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Impact of work environment on job satisfaction and stress among hemodialysis staff in Klang Valley

Original Article

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Abstract: **Objective:** To investigate the factors contributing to satisfaction with the work environment, job satisfaction (JS), and stress among hemodialysis (HD) staff in the central region of Malaysia.

Methods: A quantitative cross-sectional study was conducted on 215 HD staff working at private and non-government (NGO) dialysis centers using self-administered questionnaires. The chi-square test was used to determine factors associated with HD staff's JS, stress, and working environment.

Results: The scientific proof was apparent that the working environment had an effect on JS and stress among employees at HD centers.

Conclusions: This research offers useful insights into the essence and complexities of HD staff's work and will help nurses, dialysis managers, other dialysis personnel, and organizations to better understand the benefits and stresses faced by these workers.

Keywords: *hemodialysis staff • job satisfaction • nurses • stress • work environment*

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1. Introduction

Renal replacement therapy, such as hemodialysis (HD), is prescribed as a life's treatment for people with end-stage kidney disease (ESKD) before they receive kidney transplantation. In Malaysia, HD treatment is given 3 times a week, with each treatment session lasting 4 h. This treatment is provided by government and private hospitals, non-government (NGO) dialysis centers, and private dialysis centers. Patients with kidney diseases undergoing HD receive treatment not only from doctors but also from nurses and trained dialysis staff. Since nursing care for dialysis patients has been provided for many years, there has been a distinct direct interaction between nurses and patients.

The HD field is becoming more specialized, with dialysis workers and professionals conducting complex HD procedures in addition to providing reliable, dependable, and adequate patient care.[1] When patients visit a dialysis unit, HD nurses are expected to perform several challenging roles, such as advocate, caregiver, educator, mentor, and technician.[2] The dynamics of the role played by HD workers, together with organizational characteristics in the workplace environment (WE),

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have contributed to the risk of low job satisfaction (JS) and high stress levels.

To date, studies have mainly focused on variations at the hospital level; however, observations at the practicing HD operational level might reveal important aspects in the professional nursing setting.[3–5] The nature of work environments in the HD centers owned by private or charity centers is not yet clear. Moreover, the working environment in which these nurses work and the effect on JS, stress, and burnout need to be investigated. For instance, studies by Halm[6] and Matthew[7] have shown that hospitals with better nursing staff and working environments have better nursing performance, particularly related to less burnout, job dissatisfaction, and willingness to leave the organization.

Nurses are more likely to be stressed out and unhappy with their jobs in hospitals with high patient workloads and unsafe working conditions.[7] Nevertheless, there seems to be a dearth of studies on the perceptions of the work environment of nephrology nurses, and limited studies have explored the association between the attributes of the work environment to the responses of patients and nurses in dialysis settings.[8] In addition, nurses working in HD centers (private, NGO, or charity) often face challenges in terms of access to knowledge, services, support, and ability to learn and improve. First, compared to other existing hospital-based dialysis systems, the said HD centers frequently operate far below their physical capacity. Second, such facilities lack an adequate system to handle moderate to severe dialysis-related conditions, which ultimately need expensive immediate patient referrals to primary health care facilities. Third, the support staff is often limited, especially in rural and remote facilities, which can influence the standard of care.[9]

In this study, the researchers used Kanter's[10] structural empowerment theory as the steering framework to examine the power and structure in the work environment and the impact on JS, stress, and burnout. She emphasized that the job performance of employees are not just derived from individual qualities such as being reliable, possessing a good personality, and becoming efficient but also from organizational conditions and situations. For example, regulations, committees, and protocols are the components embedded within structural empowerment. Kanter[10] argued that autonomy is obtained further through the empowerment process and acknowledged empowerment as a result of social structures in the workplace that allow employees to be generally more successful at work.

