis of 113 international studies found that more than one-tenth of nurses experience burnout, representing a prevalence of 11.23% of nurses globally.¹⁴ The prevalence was highest in sub-Saharan Africa and lowest in Europe and Central Asia.¹⁵ These rates were coupled with a nursing shortage, especially in regions with limited healthcare resources, which further challenges the provision of standard care to critically ill patients. According to Chuang et al., risk factors for burnout are mainly related to age, sex, ICU working experience, nursing experience, working environment, organisational factors, workload, shift work, marital status, and educational degree.¹⁶ Younger and less experienced ICU nurses may be at a higher risk of burnout because of difficulties in coping with the workload and complexities in the ICU.^{16,17} Men are identified as being at higher risk, and work teams with more women are associated with a decreased burnout rate.^{18,19} Having a supportive family unit is important, as single and childless individuals are at an increased risk of burnout. Factors such as frequent night shifts and long working hours have been identified as contributing to burnout.²⁰ These factors, coupled with a nursing shortage, especially in regions with limited healthcare resources, may further impose a challenge on the provision of standard care for critically ill patients. Burnout in nurses is a direct result of excessive workloads and the entrenched dynamics of employment bureaucracies within the system.²¹ The workload and work environment are plagued by systemic issues such as irregular hours, 'voluntary' overtime, rotating shifts, and understaffing. There is a significant disconnect between expectations and the reality of nursing as a profession.²² Burnout significantly affects ICU nurses' physical and mental well-being, as well as the workplace, quality of nursing care, and patients' conditions and recovery. It leads to physical symptoms including fatigue, anxiety, sleep disorders, headaches, insomnia, frequent

flu-like illnesses, and reduced concentration and memory.²³ There is limited research specifically focused on the prevalence of burnout and associated risk factors at South African hospitals, despite the widely acknowledged significance of burnout among ICU nursing staff. It is crucial to understand the extent of burnout and the contributing factors in this particular setting to develop targeted therapies that meet the specific needs of ICU nurses. This study aims to assess the prevalence of, and risk factors associated with, burnout among nurses working in the ICU by measuring burnout using the Maslach Burnout Inventory-Human Services Survey for Medical Personnel (MBI-HSS [MP]) and correlating it with demographic data to determine whether there are specific risk factors in this population.

Research methods and design

Research design

This is a cross-sectional, quantitative, and descriptive assessment of ICU nurses. The research tools were the MBI-HSS (MP) questionnaire and a separate demographic inventory to collect and analyse numerical data. The MBI-HSS (MP) is a widely accepted tool for assessing burnout, particularly in the field of healthcare.^{11,12} It consists of 22 items covering three subscales: EE, DP, and PA. Emotional exhaustion reflects the stress and strain that individuals experience, while DP assesses negative attitudes and feelings that lead to insensitivity and a lack of compassion towards patients. Personal achievement evaluates the feeling of success in achieving occupational goals, and a reduced sense of accomplishment results in decreased job satisfaction.^{11,12} Each item is scored from 0 to 6 based on the self-reported frequency of the feeling addressed.^{11,12} The EE domain consists of nine items for a total score range of 0–54, the DP domain consists of five items, range of 0–30, and the PA domain consists of eight items for a range of 0–48. Scores generated using the MBI protocol are used to identify different degrees of burnout.^{11,12} For EE, scores indicate a low (< 17), moderate (18–29), or high (> 30) degree of exhaustion. In DP scores are classified as low (< 5), moderate (6–11), or high (> 12). With PA, scores are low (< 33), moderate (34–39), or high (> 40) level of PA.^{11,12} Standard cut-offs were applied: high EE \geq 27, high DP \geq 10 and low PA \leq 33. The strict three-dimensional burnout criterion was applied, in which burnout is present only when all three thresholds are met simultaneously (high EE, high DP and low PA). The calculation was performed directly on the raw dataset for each participant. All analyses were based on standard MBI subscale thresholds in line with Maslach and Leiter.

