

Nursing Human Resource Practices and Hospitals' Performance Excellence: The Mediating Role of Nurses' Performance

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Abstract. Background and aim of the work: There is increasing need to achieve performance excellence in healthcare organizations. Nursing human resource practices (HRP) and nursing performance are important variables to achieve it. The aim of this study was to investigate the effect of nurses' perceptions of HRP on achieving hospitals' performance excellence through the mediating role of nurses' job performance. Methods: The study used a cross-sectional research design and recruited 329 nurses from 16 hospitals. Three self-reported questionnaires were used; HRP scale, Baldrige dimension scale and six-dimension scale of nursing performance (6-D). Results: Nurses' perceptions of HRP, hospitals' performance excellence and nurses' job performance were all significantly correlated ($p < 0.01$). Nurses' job performance was found to play a mediating role in the association of nurses' perceptions of HRP and hospitals' performance excellence. Conclusion: Nurses' perceptions of HRP can help hospitals achieve performance excellence by improving nurses' job performance. Particular attention should be paid to improve nursing HRP and nursing performance.

Key words: Human resource practices, Mediation model, Nursing Performance, Hospitals' Excellence.

Introduction

In recent decades, there is growing interest in the use of human resource practices (HRP) in healthcare organizations as a way to enhance healthcare performance and workers' commitment, job satisfaction, and skills (1). Among the different groups of workers within the healthcare system, nurses make up the largest share of healthcare workforce and spanning all segments of care which put them in the core position in providing healthcare services (2). Therefore, introducing effective HRP for nurses is critical to ensure the high quality of health care (3).

HRP have been defined by Mariappanadar (4) as the activities associated with the management of the employee who perform the work of the organization. HRP in nursing are composed of several groups

of interlinked activities including; nurses' recruitment, selection, orientation, training, performance appraisal, compensation, and safety (5). Finkelman (6) added that nurses' promotion, transfer, retention, and termination are also main activities of nursing HRP. In addition to, flexibility and work-life balance have considered a current issue in HRP (7).

Today, healthcare organization should apply effective nursing HRP (6) as effective nursing HRP can shape the healthcare organization's performance outcomes, particularly in relation to quality of service delivery (8). According to Evans and Lindsay (9), HRP may lead healthcare organizations to achieve performance excellence.

Performance excellence is a characteristic of today's most outstanding healthcare organizations and is a requisite for providing high quality of care and

services (10). Hospitals' performance excellence has been identified as an integrated approach to organizational performance management that results in conveying of ever-improving value to patients and clients, lead to better health care quality and improvement of whole organizational effectiveness and capabilities (11).

Hospitals' performance excellence can be achieved through seven areas; leadership (how senior leaders guide the organization), strategic planning (establishing the strategic objectives and action plans), patients and market focus (understanding the voice of customers and make relationships with them), measurement analysis and knowledge management (effectively measuring, analyzing, and improving performance), human resource focus (integration of workforce management practices with hospitals' objectives), process management (how hospitals do things), and results (provide evidence of continuous improvement in all previous areas) (12).

One of important determinant to achieve hospitals' performance excellence and quality of health care services is nursing performance (13). Nursing performance can be introduced as the effectiveness of the nurse in carrying out roles and responsibilities related to direct patient care (14). Nurses' job performance has two types; task performance and contextual performance (15). The task performance measures the degree of nurses' completing tasks and duties written in the formal job description (16). Whereas, the contextual performance is individual effort which is not directly related to their central task function, but are important because they serve as a serious catalyst for task activities. Both two types of nursing performance contribute to health care organizations' effectiveness (17).

HRP have a unique role in healthcare organizations as represent one of its largest investment (18). Indeed, there is increasing evidence that HRP have significant impact on organizational performance. For example, a meta-analysis conducted by Jiang et al. (19) found that HRP have an important and unique influence on organizational performance in term of increasing the organizations financial outcome, employee motivation, decreasing voluntary turnover and enhancing operational outcomes in sequence. Moreover, it has been reported that HRP shape the strategic direction of organizations total quality management

effectiveness (20). Unfortunately, a few studies that examined the link between HRP and performance have been transferred to hospital settings (21). And to the authors' knowledge, it is seldom in nursing. In response to this, this study tries to address this gap by investigating the effect of nurses' perceptions of HRP on achieving hospitals' performance excellence.