Employees with empowerment features support both the employees and the organization.[11] This is created by the work surrounding or from within the thought process itself and can be regarded as either a process or an outcome.[11,12] Empowered employees understand their role in supporting the vision of their organization and therefore participate in activities that meet the following dimensions: excellent, quantifiable, and, substantial.[10] In the same manner, they are motivated employees who involve in interactions representing the integrity, efficiency, and importance of their jobs, thereby enhancing their job performance and achievement.[10]

The nurse can be empowered within the working environment by having the 4 structural components (access to information, support, resources, and opportunity) together with both types of power, allowing organizational goals to be achieved. The focus of this study is to gain a deeper understanding of the challenges that occur in the WE of HD that leads to JS and stress (S) among HD personnel. Findings will allow nurses and managers of HD to recognize causative factors that could contribute to higher work satisfaction, organizational dedication, and retention of specialist HD staff and better patient results.

This study examined the factors contributing to satisfaction with the work environment, JS, and stress among HD staff in Klang Valley, Malaysia. The objectives of this study were (1) to determine the levels of satisfaction with the work environment, JS, and job stress in the HD centers; (2) to examine the relationships between the work environment, JS, stress, and their socio-demographic characteristics; and (3) to investigate the relationships between work environment, JS, and job stress in the HD centers.

2. Methods

2.1. Sampling

The study's methodology was chosen to gather data and draw conclusions about the effect of the work environment on JS and stress among HD workers from a few dialysis centers in the central region: Selangor, Federal Territories of Kuala Lumpur, and Putrajaya. This descriptive, quantitative, and cross-sectional study was conducted between 12th May and 15th July 2020 on a total of 215 HD staff working at private and NGO dialysis centers. Research data were gathered from the sample population only once by the researchers using 350 physical copies of the questionnaires along with a cover letter that was delivered physically to 40 HD centers as well as via Google Forms to centers that prefer the method of an online survey (10 centers). The questionnaire was prepared in English.

The sample population consisted of 1200 staff nurses and medical assistants working at the specified

HD centers in the central region of Malaysia: Selangor, Federal Territories of Kuala Lumpur, and Putrajaya. We intended to involve only the nurses and medical assistants who work in the HD centers; however, due to the Coronavirus Disease 2019 (COVID-19) pandemic and the enforcement of the Movement Control Order (MCO) by the Ministry of Health (MOH), Malaysia, all of HD staff were taken as respondents in the study. Thus, no sampling technique was applied to the respondents in the selected centers since all of them were included in the study.

Of the study population, 230 subjects returned the questionnaires within 6 weeks (participation rate 73.01%). This was because staff were on leave during the study time (annual leave, medical leave, unpaid leave, etc.) and working shifts, refused to participate, or otherwise were not willing fill out the documents. A total of 15 participants did not complete the form and therefore was excluded from the study, leaving the remaining 215 subjects to complete the questionnaires.

2.2. Data collection

After obtaining ethical approval from the university and organizations, a covering letter and the questionnaire forms were circulated by hand to the study participants that chose to participate using the questionnaire forms. The cover letter clarified the purpose of the study and confirmed that the completion of the survey provided consent for participation. After 5×5 working days from the date the questionnaire forms were sent to the participants, the completed forms were collected, placed in an envelope and labeled with the name of the dialysis center, and returned by hand to the researchers.

For dialysis centers that chose to participate using the online survey method, the researchers shared the survey link via e-mail and WhatsApp application with the center managers; thus, the participants answered the survey by clicking on the provided link. The researchers received a real-time email notification for new responses. All survey data were saved to a spreadsheet and analyzed along with the data collected via questionnaire forms. After receiving enough responses, the survey responses were closed, and a brief message indicating the action was added to the response tab.

2.3. Measurements

Based on previous conceptual studies, the survey design used in this study and multi-item scales were adapted from the previous studies to fit the requirements of this study. The method of study was a questionnaire that consisted of all close-ended questions.

2.3.1. Section A: demographic profile

Demographic factors included age, gender, race, marital status, education level, working experience, job position, and specialty certification including certification in HD care.

