ORIGINAL ARTICLE

Burnout in South African dialysis practitioners: a mixed methods study

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ABSTRACT

Introduction: Provision of dialysis to patients with kidney failure relies on skilled dialysis practitioners (DPs), about whom little is known of the effect on burnout of workplace stressors, resource limitations, and the COVID-19 pandemic, which have increased the condition in other nursing specialities. We therefore analysed burnout in South African DPs working in the public sector.

Methods: Sixty-four anonymous volunteers were recruited from three public sector treatment centres in Johannesburg. Burnout was assessed using the Maslach Burnout Inventory–Human Services Survey (MBI–HSS); the study population additionally completed surveys recording their workplace and COVID-19 experiences. The effect of respondent demographics, workplace, and pandemic experiences on burnout was determined using regression modelling.

Result: Burnout occurred in 22%. Workplace challenges affected 97% of our sample; staffing shortages (97%), insufficient pay (75%), and perceived lack of management support (70%) were frequently cited. Sixty-four percent reported deteriorated perception of their career following COVID-19. Age (ß –0.29 ± 0.12, P = 0.015), longer time in current position (ß 0.38 ± 0.15, P = 0.012), lack of management support (ß 2.76 ± 0.93, P = 0.003), and lower career perception following COVID-19 (ß 3.68 ± 0.91, P < 0.001) increased emotional exhaustion; inadequate pay reduced personal sense of accomplishment (ß –1.12 ± 0.54, P = 0.036). Impaired career perception following COVID-19 independently increased burnout (OR 2.07, 95% CI 1.06–4.06, P = 0.033).

Conclusions: Burnout rates in South African DPs are high and exceed those of many other regions. Perceived inadequate remuneration and poor management support are important factors underlying the condition. COVID-19 experiences continue to exert a significant effect on career appraisal and burnout.

Keywords: burnout; dialysis technologists; dialysis nurses; work experience; COVID-19.

INTRODUCTION

The number of patients receiving dialysis is reported to be increasing in low- and middle-income countries [1]. Access to nephrologists remains poor in these regions, including South Africa [2]. As a result, nurse and technologist dialysis practitioners (DPs) in these settings are often required to assume significant responsibility for patient care [3].

Close and frequent contact with these professionals has important implications for the individual patient's experience of dialysis through the therapeutic relationship [4], and the benefit of DP-led interventions on dialysis patient compliance with treatment has been shown in several studies [5]. At the same time, DPs are uniquely positioned to ameliorate treatment-related discomfort [6], and to

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prepare patients for future dialysis-related complications [7]. As a result, these practitioners have been shown to significantly increase the efficiency of care provided by nephrologists in dialysis units, leading to improved patient perceptions of care [8].

Patient-centred shared decision-making is known to facilitate treatment compliance, reduce anxiety, and improve quality of life in dialysis patients; these benefits may be particularly evident in patients from disadvantaged backgrounds [9]. The importance of cultural sensitivity in facilitating shared decision-making in patients living with kidney failure and in the provision of appropriate care to these patients is increasingly recognised [10]. DPs in South Africa serve as important cultural mediators between the majority Black African dialysis patient population and the largely white and Indian/Asian nephrologist specialists [11].

Provision of adequate care to dialysis patients thus requires retention of DPs, yet shortages of these skilled practitioners persist, with the global South including South Africa being particularly affected [2].

Burnout is a known precipitant for DPs seeking alternative employment [12]. Defined by the lack of a sense of personal accomplishment, exhaustion and depersonalisation, the presence of these latter features of burnout in DPs may additionally compromise patient outcomes. Burnout in DPs has been associated with reduced patient safety [13] and lower patient satisfaction in dialysis units [14].