Research setting

South Africa's public healthcare system serves the majority of the population and is characterised by high service demand and resource constraints, particularly in tertiary referral facilities in Gauteng province. These systemic pressures contribute to high workloads for healthcare professionals, including nurses working in critical care settings. The study was conducted at Chris Hani Baragwanath Academic

Hospital, a large tertiary public hospital in Soweto, Gauteng province. The hospital serves a predominantly urban and peri-urban population with a high burden of disease and provides specialised care to a catchment population of several million people. As a major referral centre, it manages a high volume of emergency admissions and complex cases from surrounding healthcare facilities. The ICU included in this study comprised general medical and surgical adult ICUs managing high-acuity patients, including severe trauma, sepsis, multi-organ failure, and postoperative complications. These units are characterised by complex case mix, high patient turnover, and sustained staffing pressures, resulting in a substantial patient care burden for nursing staff.

Sampling

A purposive sampling technique was used to recruit participants. The sample size was determined based on the

total number of ICU nursing staff available during the study period which was 209.

Method of data collection

Data were collected using a structured, self-administered demographic questionnaire and the MBI-HSS (MP), distributed to the participating nurses. The questionnaire collected information including gender, age, marital status, number of children, category of nurse (Auxiliary Nurse, Professional Nurse [PN], Staff Nurse), years of experience, engagement in extra remunerative work, and preferred shift (day or night). Burnout was assessed using the MBI. Additional questions were included to identify potential risk factors associated with burnout, such as workload, support systems, and job satisfaction. The study was approved by the ethics committee of the University of the Witwatersrand. Permission to conduct the study was granted by the head of nursing and the Chief Executive Officer (CEO) of the hospital. No names or other identifying information about the participants was gathered. All gathered data in the form of paper records and password-protected electronic files were safely kept in locked cabinets. The data were only accessible to the research team. The confidentiality of the data was strictly maintained.

TABLE 1: Socio-demographic profile of the participants ($N = 141$).

Variable	<i>n</i>	Percentage	Mean age	s.d.
Total	-	-	-	-
Age in years	-	-	44.2 ± 8.6	40–50
Ages grouped (years)				
20–39	35	25	-	-
35–49	63	46	-	-
> 50	40	29	-	-
Missing	6	-	-	-
Gender				
Male	15	11	-	-
Female	125	89	-	-
Missing	1	-	-	-
Marital status				
Single	75	54	-	-
Married	46	34	-	-
Divorced	8	6	-	-
Widow or widower	8	6	-	-
Missing	4	1	-	-
Number of children				
None	12	8	-	-
1–3	115	81	-	-
> 4	11	8	-	-
Missing	6	3	-	-
Category of nurse				
AN	15	11	-	-
PN	103	73	-	-
SN	18	13	-	-
Missing	5	4	-	-
Experience (years)				
0–5	28	20	-	-
6–10	47	34	-	-
> 10	63	46	-	-
Missing	3	2	-	-
Extra remunerative work				
Yes	67	54	-	-
No	57	46	-	-
Missing	17	12	-	-
Preferred shift				
Day	75	58	-	-
Night	54	42	-	-
Missing	12	10	-	-

AN, auxiliary nurse; PN, professional nurses; SN, specialist nurses.

TABLE 2: The relationship between socio-demographic variables and high, moderate and low emotional exhaustion scores.