2.3.2. Section B: Practice Environment Scale (BPES)– Nursing Work Index

Items from the Practice Environment Scale (PES) with the Nursing Work Index (PES-NWI)[13] were used to assess HD staff perceptions of their HD work environment. This part includes 40-item measures examining 6 sub-components of the work environment: Nurse Participation in Hospital Affairs (NPHA); Staff Foundations for Quality of Care (SFQC); Nurse Manager Ability, Leadership, and Support of Nurses (TMALSS); Staffing and Resource Adequacy (SRA); Nurse-Physician Relations (SDR); and Staff-Staff Relations (SSR). Respondents are asked to assess each item and to rate the extent to which the item is "present in my current job" on a scale of 1 (very disagree) to 5 (very agree). A high score denotes satisfaction with the work environment. The language of some items was changed to reflect the dialysis environment for this study. For instance, in the original PES-NWI items, references to "hospitals" have been changed to "dialysis unit." Furthermore, references to positions common in hospitals but not in dialysis organizations, such as chief nursing officer, have been changed to reflect dialysis staff positions common in dialysis settings (e.g., unit manager, in-charge nurse, medical assistant, and dialysis assistant). Moreover, some items from the original version did not apply to dialysis settings, and other items were added to determine the interpersonal relationship between staff and HD administration. PES-NWI reliability for this study was 0.96.

2.3.3. Section C: Minnesota Satisfaction Questionnaire

This section measured 5 components of nurse JS: pay, autonomy task requirements, organizational policies, interaction during working hours, and professional status. A high score out of 7 for the subscales suggests high JS. The 20 Minnesota Satisfaction Questionnaire (MSQ)-short version items were rated on a 5-point Likert scale (1 "very dissatisfied with this aspect of my job", 2 "dissatisfied with this aspect of my job", 3 "can't decide if I'm satisfied or dissatisfied with this aspect of my job", 4 "satisfied with this aspect of my job", and 5 "very satisfied with this aspect of my job"). Item responses were summed or averaged to create a total score—the lower the score, the lower the level of JS. MSQ reliability for this study was 0.92.

2.3.4. Section D: Cohen Perceived Stress Scale (PSS-10)

This section measured situations that have been identified as causing stress for nurses while performing their duties.[14] The PSS-10 has 10 items on a 5-point Likert scale. Six items using the following score (0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, 4 = very often). Four positively stated items (items 4, 5, 7, and 8) were reversely scored (0 = very often, 1 = fairy often, 2 = sometimes, 3 = almost never, 4 = never). The sum of the 10 items represents the total score, with a higher score representing a higher level of perceived stress. PSS-10 reliability for this study was 0.89.

2.4. Statistical analyses

Statistical Package for Social Sciences SPSS version 25 (IBM Corporation, Armonk, New York, United States) was used for evaluating the data. Mean, standard deviation (SD), percentage (%), and numbers (n) were used to present the descriptive statistics. The data were non-normality distribution in this study, and therefore, we used the non-parametric test. The relationship of 2 scales with each other was calculated using the chi-square correlation analysis. The statistical significance limit was accepted as 0.05.

3. Results

3.1. Samples

The majority of the respondents were female (n = 191, 88.8%). Most of them were 20–30 years old (50.2%), working as staff nurses (61.9%), have a post-basic renal certificate, and have a working experience of more than 6 years.

The socio-demographic characteristics of the respondents are summarized in Table 1.

Item	Frequency (*n*)	Percentage (%)	Mean (SD)
Gender			
Female	191	88.8	
Male	24	11.2	
Nationality			
Malaysia	215	100.0	
Race			
Malay	191	88.8	
Chinese	2	0.9	
Indian	9	4.2	
Others	13	6.0	
Marital status			
Married	153	71.2	
Single	62	28.8	
Education level			
Secondary	20	9.3	
College/university	85	39.5	
Add-on renal certificate	110	51.2	
Age (years)			2.6 (0.708)
20–30	108	50.2	
31–40	89	41.4	
41–50	13	6.0	
≥50	5	2.3	
Working experience			4.55 (1.426)
Less than 3 months	9	4.2	
3–6 months	13	6.0	
7–11 months	23	10.7	
1–3 years	50	23.3	
4–6 years	45	20.9	
>6 years	75	34.9	
Job title/position			
Unit manager/in-charge nurse	29	13.5	
Staff nurse	133	61.9	
Medical assistant	22	10.2	
Dialysis assistant	24	11.2	
Others	7	3.3	
Total	215	100.0	

Note: SD, standard deviation.

Table 1. Demographic profile of respondents (N = 215).