These practitioners face unique risks of burnout. Long-term contact with individual patients at high risk of mortality, patient non-compliance with life-saving therapy, heavy workloads, and potential self-risk from exposure to blood-borne pathogens are just some of the stressors associated with burnout in these healthcare workers [15]. The COVID-19 pandemic has been reported to have substantially contributed to burnout in the staff of dialysis units [16]. DPs in the South African public healthcare sector face significant moral distress arising from long-standing resource limitations, which is known to increase burnout risk [17].

The effect of these factors on nephrologists in South Africa has previously been documented [11], but to date the experience of DPs remains unreported. We therefore undertook the first South African survey of burnout and contributing factors in this vital group of healthcare workers.

METHODS

A study population comprising nurses and clinical technologists was recruited from the peritoneal and haemodialysis units of three academic hospitals in Johannesburg, South Africa between 1 July and 1 September 2023. After providing informed consent, these participants self-completed a three-part anonymous questionnaire consisting of 1) a modified Maslach Burnout Inventory–Human Services Survey (MBI–HSS); 2) a 5-point Likert-scale survey of workplace experience; and 3) a 5-point Likert-scale survey of experiences during the COVID-19 pandemic. Data were extracted from completed questionnaires and collated in a secured Excel™ database accessible only to the primary investigators prior to export for analysis using Stata version 17.0 SE (StataCorp LLC, College Station, Texas, USA). Permission to undertake this study was obtained from the Human Research Ethics Committee of the University of the Witwatersrand (protocol reference number 220841) and was conducted in accordance with the Declaration of Helsinki.

Measurement tools

Severity of burnout was quantified using the MBI–HSS, which has been validated as a measurement tool for nurses working in the South African context [18]. The modified instrument consists of a 5-point Likert scale which describes burnout according to the domains of emotional exhaustion, depersonalisation, and lack of personal accomplishment using a set of 22 questions [19]. Summed scores for the three domains are subcategorised as low, medium and high; burnout was defined, as recommended, by a high emotional exhaustion and elevated depersonalisation score, or by a high emotional exhaustion and low personal accomplishment score [19].

To interrogate factors contributing to burnout as determined by the modified MBI–HSS questionnaire, participants additionally completed 5-point Likert-scale surveys documenting workplace experiences (18 questions) and experiences during the COVID-19 pandemic (5 questions). Respondents additionally provided free-form written submissions detailing workplace stressors.

Internal reliability of these measurement tools was determined using the Cronbach alpha test, whose value for the modified MBI–HSS with this cohort was 0.82, was 0.84 for the COVID-19 pandemic experience survey, and 0.77 for the workplace survey.

Demographic and professional parameters

Additional data were collected pertaining to participants' self-reported age, training in dialysis (via college or experience), total years spent in employment, time in current position, professional designation (clinical technologist, nursing assistant, enrolled nurse, or professional nurse), relationship status (single, married or in a long-term relationship, or widowed), and number of dependants.

Multicollinearity was assessed by determining the variance

inflation factor (VIF) for all demographic and professional parameters included. The VIF for all these parameters was less than 4.0, with the maximum value being 3.25 (for years spent working).

Statistical analysis

Emotional exhaustion, depersonalisation, and personal accomplishment scores were computed and subcategorised as low, medium, and high as recommended. Burnout category was assigned as per the MBI–HSS definition. Responses to the workplace and COVID-19 experience surveys were collated and summarised as binary parameters for reporting. Free-form responses detailing workplace stressors were subjected to thematic review. Heteroskedastic linear regression was used to model the effect of workplace and COVID-19 experience survey responses on emotional exhaustion, depersonalisation, and personal accomplishment subdomains of the MBI–HSS; in this analysis, Likert-scale responses to the former regressors were transformed to a linear scale of –2 to +2 to facilitate modelling. Finally, logistic regression was used to evaluate the contribution of parameters identified in the preceding analysis on the binary outcome of burnout.

RESULTS

Characteristics of study population

Responses were received from 64 participants, representing 69% of dialysis unit staff employed across all three sites. Demographic and professional data of the sampled cohort are presented in Table 1.