Demographic features	High		Moderate		Low		Statistics		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>df</i>	<i>P</i> -value
Gender (<i>n</i> = 141)	-	-	-	-	-	-	3.00	2	0.223
Female (<i>n</i> = 125)	57	46	39	31	29	23	-	-	-
Male (<i>n</i> = 15)	5	33	8	53	2	13	-	-	-
Age (years)	-	-	-	-	-	-	2.90	4	0.575
20–39	13	37	15	43	7	20	-	-	-
40–49	27	43	20	32	16	25	-	-	-
> 50	21	53	12	30	7	18	-	-	-
Marital status	-	-	-	-	-	-	3.86	6	0.696
Single	29	39	30	40	16	21	-	-	-
Married	23	50	12	26	11	24	-	-	-
Divorced	3	38	3	38	2	25	-	-	-
Widowed	5	63	2	25	1	13	-	-	-
Number of children	-	-	-	-	-	-	2.04	4	0.729
None	3	25	3	42	6	33	-	-	-
1–3	52	45	38	33	25	22	-	-	-
≥ 4	5	45	4	36	2	18	-	-	-
Category of nurse	-	-	-	-	-	-	11.74	4	0.019
AN	8	44	2	11	8	44	-	-	-
PN	47	46	37	36	19	18	-	-	-
SN	4	22	10	56	4	22	-	-	-
Experience (years)	-	-	-	-	-	-	5.41	4	0.248
0–5	8	42	7	37	4	21	-	-	-
6–10	16	34	21	45	10	21	-	-	-
> 10	34	54	16	25	13	21	-	-	-
Extra remunerative work	-	-	-	-	-	-	3.48	2	0.176
Yes	29	51	15	26	13	23	-	-	-
No	25	37	28	42	14	21	-	-	-
Preferred shift	-	-	-	-	-	-	3.48	2	0.175
Day	35	47	28	37	12	16	-	-	-
Night	22	41	16	30	16	30	-	-	-

Note: Statistics = Pearson's Chi-squared contingency table tests; a significant outcome is shown in bold.

AN, auxiliary nurse; PN, professional nurses; SN, specialist nurses.

TABLE 3: The relationship between socio-demographic variables and high, moderate and low depersonalisation scores.

	High		Moderate		Low		Statistics		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>df</i>	<i>P</i> -value
Gender	-	-	-	-	-	-	0.490	2	0.781
Female	121	97	2	2	2	2	-	-	-
Male	15	100	0	0	0	0	-	-	-
Age (years)	-	-	-	-	-	-	2.420	4	0.660
20–39	35	100	0	0	0	0	-	-	-
40–49	61	97	1	2	1	2	-	-	-
> 50	21	53	0	0	0	0	-	-	-
Marital status	-	-	-	-	-	-	4.020	6	0.675
Single	75	100	0	0	0	0	-	-	-
Married	44	96	1	2	1	2	-	-	-
Divorced	8	100	0	0	2	25	-	-	-
Widow	8	100	0	0	0	0	-	-	-
Number of children	-	-	-	-	-	-	16.012	4	0.003
None	11	92	0	0	1	8	-	-	-
1–3	114	99	0	0	1	1	-	-	-
≥ 4	10	91	1	9	0	0	-	-	-
Category of nurse	-	-	-	-	-	-	1.070	4	0.899
AN	18	100	0	0	0	0	-	-	-
PN	100	97	1	1	2	2	-	-	-
SN	18	100	0	0	0	0	-	-	-
Experience (years)	-	-	-	-	-	-	2.170	4	0.704
0–5	19	100	0	0	0	0	-	-	-
6–10	45	96	1	2	1	2	-	-	-
> 10	62	98	0	0	1	2	-	-	-
Extra remunerative work	-	-	-	-	-	-	1.730	2	0.421
Yes	65	97	1	1	1	1	-	-	-
No	57	100	0	0	0	0	-	-	-
Preferred shift	-	-	-	-	-	-	2.110	2	0.348
Day	74	99	1	1	0	0	-	-	-
Night	53	98	0	0	1	2	-	-	-

Note: Statistics = Pearson's Chi-squared contingency table tests; a significant outcome is shown in bold.

AN, auxiliary nurse; PN, professional nurses; SN, specialist nurses.

Method of data analysis

Statistical analyses were conducted in R software (version 4.00; www.R-project.org). The data sets in the study comprised categorical variables, so non-parametric analyses were used. Tests were two-tailed, and the model significance was set at 0.05. Data are reported descriptively as counts and percentages and presented in charts, tables or in text. The MBI protocol was used to generate scores for EE, DP and PA. Pearson's goodness-of-fit test was used to analyse the distribution of socio-demographic variables against an expected (null) model. Pearson's Chi-squared contingency table tests were used to analyse the relationship between gender, age, marital status, number of children, grade of nurse, years of experience, performance of additional remunerative work and preferred shift and the categories of EE, DP and PA. For significant outcomes, standardised residuals were calculated to obtain pairwise comparisons between variables and EE, DP or PA.