3.2. Practice environment, job satisfaction, and job stress

3.2.1. Practice environment

Means and SDs of the PES–NWI, MSQ, and Cohen Perceived Stress Scale (PSS-10) are summarized in Table 2. The mean score of the nursing PES for the sample ranged between 1.97 and 5.00 (M = 3.46, SD = 0.58). The average of the subscale item responses was reported as follows: SFQC (M = 3.49, SD = 0.59); Nurse Manager Ability, Leadership, and Support of Staff (M = 3.43, SD = 0.78); and Staff-Doctor Relations (M = 3.59, SD = 0.80). The highest agreement among the subscales was for "Staff-Staff Relations," and the least agreement was for the subscales "Staff Participation in Haemodialysis Affairs" and "Staffing and Resource Adequacy."

The data in Table 3 suggest that there appears to be an association between i) the education level and Manager Ability, Leadership, and Support of Staff (χ^2 = 6.38; *P* = 041); ii) working experience and SFQC (χ^2 = 16.22; *P* = 0.00), whereby participants with less

than 3 months of working experience were 88.9% higher perceived of SFQC than another group statistically; and iii) working experience and the Staff Participation in Haemodialysis Affairs (SPHA) (χ^2 = 21.05; P = 0.001). From our observation, the participants with less than 3 months of working experience were 88.9% higher perceived of their participation in HD affairs.

Instrument	Mean	SD
PES–NWI:	3.46	0.58
Staff Participation in Haemodialysis Affairs (BPES-BSPHA)	3.33	0.65
Staffs Foundations for Quality of Care (BPES-BSFQC)	3.49	0.59
Manager Ability, Leadership, and Support of Staff (BPES-BTMALSS)	3.43	0.78
Staffing and Resource Adequacy (BPES-BSRA)	3.33	0.70
Staffs-Doctor Relations (BPES-BSDR)	3.59	0.80
Staff-Staff Relation (BPES-BSSR)	3.63	0.86
SQ	3.26	0.56
PSS	2.84	0.63

Note: MSQ, Minnesota Satisfaction Questionnaire; NWI, Nursing Work Index; PES, Practice Environment Scale; PSS, Perceived Stress Scale; SD, standard deviation; SQ, Satisfaction Questionnaire.

Table 2. Means and SDs of the PES–NWI, MSQ, and PSS-10 (N = 215).

3.2.2. JS

The mean subscale score (based on the Likert-type responses) was 3.26 ± 0.56, with subscale scores ranging from 2.81 to 3.40.

The resulting value of 3.40 suggests moderate levels of JS. The highest level of satisfaction was observed in the way company policies are put into practice (3.40 ± 0.81), whereas the lowest was observed for the chance to work alone on the job subscale (2.81 ± 0.88). Table 4 shows the results of the chi-square test between the MSQ and all the subscales in the PES. Overall, JS of these HD staff was found to be related to their practice environment (P < 0.05). However, there were no significant associations between their work satisfaction and socio-demographic characteristics.

3.2.3. Job stress

The majority of the participants (Table 5) appraised their work–life situations as moderately stressful (M = 2.84,

Items	Low, *n* (%)	High, *n* (%)	χ^2	*P*
The Manager Ability, Leadership, and Support of Staff (BPES-BTMALSS)				
Education level			6.38	0.041*
Secondary	10 (50.0)	10 (50.0)		
College/university	51 (60.0)	34 (40.0)		
Add-on renal certificate	33 (30.0)	77 (70.0)		
Staffs Foundations for Quality of Care (BPES-BSFQC)				
Working experience			16.22	0.006*
Less than 3 months	1 (11.1)	8 (88.9)		
3–6 months	4 (30.8)	9 (69.2)		
7–11 months	11 (47.8)	12 (52.2)		
1–3 years	22 (44.0)	28 (56.0)		
4–6 years	24 (53.3)	21 (46.7)		
> 6 years	18 (24.0)	57 (76.0)		
Staff Participation in Haemodialysis Affairs (BPES-BSPHA)				
Working experience			21.05	0.001*
Less than 3 months	1 (11.1)	8 (88.9)		
3–6 months	8 (61.5)	5 (38.5)		
7–11 months	9 (39.1)	14 (60.9)		
1–3 years	28 (56.0)	22 (44.0)		
4–6 years	33 (73.3)	12 (26.7)		
> 6 years	31 (41.3)	44 (58.7)		

Note: PES, Practice Environment Scale.