A substantial proportion of participants (22, 34%) reported overlapping responsibilities in the dialysis facilities, namely chronic and acute haemodialysis units (9, 41%); chronic and acute haemo- and peritoneal dialysis units (7, 32%); and chronic haemo- and peritoneal dialysis units (5, 23%).

Burnout and subdomain prevalence among respondents

Responses to the modified MBI-HSS survey are shown in Table 2. Burnout, as defined by high emotional exhaustion and depersonalisation scores, or an elevated emotional exhaustion and low personal accomplishment score, were recorded by 14 respondents (22%).

Workplace experience and stressors

Responses to the workplace experience survey are shown in Figures 1 and 2. Sixty-one (97%) respondents reported workplace challenges: lack of sufficient staff (61 respondents, 97%), insufficient pay (48, 75%), and lack of support from management (44, 70%) were significant contributors. Thirty-seven participants (58%) reported feeling unsafe in their place of work; 41 (65%) considered that their unit lacked adequate security. Forty-three respondents (68%) reported that working hours were fair; overtime hours were characterised as reasonable by 30 subjects (48%). Seventeen respondents (27%) recorded that patients were understanding of their challenges; four (6.3%) reported feeling threatened by patients in the workplace; 33 participants (52%) recorded that medical staff were aware of their challenges; and 30 (47%) felt supported by medical colleagues.

Table 1. Demographic and professional data.

Age (years)*	44.0 (35.0–53.0)
Total years spent working*	17.0 (12.5–24.5)
Time in current position (years)*	8.0 (3.5–12.5)
Professional designation	
Clinical technologist	7 (11%)
Nursing assistant	1 (1.6%)
Enrolled nurse	7 (11%)
Professional nurse	49 (77%)
Primary area of responsibility	
Acute haemodialysis	28 (44%)
Chronic haemodialysis	43 (67%)
Peritoneal dialysis	20 (31%)
Transplant (recipient evaluation)	1 (1.6%)
Personal relationship	
Single	23 (36%)
Married / long-term partnership	36 (56%)
Widowed	4 (6%)
Number of dependants*	4.0 (2.5–6.0)

*Median (interquartile range).

Table 2. MBI–HSS survey responses.

	Score	Low	Medium	High
	Mean ± SD	n (%)	n (%)	n (%)
Emotional exhaustion	20.9 ± 7.8	8 (13%)	14 (22%)	42 (66%)
Depersonalisation	4.3 ± 3.4	42 (66%)	16 (25%)	6 (9.4%)
Lack of personal accomplishment	22.4 ± 4.6	17 (27%)	20 (31%)	27 (42%)