Ethical considerations

Ethical clearance to conduct this study was obtained from the University of the Witwatersrand Human Research Ethics Committee (No. M230426 MED22-08-108).

TABLE 4: The relationship between socio-demographic variables and moderate and low personal accomplishment scores.

	Moderate		Low		Statistics		
	<i>n</i>	%	<i>n</i>	%	χ^2	<i>df</i>	<i>P</i> -value
Gender	-	-	-	-	0.01	1	0.907
Female	3	2	122	98	-	-	-
Male	1	7	14	93	-	-	-
Age (years)	-	-	-	-	1.85	2	0.398
20–39	0	0	35	100	-	-	-
40–49	3	5	60	95	-	-	-
> 50	1	3	39	98	-	-	-
Marital status	-	-	-	-	0.88	3	0.830
Single	3	4	72	96	-	-	-
Married	1	2	45	98	-	-	-
Divorced	0	0	8	100	-	-	-
Widow	0	0	8	100	-	-	-
Number of children	-	-	-	-	0.82	2	0.662
None	0	0	12	100	-	-	-
1–3	4	3	111	97	-	-	-
≥ 4	0	0	11	100	-	-	-
Category of nurse	-	-	-	-	0.99	2	0.608
AN	1	6	17	94	-	-	-
PN	3	3	100	97	-	-	-
SN	0	0	18	100	-	-	-
Experience (years)	-	-	-	-	1.33	2	0.513
0–5	0	0	19	100	-	-	-
6–10	1	2	46	98	-	-	-
> 10	3	5	60	95	-	-	-
Extra remunerative work	-	-	-	-	0.00	1	1.000
Yes	2	3	65	97	-	-	-
No	2	4	55	96	-	-	-
Preferred shift	-	-	-	-	0.03	1	0.858
Day	3	4	72	96	-	-	-
Night	1	2	53	98	-	-	-

Note: Statistics = Pearson's Chi-squared contingency table tests; none of the outcomes were significant.

AN, auxiliary nurse; PN, professional nurses; SN, specialist nurses.

TABLE 5: Participants with high, moderate and low scores in the Maslach Burnout Inventory domains.

Variable	Level	Number	Prevalence (%)	Lower CI (%)	Upper CI (%)
EE	High	63	44.70	36.50	52.90
	Moderate	47	33.30	25.60	41.10
	Low	31	22.00	15.10	28.80
DP	High	137	97.20	94.40	99.90
	Moderate	2	1.42	0.17	5.03
	Low	2	1.42	0.17	5.03
PA	High	0	-	-	-
	Moderate	4	2.84	0.78	7.10
	Low	137	97.20	94.40	99.90
Burnout	Scored positive	72	51.10	42.80	59.30

EE, Emotional Exhaustion; DP, Depersonalisation; PA, Personal Accomplishment; CI, confidence interval.

Results

The study achieved a 67.46% response rate, which is 141 ICU nurses at the hospital.

Table 1 revealed a pronounced gender disparity in the nursing workforce, with a higher proportion of female nurses ($n = 125$, 89%) compared to male nurses ($n = 15$, 11%), a statistically significant difference ($p < 0.001$). The age distribution indicates that most respondents were between

40 years old and 49 years old (63.46%), predominantly single ($n = 75$, 55%), and most of the nurses had 1–3 children ($n = 115$, 83%). In addition, a substantial number of respondents were PN with over 10 years of experience ($n = 63$, 46%). Overall, 51.1% of the ICU nurses sampled suffer from burnout. The study revealed that 44.7% experience high EE, and about one-third have moderate levels. Furthermore, 97.2% report high DP and low PA of 95%, with no participants feeling high levels of achievement.