Table 3. Chi-square correlation test between the mean scores of demographic data and PES 3 subscale of PES.

Items	Satisfaction Questionnaire (CSQ)		χ^2	*P*
	Low, n (%)	High, n (%)		
Staff Participation in Haemodialysis Affairs (BPES-BSPHA)			71.84	0.001*
Low	80 (72.7)	30 (27.3)		
High	16 (15.2)	89 (84.8)		
Staffs Foundations for Quality of Care (BPES-BSFQC)			47.48	0.001*
Low	60 (75.0)	20 (25.0)		
High	36 (26.7)	99 (73.3)		
The Manager Ability, Leadership, and Support of Staff (BPES-BTMALSS)			59.97	0.001*
Low	76 (71.0)	31 (29.0)		
High	20 (18.5)	88 (81.5)		
Staffing and Resource Adequacy (BPES-BSRA)			53.73	0.001*
Low	78 (67.8)	37 (32.2)		
High	18 (18.0)	82 (82.0)		
Staffs-Doctor Relations (BPES-BSDR)			82.17	0.001*
Low	79 (76.7)	24 (23.3)		
High	17 (15.2)	95 (84.8)		
Staff-Staff Relation (BPES-BSSR)			71.04	0.001*
Low	70 (78.7)	19 (21.3)		
High	26 (20.6)	100 (79.4)		
Perceived Stress Scale (OPSS)			3.49	0.062
Low	69 (49.3)	71 (50.7)		
High	27 (36.0)	48 (64.0)		

Note: MSQ, Minnesota Satisfaction Questionnaire; PES, Practice Environment Scale.

Table 4. Correlation of PES and MSQ (chi-square test).

SD = 0.63). The overall level of perceived stress score revealed that 57.25% of HD staff in the study experienced stressful situations. More importantly, being upset with something that happened unexpectedly was most highly supported by 135 respondents (63.8%). In addition, the research participants scored 4 subscales in the PSS as above the mean value (2.84). However, the participants scored the feeling of confidence in handling personal problems (M = 3.19, SD = 1.01) as the most favorable situation, despite the overall frequent stressful experience. There was an association between the education level and job title with perceived stress (χ^2 = 7.27; *P* = 0.02) (χ^2 = 12.91; *P* = 0.01) (Table 6).

4. Discussion

In general, participants were moderately satisfied with their work environment; in particular, the SFQC was found to be the most favorable element compared to the other work environment characteristics. This could be due to the exceptional basic health professional and HD education program along with consistent continuous dialysis education that was provided to dialysis staff. Several studies have considered the effects of education on quality care. Participation in continuous education in health care helps improve patient care, minimize costs, increase productivity, decrease mishappenings including medical and drug errors, and decrease work stress.[15,16] Technological advancements, collaborative patient evaluation criteria, and financial constraints have transformed the dialysis unit, where demand exceeds the capacity, into a more complex environment. The growing demands have forced the HD staff, often to the benefit of patient care and safety, to become technologically competent. Continuing nursing education (CNE) and training programs are common approaches that have been beneficial in increasing caregivers' skills, behaviors, and expectations in a variety of health care settings.[17,18]

The majority of HD staff in this study perceived both intra- and interdisciplinary interactions within HD facilities highly favorably. Improved encouragement from clinical superiors and coworkers may help safeguard against workload stressors, difficult personal life, and frequent patient mortality exposure.[19] In the same manner, the study by Elbejjani et al.[20] has