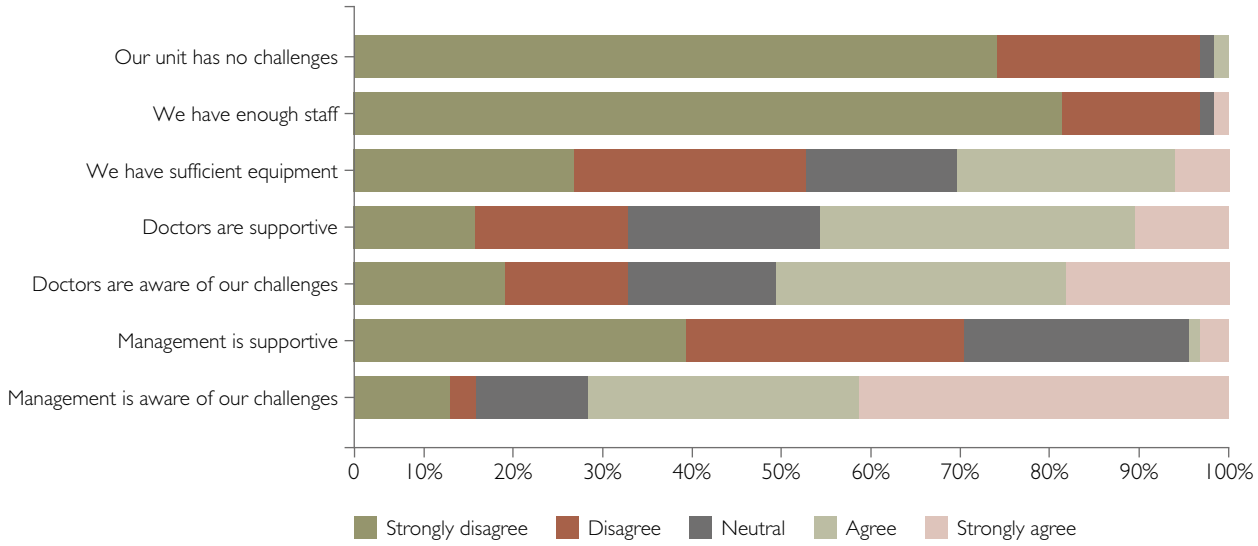

Figure 1. Workplace experience survey responses: staffing, equipment, and support.

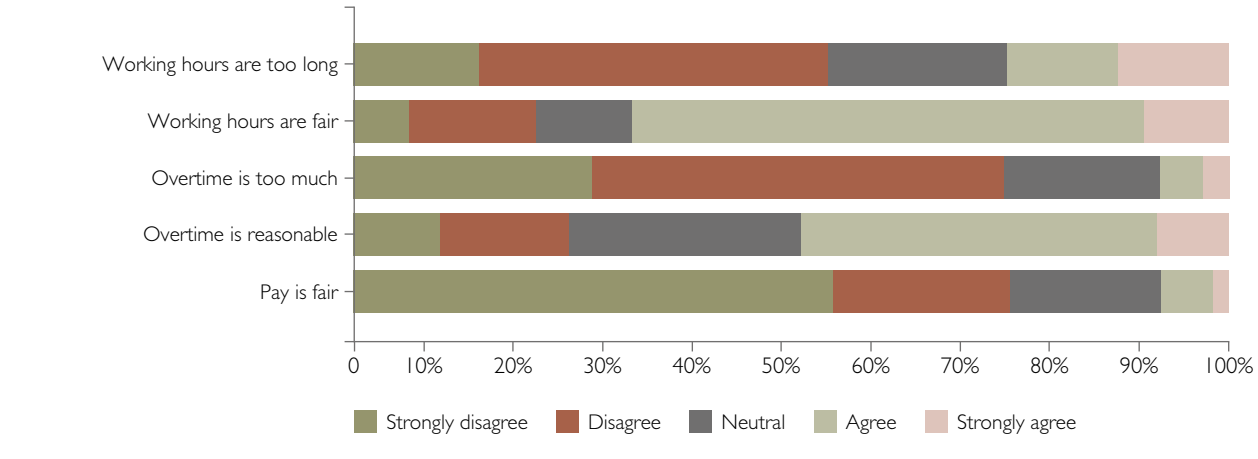

Figure 2. Workplace experience survey responses: working hours and pay.

Resource limitations (reported by 31 DPs, 48%), perceived lack of support from institutional management (16 respondents, 25%), and excessive workload (10 respondents, 16%) emerged as the main elements in thematic analysis of free-form responses detailing negative workplace experiences; some 7 respondents additionally reported experiencing difficulties in DP–patient relationships and 3 indicated inadequate remuneration.

Resource limitations included inadequate staffing (21 respondents) and the stress that arose from workplace infrastructure and equipment (10 replies). Lack of consumables was a significant contributor to equipment-related stress in the workplace (3 respondents); two participants described crumbling dialysis unit infrastructure as a "threat to [personal] health and safety".

Inadequate staffing was also expressed as excessive workload, with three respondents citing persistent low nurse-to-patient ratios, and two subjects reporting an increase in patient numbers as contributors to excessive workload. Other contributors to this theme included the specialised nature of DP practice including administrative duties (cited as "we have no time for paperwork"), and the feeling of "being overburdened by patients from other facilities" (one respondent each).