Table 2 shows that females exhibited a greater percentage of high exhaustion (46%) compared to males (33%), while males exhibit a higher percentage of moderate exhaustion (53%) compared to females (31%). Despite these differences, statistical analysis indicates no significant relationship between gender and EE levels with the Chi-squared test result ($\chi^2 = 3.00$, $df = 2$, $p = 0.223$). Differences in EE levels show a trend of increasing with increasing age, but the chi-squared test result of ($\chi^2 = 2.90$, $df = 4$, $p = 0.575$) suggests no significant relationship between age and exhaustion levels. Table 2 highlighted a significant relationship is found between the category of nurse and occupational exhaustion levels. Professional nurses had the highest percentage in the high exhaustion category (46%), while SN showed the highest percentage in the moderate exhaustion category (56%), with the chi-squared test result ($\chi^2 = 11.74$, $df = 4$, $p = 0.019$). No significant relationships are identified between marital status, number of children, experience, extra remunerative work, preferred shift, and occupational exhaustion levels.

The relationship between socio-demographic variables and DP scores reveals that most variables, as presented in Table 3, including gender, age, marital status, category of nurse, experience, extra remunerative work, and preferred shift, do not show significant associations with DP scores, as indicated by their p -values exceeding the 0.05 threshold. However, an exception is the number of children, which demonstrates a significant relationship with DP scores ($p = 0.003$). Specifically, individuals with no children or four or more children exhibit higher instances of moderate and low DP scores compared to those with one to three children, who predominantly show high DP scores. Although not statistically significant, a greater proportion of younger nurses (20–49 years) had a high DP compared to older nurses.

The relationship between socio-demographic variables and PA scores, using Pearson's Chi-squared tests (Table 4), indicates that none of the socio-demographic variables show significant associations with PA scores, as all p -values are greater than 0.05. For instance, both women and men report low PA scores (98% and 93%, respectively), and similar trends are observed across different age groups, marital status, and other variables. When applying the strict three-dimensional criterion (high EE, high DP and low PA concurrently), 72 of the 141 nurses met all three thresholds (Table 5). This corresponds to a burnout prevalence of 51.1%

Discussion

Among the 141 ICU nurses surveyed, 51.1% met the criteria for burnout, with high EE reported by 44.7% and high DP by 97.2%. In addition, none reported high levels of PA. According to the SANC statistics of 2023, about 89% of registered nurses are women, and a significant proportion belong to the age group of 35–50. Likewise, many South African nurses have more than a decade of professional experience and reflect the ageing profile of the nursing workforce at the national level.²⁴ A statistically significant association was found between the PN category and higher EE ($p = 0.019$), and between the number of children and DP scores ($p = 0.003$). These findings reflect a critical burden of burnout in working mothers. Based on the three-dimensional definition of burnout, the observed prevalence (51.1%) is broadly comparable to estimates reported in international literature. A systematic review conducted in 2023 by Papazian et al. reported a burnout prevalence of approximately 44% among ICU healthcare professionals, increasing to about 61% during the COVID-19 pandemic. While the prevalence reported in this study falls within this range, it is important to observe that none of the studies included in the meta-analysis were conducted within African settings, and most originated from high-income countries. Differences in healthcare system resources, staffing levels, patient acuity, and structural constraints within low- and middle-income settings may therefore influence variations in burnout prevalence and should be taken into account when interpreting these findings.

Socio-demographic variables and emotional exhaustion

A total of 63 nurses (44.7%, CI [confidence interval]: 36.5% – 52.9%) were experiencing high levels of EE. These findings (Figure 1) align with a systematic review by Papazian et al., who reported a similar prevalence of 47%.³ Interestingly, socio-demographic factors such as gender, age, marital status, family responsibilities, or parental status did not significantly affect EE levels. This may indicate that, in this sample, occupational rather than social factors are a more consistent driver of burnout. However, different nursing roles had a significant impact on EE levels, which is consistent with research by Zhang et al., who found that job roles and responsibilities influence burnout and exhaustion. However, experience, additional work responsibilities, and shift work did not show significant differences in EE levels, as has been observed by Dall'Ora et al.^{25,26} This suggests that while shift work and long hours contribute to fatigue, they do not necessarily lead to higher levels of burnout. The very high overall rate of burnout in the participants and the relatively small sample size may also have resulted in specific occupational categories not being separated from the sample.