ID	Perceived Stress Scale (DPSS)	Mean	SD	Level	Ranking
H61	In the last month how often you have been upset because of something that happened unexpectedly?	2.87	0.86	Moderate	4
H62	In the last month, how often have you felt that you were unable to control the important things in your life?	2.67	0.96	Moderate	9
H63	In the last month, how often have you felt nervous and stressed?	2.89	0.98	Moderate	3
H64	In the last month, how often have you felt confident about your ability to handle your personal problems?	3.19	1.01	Moderate	1
H65	In the last month, how often have you felt that things were going your way?	3.01	0.92	Moderate	2
H66	In the last month, how often have you found that you could not cope with all the things that you had to do?	2.69	0.86	Moderate	8
H67	In the last month, how often have you been able to control irritations in your life?	2.84	0.97	Moderate	5
H68	In the last month, how often have you felt that you were on top of things?	2.84	0.91	Moderate	6
H69	In the last month, how often have you been angered because of things that happened that were outside of your control?	2.75	0.91	Moderate	7
H70	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	2.67	0.90	Moderate	10

Note: PSS, Perceived Stress Scale; SD, standard deviation.

Table 5. Mean, level, and ranking PSS ($N = 215$).

Items	Perceived Stress Scale (OPSS)		χ^2	*P*
	Low, n (%)	High, n (%)		
Gender			1.16	0.281
Female	122 (63.9)	69 (36.1)		
Male	18 (75.0)	6 (25.0)		
Race			0.96	0.811
Malay	126 (66.0)	65 (34.0)		
Chinese	1 (50.0)	1 (50.0)		
Indian	6 (66.7)	3 (33.3)		
Others	7 (53.8)	6 (46.2)		
Marital status			0.19	0.665
Married	101 (66.0)	52 (34.0)		
Single	39 (62.9)	23 (37.1)		
Education level			7.27	0.026*
Secondary	18 (90.0)	2 (10.0)		
College/university	54 (63.5)	31 (36.5)		
Add-on renal certificate	68 (61.8)	42 (38.2)		
Age (years)			2.25	0.522
20–30	75 (69.4)	33 (30.6)		
31–40	53 (59.6)	36 (40.4)		
41–50	9 (69.2)	4 (30.8)		
50	3 (60.0)	2 (40.0)		
Working experience			1.82	0.874
Less than 3 months	6 (66.7)	3 (33.3)		
3–6 months	7 (53.8)	6 (46.2)		
7–11 months	13 (56.5)	10 (43.5)		
1–3 years	33 (66.0)	17 (34.0)		
4–6 years	31 (68.9)	14 (31.1)		
>6 years	50 (66.7)	25 (33.3)		

Continued

Table 6. Continued

Items	Perceived Stress Scale (OPSS)		χ^2	*P*
	Low, n (%)	High, n (%)		
Job title/position			12.91	0.012*
Unit manager/in-charge nurse	15 (51.7)	14 (48.3)		
Staff nurse	82 (61.7)	51 (38.3)		
Medical assistant	16 (72.7)	6 (27.3)		
Dialysis assistant	22 (91.7)	2 (8.3)		
Others	5 (71.4)	2 (28.6)		
Staff Participation in Haemodialysis Affairs (BPES-BSPHA)			1.57	0.211
Low	76 (69.1)	34 (30.9)		
High	64 (61.0)	41 (39.0)		
Staffs Foundations for Quality of Care (BPES-BSFQC)			0.74	0.389
Low	55 (68.8)	25 (31.3)		
High	85 (63.0)	50 (37.0)		
Manager Ability, Leadership, and Support of Staff (BPES-BTMALSS)			0.91	0.341
Low	73 (68.2)	34 (31.8)		
High	67 (62.0)	41 (38.0)		
Staffing and Resource Adequacy (BPES-BSRA)			1.40	0.238
Low	79 (68.7)	36 (31.3)		
High	61 (61.0)	39 (39.0)		
Staffs-Doctor Relations (BPES-BSDR)			0.31	0.580
Low	69 (67.0)	34 (33.0)		
High	71 (63.4)	41 (36.6)		
Staff-Staff Relations (BPES-BSSR)			0.35	0.552
Low	60 (67.4)	29 (32.6)		
High	80 (63.5)	46 (36.5)		
Satisfaction Questionnaire (CSQ)			3.49	0.062
Low	69 (71.9)	27 (28.1)		
High	71 (59.7)	48 (40.3)		

Table 6. Correlation of education level, job title, and perceived stress (chi-square test) ($N = 215$).

proven that lower musculoskeletal and mental health issues were associated with a stronger team environment, and a 54% lower incidence of emotional fatigue was associated with higher staffing capacity and sufficiency. For HD workers, a healthy team atmosphere was necessary for the face of extreme workloads where patient load, resources, and personnel are repeatedly strained.[21] Some examples of comments that are considered as positive remarks about the work environment are as follows: continuing to support one another in educational and career development, working together towards treatment delivery, acknowledging outstanding jobs, and a group solution to patient care. Therefore, such significant professional relationships identified in this study are a WE that should be fostered, maintained, and then further pursued.