Two practitioners reported feeling obliged to support patients financially, and a similar number cited their distress

at being unable to provide patients with an adequate level of care, noting "we can't improve our services [to patients]". However, some respondents considered that "patients [are] inconsiderate about challenges despite being aware [of them]", a factor that contributed to the theme of poor DP–patient relationships, with one participant going so far as to report "hatred between staff and patients". Broader societal factors such as xenophobia also found expression in this theme, with another respondent indicating difficulties in maintaining a professional relationship with "foreign nationals".

Free-form responses indicated a perception that institutional management was aware of resource limitations and excessive workload but was either "unable to assist" or unwilling to intervene, with some in the study population perceiving that "challenges aren't addressed and we stay overworked" and "management only want nursing to continue despite knowing [our] challenges". Management was perceived also as "unsupportive" (three respondents), "unresponsive" (three respondents), and "aloof" (one respondent); as a result, some DPs felt "left to fend for ourselves". This perceived lack of support, and difficult relationships with management (cited as "management need to change their manner of handling situations in the workplace") may contribute to an expectation that medical staff should intervene on behalf of DPs, illustrated by free-form responses such as "doctors don't take challenges to management" and "no support or advocacy from doctors".

The effect of these workplace experiences on emotional well-being was evidenced by respondents describing themselves as "unappreciated" (6 replies), "frustrated" (5 examples), "burnt out" (3 cases), and "exhausted" (2 respondents).

Experiences during the COVID-19 pandemic

The DPs generally reported a deterioration in working conditions during the COVID-19 pandemic (Figure 3). Fifty-six (89%) of them described extra workload due to additional patient numbers; 58 (92%) indicated that workload expanded as a result of absenteeism among colleagues. Work stress was exacerbated by fears for personal health by 58 respondents (91%). Excess patient deaths during the pandemic resulted in a decline in 56 (88%) respondents' feelings about their career and, overall, a fall in the attitudes of 41 (64%) of them towards their career during this time.

Effect of workplace and COVID-19 pandemic experiences on burnout and its subdomains

Younger age, longer time spent in current position, registration as a professional nurse, perceived lack of support from hospital management, and self-reported deterioration in career fulfilment due to experiences during the COVID-19 pandemic were associated with increased emotional exhaustion (Table 3). The last was also associated with a higher depersonalisation score. The perception of inadequate pay reduced the personal accomplishment score. Also observed was a weak trend towards increased personal accomplishment with years spent in current position ($P = 0.061$). The extra workload due to colleagues being off sick during the COVID-19 pandemic was also associated with higher scores for sense of lack of personal accomplishment; somewhat paradoxically, DPs who reported experiencing negative feelings towards their career because of excessive patient deaths during the pandemic also reported higher personal accomplishment scores.

Logistic regression modelling of the independent effect of parameters identified as associated with subdomains of the