Socio-demographic variables and depersonalisation

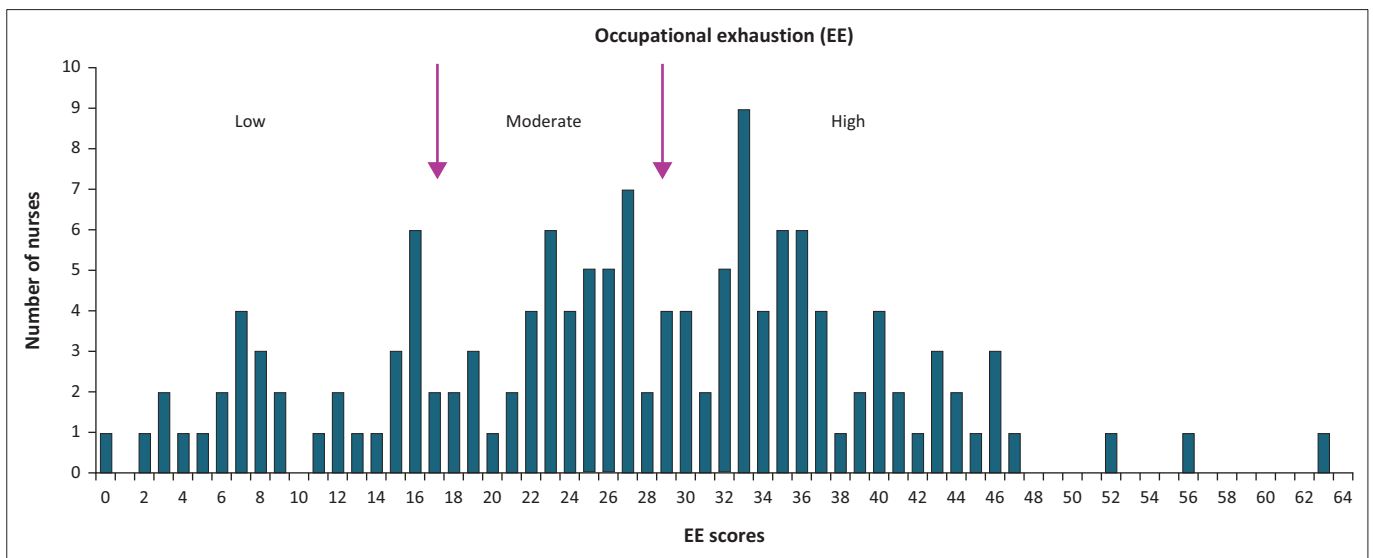
The results (Figure 2) indicate a high prevalence of DP among ICU nurses, with 97.2% (CI: 94.4% – 99.9%) experiencing

elevated levels of DP. Comparative studies have shown a lower DP rate of 29%, which can be attributed to different work environments.³ An analysis of various demographic and work-related factors, such as gender, age, marital status, nursing category, experience, extra remunerative work, and preferred shift, reveals no significant impact on DP levels, as indicated by p -values greater than 0.05. This finding is consistent with Purvanova and Muros, who also reported no significant gender differences in burnout.²⁷ However, the number of children appears to be a significant factor, with a p -value of 0.003, suggesting that having children could influence DP levels. Moreover, having no children or more than three children was significant in our study population. There are mixed findings in the literature regarding this variable. Fiksenbaum suggests that having children can increase stress and burnout, while Jackson et al.²² propose that children might provide fulfilment and support, potentially

mitigating burnout.^{3,28} In South African's resource-constrained public healthcare sector, systemic service pressures may contribute to depersonalisation as an adaptive response to chronic occupational stress. As Illustrated in Figure 2 this finding underscores the complex interplay of personal and professional factors in influencing burnout among ICU nurses. This highlights the interplay of personal and professional factors in influencing burnout among ICU nurses.