In our study, nearly 50% of the staff perceived inadequacy with the way the manager listens and responds to employee concerns, acknowledges the staff's contributions to patient care, and provides career growth opportunities. A potential reason for these outcomes may be due to insufficient organizational support received by the HD managers, lack of knowledge of professional growth, and lack of authority to implement professional changes at the manager level. It has been reported that misinterpretation combined with inadequate organizational commitment results in reduced employee satisfaction, higher work tension, and a greater turnover rate for

nurse managers, which could contribute to unit/department and organizational instability.[22] In the same way, insufficient authority is one of the most critical barriers preventing nurse managers from introducing successful steps to increase the consistency of the decisions of health care organizations.[23]

The findings indicated that the education level and job position had significant associations with perceived stress. One of the most significant factors in the effort of health care organizations to deliver quality services is the capacity and leadership of nurse managers. The findings from existing studies revealed a significant relationship between the respondent's education level with nurse leadership and ability. Our findings are consistent with the findings of other studies[24,25], whereby nursing employees with higher academic achievements exhibited knowledge-related features of genuine leadership that included openness, morality, ethics, and self-awareness and had a high score of authentic leadership behaviors, whereas nursing technicians had low scores.[24] Therefore, we ought to recognize that nowadays, we are dealing with a revolution of technology and cybermedia because of the growth of contemporary science and innovation, where the position of managers are challenged and workers are expected to be smarter.[26] Moreover, in hospitals, poor working conditions and ineffective nurses with nursing training may be responsible for preventable deaths.[27]

In health care organizations, nurses require autonomy and control.[28] Nurses can function professionally and individually at their highest level of clinical competence with good structural empowerment in the workplace.[11] In the same manner, access to opportunity as one of the important element in creating good structural empowerment would foster certain autonomy among health care workers.[10] Based on the current findings, there has been a statistically relevant association between working experience and staff participation in HD affairs.

Working experience has traditionally been described as the length of time spent working for a company, measured in months or years.[29,30] When considering the value of the nurse's job experience, more experienced workers may have a greater guiding role than others in the medical team, specifically people with limited experience. Our study results show that employees with more than 6 years of work experience had 58.7% higher involvement in work affairs than other groups statistically. Increasing levels of nursing experience, the emotional bond between the nurse and the patient, the nurse's high academic level, and a safe atmosphere have all been shown to promote treatment and nursing care.[31]

A significant relationship was also detected between work experience and Staff Foundations for Quality of Care (BSFQC). According to Liao et al.[32] nurses with many years of experience gain a wealth of clinical and social skills and advance their careers. Although several studies have shown that junior workers are more likely to encounter work-related stress, this does not appear to be the case in our research.[33–35] Furthermore, this may cause them to shift their perception about the foundation of quality of care in their working area.

Our findings[36] support that junior nurses are more likely to strive for professional autonomy and take on new challenges. As a result, the HD centers included in our sample have a healthy working atmosphere for junior workers, ensuring that they are equipped with the foundations for providing high-quality treatment.

The low level of stress perception by the majority of our study participants might be due to the working environment of the much smaller dialysis centers, which indicates that the number of patients receiving treatment in every shift in small dialysis centers will be less than that in hospital-based HD unit. On top of that, the type of patients who received dialysis treatment in private and charity dialysis centers in Malaysia were more hemodynamically stable patients. Multiple related research on nurses working in various wards have been performed; unfortunately, specific studies related to HD centers are limited. Our findings show that medical-surgical nurses had lower stress levels than critical care nurses, in accord with recent studies.[37] The analysis of collected data[38] revealed that manifestations of work stress, such as psychological distress, dissociation, and low satisfaction with one's achievements, have been associated not only with one's educational level, length of employment, and additional employment but also with the job position.