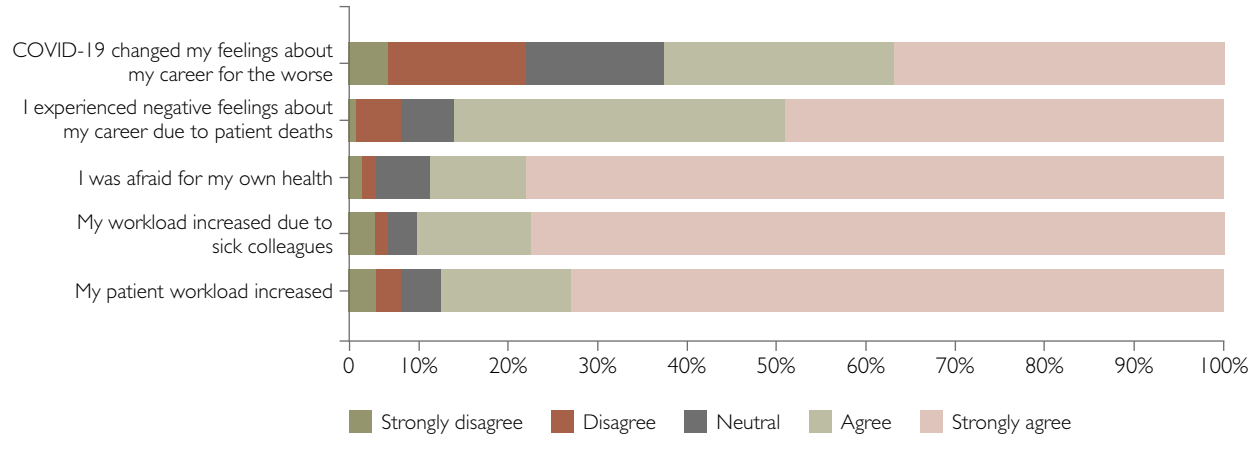

Figure 3. COVID-19 survey responses.

Table 3. Contributors to burnout subdomain scores.

	Emotional exhaustion		Depersonalisation		Personal accomplishment	
	ß ± SE	P	ß ± SE	P	ß ± SE	P
Effect of demographic and professional characteristics on burnout subdomain scores						
Age (years)	–0.29 ± 0.12	0.015	–0.02 ± 0.08	0.780	–0.02 ± 0.10	0.849
Total years spent working	0.18 ± 0.20	0.362	–0.04 ± 0.09	0.671	–0.03 ± 0.12	0.816
Time in current position (years)	0.38 ± 0.15	0.012	0.08 ± 0.07	0.308	0.19 ± 0.10	0.061
Professional nurse	5.41 ± 2.47	0.028	1.91 ± 1.14	0.095	0.69 ± 1.56	0.660
Acute haemodialysis unit	–2.28 ± 2.20	0.134	0.36 ± 0.94	0.703	0.75 ± 1.28	0.558
Chronic haemodialysis unit	–2.69 ± 2.15	0.211	–0.18 ± 0.97	0.854	0.63 ± 1.32	0.631
Peritoneal dialysis unit	3.81 ± 2.19	0.082	1.55 ± 0.99	0.119	0.03 ± 1.35	0.983
Married/in a partnership	–0.40 ± 1.98	0.840	0.09 ± 0.89	0.921	–0.89 ± 1.22	0.463
Effect of workplace experience on burnout subdomain scores						
Perceived staff shortages	0.53 ± 1.39	0.700	–0.79 ± 0.66	0.233	1.18 ± 0.82	0.151
Perceived lack of equipment	0.96 ± 0.82	0.241	0.19 ± 0.39	0.618	–0.09 ± 0.52	0.865
Perceived excessive work hours	0.32 ± 0.82	0.700	0.19 ± 0.39	0.626	–0.18 ± 0.52	0.722
Perceived excessive overtime	0.70 ± 1.00	0.483	0.07 ± 0.47	0.876	–0.45 ± 0.63	0.472
Perceived inadequate pay	1.27 ± 1.11	0.252	0.33 ± 0.53	0.531	–1.12 ± 0.54	0.036
Perceived lack of management support	2.76 ± 0.93	0.003	–0.15 ± 0.64	0.812	0.89 ± 0.85	0.295
Perceived medical staff support	0.07 ± 0.90	0.932	–0.13 ± 0.43	0.762	0.51 ± 0.48	0.294
Effect of COVID-19 pandemic experience on burnout subdomain scores						
Perceived increase in patient workload	–0.08 ± 1.52	0.959	–0.12 ± 0.74	0.877	–1.30 ± 1.01	0.195
Perceived increased workload due to colleagues off sick	–0.28 ± 1.77	0.876	–0.52 ± 0.87	0.549	2.44 ± 1.17	0.037
Fear for own health	–0.96 ± 1.65	0.562	0.70 ± 0.81	0.388	–1.75 ± 1.09	0.109
Negative feelings towards career due to patient deaths	0.52 ± 1.42	0.713	–0.73 ± 0.69	0.292	1.96 ± 0.94	0.037
Worsened view of career due to pandemic experiences	3.68 ± 0.91	<0.001	1.18 ± 0.44	<0.001	–1.02 ± 0.60	0.091

MBI–HSS indicated self-reported deterioration in sense of career fulfilment due to COVID-19 experience as increasing the odds of meeting the definition of burnout (Table 4).