The relationship between HRP and organizational performance is complex. Empirically, a recent study has reported that HRP may influence organizational outcomes by mediating factor (22). So, this study attempted to explore the mechanisms through which nurses' perceptions of HRP can help hospitals achieve performance excellence. A variety of studies considered nurses' performance is a predictor to achieve high-performing health care delivery system (15). Accordingly, nurses' perceptions of HRP, hospitals' performance excellence and nurses' job performance are related, and nurses' job performance may serve as an intervening mechanism between nurses' perceptions of HRP and achieving hospitals' performance excellence.

Aim

To sum up, the present study aims to investigate the effect of nurses' perceptions of HRP on achieving hospitals' performance excellence through the mediating role of nurses' job performance. The research hypotheses examined were as follows:

H1. Nurses' perceptions of HRP have a positive effect on achieving hospitals' performance excellence.

H2. Nurses' job performance has a positive effect on achieving hospitals' performance excellence

H3. Nurses' job performance has a mediation role in the effect of nurses' perceptions of HRP on achieving hospitals' performance excellence.

Methods

Study design

A cross-sectional, descriptive research design was used for the current study.

Settings

This study was carried out at 16 hospitals (out of 17 hospitals) in Port Said city, Egypt, which accepted to participate in the study. Eight hospitals are affiliated to the Ministry of Health, two follow Health Insurance Hospitals, and six are private hospitals.

Sampling method and techniques

The target population of this study consisted of nurses working at hospitals affiliated to Port Said city, Egypt in the time of data collection and approved the study (N= 1331). The initial sample size was calculated using OpenEpi, Version 3, open source calculator. Estimated minimum sample size $n= 299$ nurses with confidence level 95%. 10% was increased to the sample size to be 332 participants to avoid dropped incomplete responses or withdrawal. A stratified random sampling technique was employed to ensure accuracy and equal representation from all 16 hospitals. A random sample for each stratum equivalent to the target population proportions of that stratum was calculated. Three questionnaires were excluded from the study due to their incompleteness. Therefore, the present study sample consisted of $n= 329$ nurses.

Inclusion and exclusion criteria were defined to select the participants. This study included nurses who had experience more than six months in the current working hospital. The nurses who were in labor, sickness and child care vacations during the data collection period were excluded. Also, incomplete questionnaires were considered as the exclusion criteria.

Instruments

Three scales were used to collect the data of this study; the HRP scale, Baldrige dimension scale and six dimension scale of nursing performance (6-D). As well as, demographic questionnaire sheet was used to collect data related to hospital name, age, gender, level of education and years of experience in nursing.

The human resource practices (HRP) scale: It was developed by Villajos et al. (23), in English to measure employees' perceptions of HRP. The scale was translated into Arabic and evaluated for validity and reliability among nurses by the researchers. The Arabic version

of HRP scale had good content validity with I-CVI ranged from 0.727 to 1 and S-CVI with the average approach 0.961. The confirmatory factor analysis showed a better fit for the two bundles model (CFI, NFI and RMSEA= 0.932, 0.926, and 0.064; respectively). The Arabic version of HRP scale correlated significantly with performance excellence and nurses' performance ($r= 0.701$, and 0.565 ; respectively), indicating good concurrent validity. Internal consistency with Cronbach's α was 0.95 and the intra-class correlation coefficient was 0.91 for the total scale showed good reliability. HRP scale composed of 24 items (five-point Likert-type) that equally divided into eight practices.

Baldrige dimension scale: It was developed by Meyer and Collier (24) to assess Baldrige Health Care Criteria for performance excellence. Badri et al. (25) carried out the validity and reliability of the Arabic version. Scale composed of 115 items with a seven-point Likert-type scale. The scale measure seven categories; leadership, strategic planning, focus on and satisfaction of patients and other stakeholders, information and analysis, human resource development and management, process management, and organization performance results.

Six dimension scale of nursing performance (6-D): It was developed by Schwirian (26). Miloud (27) carried out the validity and reliability of the Arabic version. In this scale, nurses self-evaluated their job performance. It composed of 52 items under six dimensions namely leadership, critical care, teaching/collaboration, planning/evaluation, interpersonal relations/communication, and professional development. Each item was scored using a four-point scale.

Pilot study

A pilot study was carried out on 30 nurses (not included in the study) to test the applicability of tools before starting data collection and estimated the time needed to complete questionnaire, and they were excluded from the entire sample of research work to assure stability of the answers.