The amount of perceived stress among HD professionals was shown to be correlated with the education level in our study ($\chi^2 = 7.27$, $P = 0.026$). The majority of our respondents receive specialized kidney care certificates and have more than 4 years of work experience after graduating from a college or a university. Overall, it was discovered that most of them reported stress at a moderate level. Placing the importance of involvement in learning activities can make it easy to manage stress. Although 62.8% (n = 135) of our study participants sometimes felt upset because of something that happened unexpectedly, 85.5% (n = 184) thought that they were confident about their ability to handle personal problems. Individuals who engaged in professional learning programs may eliminate the negative effects of stress and strengthen their psychological well-being.

Our recent finding is consistent with the findings of other studies which found that highly trained people

were more resilient because they possess the knowledge and tools that are required to solve difficult life events, and thus, they remain intact and also have balanced facets of their perceived and physical capacity to perform all the tasks.[39,40] Individuals experience tension as a result of stress, but the physical outcome of that tension is determined by the individual's tension management skills.[41]

The present study extends our knowledge of how job position can affect the rate of perceived stress. It was shown that there was indeed a link between job position and the level of perceived stress among staff working in HD centers (χ^2 = 12.91, P = 0.012). This was in line with the findings of previous studies[42,43], which suggested that there is a difference in the level of stress response among doctors, nurses, and those in other positions and[43] that employees in higher job positions were 3 times more likely to experience stress.

In the same manner, there are several categories of work, including registered nurses, nurse managers, HD center managers, medical assistants, dialysis assistants, and general workers for staff in HD centers. Some of them have the same field of work and some differ according to the academic qualifications and experience of the employees. Other studies have also detected situations related to the job category that can become a potential generator of stress among nurses and other health care worker sub-groups.[44]

Although overall, our study participants rated themselves as having a low level of perceived stress, it was found that the nurse managers (48.3%, n = 14?) experienced more stress than other job positions (mean range >3). Our finding is supported by a previous study[45] that found that some of the job categories with the greater proportions of stress (55% of all jobs within a category) were management occupations and supervisors. This can be because higher-ranking nurses usually have complex and numerous responsibilities and accountabilities, involving clinical and educational duties, survey, and so forth, which could contribute to higher levels of stress and lack of JS.[42]

The majority of our study participants with high JS levels were from those who were agreeable and satisfied with their working environment, and this is significant evidence of a relationship between the job environment and job satisfaction (P = 0.001). Several studies have shown that the average impact of nurses' JS on patient care, client experience, treatment outcomes, and overall provision of care could not be overstated, as the JS of workers is important in the workforce's everyday life. Low JS has been identified as the primary cause of job turnover among health care workers, which can lead to poor service quality and a lack of organizational contribution among health care workers.[46]

The improved interprofessional relationship creates good teamwork and safe atmosphere, which were found to be correlated with high JS as intertwined facets of the work environment. The current study revealed that SPHA and SDR are the basis of JS among the HD staff since participants who gave high scores to the level of JS were among those who also gave high scores to these 2 subscales. A study conducted in Cyprus investigating the JS of nurses in different areas of clinical practice showed that staff participation in hospital affairs, which refers to self-growth and responsibility, interaction, and organization policies, was found to influence JS of nurses.[47]

5. Conclusions

The working environment of HD workers is a multidimensional factor influencing their job performance. However, as a whole, HD workers were moderately grateful with their working environment and were capable of taking care of patients with diverse health care needs. This research offers useful insights into the essence and complexities of HD staff work and will help nurses, dialysis managers, other dialysis personnel, and organizations to better understand the benefits and stresses faced by these workers. The administration of HD and nurse leaders must analyze the working environment of staff, identify shortcomings and non-favorable aspects, and concentrate their attention on enhancing them to establish and sustain the provision of healthy and reliable health services for providing high-quality treatment.

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Ethical approval

This study was approved by the Open University Malaysia Ethical Approval Committee and the participated hemodialysis centres.

Conflicts of interest

All contributing authors declare no conflicts of interest.

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