Table 4. Contributors to burnout.

	OR (95% CI)	P
Age (years)	0.97 (0.89–1.06)	0.515
Years in current position	1.04 (0.93–1.17)	0.476
Registration as professional nurse	4.04 (0.42–38.9)	0.227
Perceived inadequate pay	1.07 (0.38–3.03)	0.893
Perceived lack of management support	0.83 (0.38–1.81)	0.641
Perceived increase in workload due to colleagues off-sick	1.61 (0.42–6.17)	0.487
Negative feelings towards career due to patient deaths	0.88 (0.23–3.31)	0.852
Worsened view of career due to pandemic experiences	2.07 (1.06–4.06)	0.033

DISCUSSION

This first multi-centre survey of burnout among South African dialysis practitioners working in the public healthcare sector found high rates of emotional exhaustion but low levels of depersonalisation, with an overall burnout rate of 22%. Almost all respondents (97%) reported dissatisfaction with their workplace; perceived lack of adequate pay (75% of respondents) and lack of management support (70% of study population) were important factors in workplace dissatisfaction and were significantly associated with decreased personal accomplishment and emotional exhaustion scores, respectively. Duration of employment in current role and

level of nursing training were associated with increased emotional exhaustion. Extra workload due to absent colleagues and additional patient deaths during the COVID-19 pandemic appear to have contributed to deterioration in individual respondents' feelings towards their profession, with the latter associated with increased emotional exhaustion and depersonalisation scores.

Previous surveys have reported overt burnout in 45.8% of South African nurses in general practice across all sectors; burnout is more common in nurse practitioners employed in public hospitals compared to those working in the private sector [20]. The overall prevalence of burnout in dialysis nurse practitioners in the state sector in our survey (22%) is substantially lower than that reported for colleagues in general practice in the public service (53.8%) [20] and is in keeping with lower rates of burnout reported in dialysis nursing practitioners compared to other disciplines [14,21]. Low rates of high depersonalisation (9.4%) and poor personal accomplishment (27%) scores, despite the high prevalence of emotional exhaustion (66%), account for low overall burnout in the present study. Similar distributions of burnout subdomains in other studies [21] suggest that the act of providing patients with a life-saving intervention such as dialysis affords nurse practitioners a sense of personal accomplishment, which in turn counteracts a sense of depersonalisation.

Levels of burnout among South African dialysis practitioners in this and other surveys are nevertheless higher than those reported for DPs elsewhere in the world (16–17%) [15,21]. Meta-analysis suggests nurses working in sub-Saharan Africa demonstrate higher burnout symptomatology than in other regions [22]. Excessive workload due to chronic shortages of skilled nurses in these regions, coupled with low remuneration packages, may underlie the higher rate of burnout in Africa [23]. Staffing shortages (97% of our respondents) and lack of adequate pay (75% of cases) were frequently cited as sources of workplace dissatisfaction, with perceived lack of adequate pay being independently associated with lower personal accomplishment scores in our survey.

Registration as a professional nurse and increased time spent working in the individual's current position were associated with a relatively high emotional exhaustion score in this cohort. South African professional nurses have indicated comparatively high levels of work-related stress, which has been ascribed to limited resources, lack of sufficient staffing, and sole or primary responsibility for demanding patients [24]; work-related stress is a known precipitant of burnout [25], and the length of time spent in a difficult working environment may reasonably be expected to contribute to emotional exhaustion [15].