Procedure

To collect data, a list of hospitals located in Port Said city, Egypt, during the time of data collection was prepared. From all 17 hospitals, 16 hospitals agreed

to participate in the study. The researchers visited the nursing directors of the hospitals that accepted the study to explain the purpose and significance of the study and gain their cooperation for data collection. Data were collected by the researcher from nurses at three shifts after explaining the objectives of the study and how to complete the tool. The data collected using self-reported scales; took about 35 min to complete. Collecting the data took a period started from the beginning of January 2019 to the end of May 2019 covering five months.

Ethical consideration

Ethical approval was obtained from the Research Ethics Committee of the Faculty of Nursing – Port Said University regarding conducting the study. Nurses' informed consent was obtained after explanation of the aim of the study. Nurses included in the study were confirmed about the confidentiality of the information gathered and that they have the right to withdraw or refuse at any time without penalty.

Statistical analysis

Data were analyzed with SPSS version 24 (IBM Corporation, IL, Chicago, USA) and the PROCESS Macro. The normality test of the study variables was analyzed using Kolmogorov–Smirnov test. Descriptive statistics were used to describe the variables and Pearson's correlation coefficient (r) to test bivariate correlations.

To test the mediating role of nurses' job performance in the effect on nurses' perceptions of HRP on achieving hospitals' performance excellence, a summated scale of HRM practices was computed as the two HRP bundles were combined into one single index score named HRPM. The Model 4 of Hayes' (2018) PROCESS Macro (version 3.4) in IBM SPSS Statistics Version 24.0 was used to examine the mediating role of nurses' job performance with 5,000 Bootstrap re-samples and 95% confidence interval (CI) to test the significance of the indirect effects. If the 95% CI for the estimates of the mediation effect does not include zero, it suggests that the indirect effect is statistically significant at the 0.05 level.

Results

The demographic characteristics of the participants are presented in Table 1. The largest portion of the participants was recruited from Ministry of Health hospitals (62.6%). The age of participants ranged between 18 and 50 years with a mean of 29.3 years ($SD = 8.35$). Of the participants, there were 41 males (12.5%) and 288 females (87.5%). In addition to, 36.8% of participants had bachelor degree. Regarding to work experience, 64.1% of the participants had less than ten years of experience in nursing career in total.

Table 2 shows descriptive statistics for the study variables. In light of this table, the mean score of participated nurses' perceptions of HRP bundles was 2.29, $SD = 0.82$ for performance-enhancement bundle and it was 2.15, $SD = 0.94$ for employee support bundle. The mean score of performance excellence for the studied hospitals as perceived by participated nurses was 2.45, $SD = 1.08$. The mean score of participated nurses' job performance was 2.36, $SD = 0.84$.

Table 3 provided the correlation matrix among the study variables. The results indicated that, nurses' perceptions of HRP bundles (performance-enhancement bundle and employee support bundle) had a significant positive relationship with hospitals' performance excellence ($r = 0.676$, $P < 0.001$, $r = 0.580$, $P < 0.001$, respectively) and their job performance ($r = 0.719$, $P < 0.001$, $r = 0.631$, $P < 0.001$, respectively). Further, there is a significant positive relationship between nurses' job performance and hospitals' performance excellence ($r = 0.792$, $P < 0.001$).

As shown in Figure 1 and Table 4, the results of mediation analyses indicated that the total effect (path $c = c' + (a \times b)$) of nurses' perceptions of HRP on achieving hospitals' performance excellence was significant ($\beta = 0.8633$, $p < 0.001$). Additionally, nurses' perceptions of HRP had a significant positive direct relationship with hospitals' performance excellence ($\beta = 0.2599$, $p < 0.001$), supporting H1, and their job performance ($\beta = 0.7235$, $p < 0.001$). A bootstrap confidence interval for the indirect effect ($a \times b$) of nurses' job performance in the relationship between nurses' perceptions of HRP and hospitals' performance excellence does not include zero with 95% confidence interval and 5000 bootstrap ($\beta = 0.6034$, 95% CI: 0.4981 to 0.7156) indicating that

Table 1. Demographic characteristics of the studied nurses (n=329).

Variable	Category	No (%)
Hospital	Ministry of Health hospitals	206 (62.6)
	Health Insurance hospitals	51 (15.5)
	Private hospitals	72 (21.9)
Age (years)	<30	196 (59.6)
	30: 40	100 (30.4)
	>40	33 (10)
	Mean \pm SD	29.3 \pm 8.35
Gender	Male	41 (12.5)
	Female	288 (87.5)
Level of education	Nursing diploma	88 (26.7)
	Technical Institute	102 (31.0)
	Bachelor degree	121 (36.8)
	Master degree	16 (4.9)
	Doctorate degree	2 (.6)
Experience years in nursing career	<10	211 (64.1)
	10: 20	92 (28)
	>20	26 (7.9)
	Mean \pm SD	8.32 \pm 6.34

the indirect effect is significant. Together, these findings indicate that nurses' job performance act as a mediator in the effect of nurses' perceptions of HRP on achieving hospitals' performance excellence.