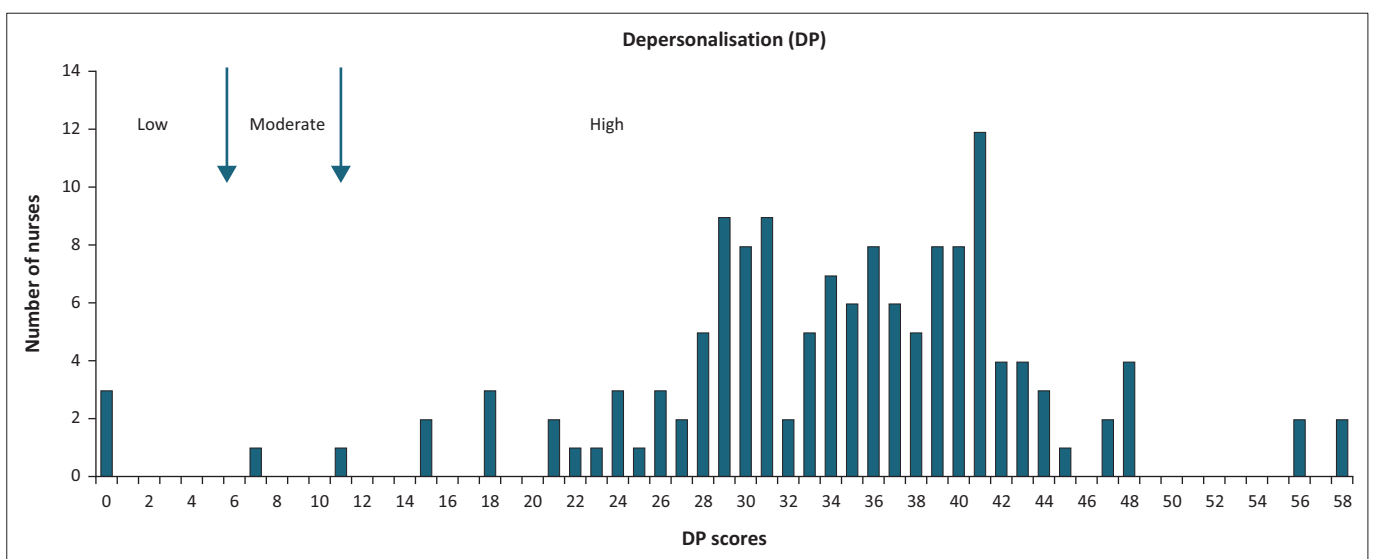
Socio-demographic variables and personal accomplishment

The PA levels among ICU nurses were notably low (Figure 3), and 137 nurses (97.2%, CI 94.4% – 99.9%) experienced low PA. High levels of burnout have been documented among intensive care nurses globally and are associated with poorer job satisfaction, increased staff turnover and potential risks to patient safety.¹³ Personal accomplishment levels vary