A stressful working environment may be offset by concern for perceived challenges experienced by nurse practitioners by institutional management and medical staff. Perceived lack of management support was common in this survey (70% of respondents) and was significantly associated with emotional exhaustion score (β 2.76 ± 0.93, P = 0.003). Lack of support has been identified in other South African settings as a significant factor in burnout in general nurse practitioners [24], and organisational commitment has been shown to affect burnout in nephrology nurses in other centres [26].

Although not directly influencing burnout measures in the present survey, the lack of support by medical staff reported by our study population is cause for concern. Whereas nurse practitioners are typically instructed in collaborative patient care, the training of specialist physicians such as nephrologists tends to emphasise the role of the latter as autonomous leaders [27]. The resultant differences in professional cultures may create an unequal power balance in doctor–nurse interactions [27], exacerbated in South Africa by the legacy of apartheid, which leads to white and Indian/Asian males being overrepresented in the nephrology workforce [11], in turn informing perceptions of the relative lack of support by nephrologists in this study. More collegial relationships between physicians and dialysis nurses are known to reduce workplace-related stress and burnout in the latter [28]. Recognition of the skills of nurse practitioners by physicians additionally improves an individual's sense of personal accomplishment [29], thereby ameliorating burnout.

Increased workload during the COVID-19 pandemic, resulting from additional numbers of patients and higher rates of absenteeism among their colleagues, was reported to have worsened individual perceptions of practice in 64% of respondents, which in turn was independently associated with greater risk of burnout. A multinational survey reported significant rates of emotional exhaustion (35.9%) in dialysis unit staff during the pandemic [16]. Exacerbation of long-standing staff shortages, fears over personal safety due to close contact with patients infected with coronavirus, and increased mortalities in dialysis patients with COVID-19 disease were important mediators of increased burnout in DPs in this and other studies [16]. Persistent effects of the pandemic on dialysis unit staff reinforced a significant level of post-traumatic stress reported by other studies of nurses in general practice [30].

Taken together, these findings have important implications for the management of staff in dialysis units in South Africa and similarly resource-constrained environments. Insufficient numbers of DPs in these settings [31], and the effect of burnout on individual patient care [13,14], require that

attention be given to burnout in these healthcare workers to increase the retention of scarce skills and to safeguard patient outcomes. Although lack of adequate remuneration was cited as an important contributing factor to burnout by a substantial proportion of respondents, persistent relatively low levels of government spending on health care [32] are unlikely to lead to improvement in this area in the immediate future. Enhancing perception of management support through feedback processes is an attractive and readily available mechanism to reduce work stress and burnout [33]. Persistent effects of the COVID-19 pandemic on healthcare workers' mental health suggest a need for directed debriefing to reduce emotional exhaustion and effects of depersonalisation as well as the overall prevalence of burnout in DPs, despite their not having traditionally been considered as front-line workers [34].

There are limitations to this study. Restricting the participation to DPs working in the resource-limited state sector may have resulted in selective bias through the recruitment of a cohort with higher prevalence of burnout. Remuneration patterns in this sector may have resulted in overemphasis of the effect of income on burnout on our study population. Finally, the relatively small study population and the location of just three study sites within a single province of South Africa may limit the generalisability of this survey's findings.

CONCLUSIONS

South African dialysis practitioners demonstrate lower rates of burnout than their colleagues in general practice but higher rates than those reported for their counterparts in other regions. Lack of adequate remuneration and poor institutional management support proved to be important contributors to burnout in our setting. Experiences during the COVID-19 pandemic continue to exert a significant effect on DPs' appraisal of their careers and thus on burnout. Improvements in feedback given them by management and pandemic debriefing are recommended as cost-effective means to reduce burnout in this valued group of healthcare professionals.

Data availability statement

The data supporting this study's findings are openly available through the University of the Witwatersrand Open Data Vault Repository at doi 10.71796/wits-figshare.29917913.

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Conflict of interest

The authors have no conflicts of interest to declare.

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