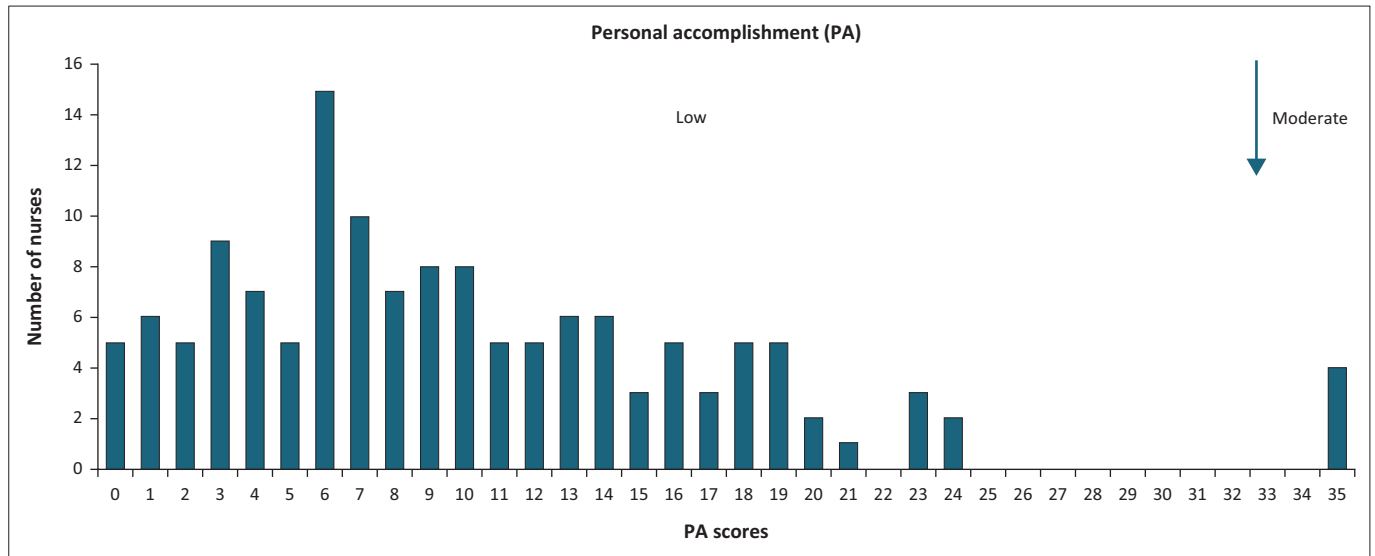
EE, emotional exhaustion.

FIGURE 1: The distribution of scores by the number of nurses for emotional exhaustion.



DP, depersonalisation.

FIGURE 2: The distribution of scores by the number of nurses for depersonalisation.



PA, personal accomplishment.

FIGURE 3: The distribution of scores by the number of nurses for personal accomplishment.

among countries, for example, in Spain, PA levels among nurses were found to be 63.3%, in Brazil, 52.9%, and in China, approximately 20%.^{29,30} Demographic or occupational variables did not significantly influence low levels of personal achievement among ICU nurses. Research by Purvanova and Muros suggested that burnout and PA in medical environments are not strongly affected by gender.²⁷

Limitations

Burnout remains a contested construct with no universally accepted operational definition.^{3,14} Although the MBI conceptualises burnout across three related dimensions,^{11,12} different studies apply varying thresholds and criteria, which complicates comparisons across settings. In this study, we adopted the strict three-dimensional criterion to reduce misclassification^{11,31}; however, alternative approaches may yield different prevalence estimates. These methodological differences should be considered when interpreting the findings. The cross-sectional design of the study does not account for changes in levels of burnout over time. To better understand how burnout evolves and the factors that contribute to its development, longitudinal studies would be necessary. It is also important to consider that there may be other unmeasured factors influencing burnout that were not accounted for in the study, such as organisational culture, support systems, or personal coping mechanisms. Furthermore, the reliance on self-reported data to measure burnout and socio-demographic factors may impact the results. Participants may have underreported or over-reported their levels of burnout because of social desirability or to communicate the level of their distress. Furthermore, the study could have inherent biases because of the voluntary nature of participation, where those experiencing higher levels of burnout might be more inclined to participate (a cry for help), thus skewing the results.

Conclusion and recommendations

The study focused on burnout, measured by the MBI-HSS (MP), among ICU nursing staff and associated risk factors. The study found that 51.1% of participants experienced burnout, with a confidence interval ranging from 42.8% to 59.3%. Notably, nurses reported significantly higher levels of EE and a lower sense of PA. The analysis showed that demographic and occupational variables did not significantly impact burnout levels, but different nursing categories played a role. This emphasises the need for interventions to address burnout in ICU nurses to enhance staff well-being and thereby improve patient care.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

CRedit authorship contribution

Matuka Banyane: Conceptualisation; Formal analysis; Funding acquisition; Investigation; Methodology; Writing – original draft. Wendy Friedlander: Conceptualisation;

Supervision; Writing – review & editing. All authors reviewed the article, contributed to the discussion of results, approved the final version for submission and publication, and take responsibility for the integrity of its findings.

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Data availability

The data that support the findings of this study are available on request from the corresponding author, Matuka Banyane.

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