Discussion

In the present study, the level of nurses' perceptions of HRP was in the low level. This is a worrying finding indicating the need for paying more attention to policies, practices, and systems related to nursing management in the studied hospitals. This result is parallel to those of Lammintakanen et al. (28) who studied HRP among nurses in Finland, and reported that HRP were quite under-developed. On the other hand, this result is different from, a previous study by Al-Rashdy (29) who studied ten HRP among Omani nurses and claimed that the ten HRP were found to be in use.

Table 2. Descriptive statistics of the study variables as perceived by participated nurses (n=329).

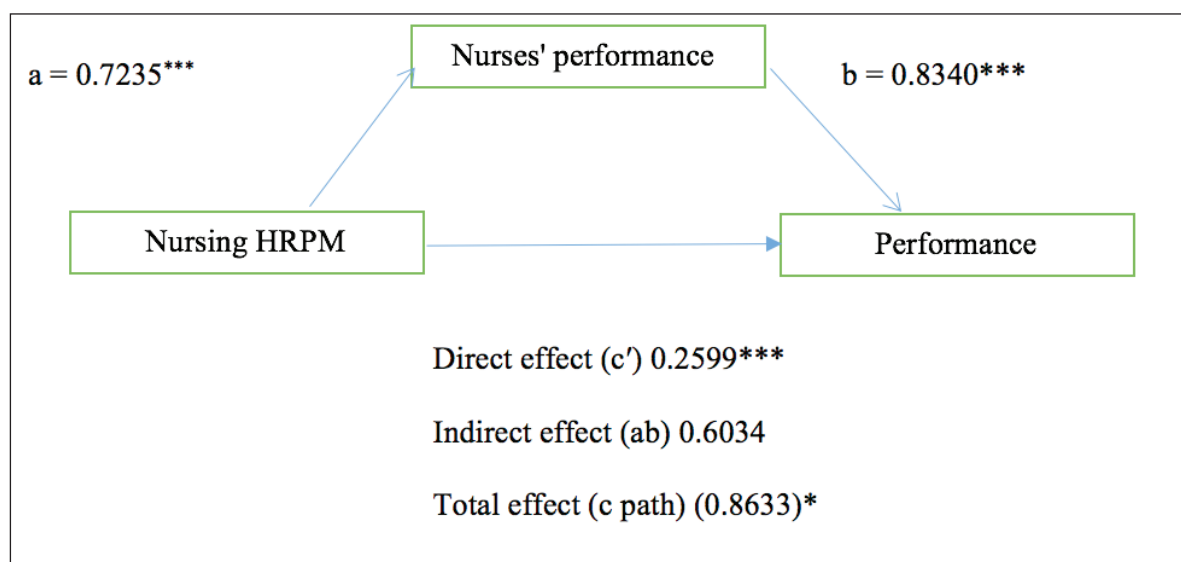
Scale	Mean	SD
HRP		
Performance enhancement bundle	2.29	0.82
Training and development	2.72	0.80
Contingent pay and rewards	2.05	1.05
Performance appraisal	2.37	1.08
Recruitment and selection	2.36	1.05
Competitive salary	1.95	0.96
Employee-support bundle	2.15	0.94
Employment Security	2.27	1.19
Work-life balance	2.26	1.01
Exit management	1.92	1.01
Hospitals' performance excellence	2.45	1.08
Leadership	2.62	1.26
Strategic planning	2.45	1.19
Focus on and satisfaction of patients and other stakeholders	2.43	1.22
Information and analysis	2.45	1.19
Human resource development and management	2.49	1.26
Process management	2.47	1.19
Organization performance results	2.22	.87
Nurses' job performance	2.36	0.84
Leadership	2.14	0.82
Critical care	2.48	1.01
Teaching/ collaboration	2.41	0.89
Planning/evaluation	2.32	0.91
Interpersonal relations/communications	2.33	0.89
Professional development	2.50	0.93

According to the results, the level of hospitals' performance excellence from the nurses' point of views was in the low level. This result in accordance with those of Sanjug et al. (30) that examined

Table 3. Correlations matrix among the study variables (n= 329).

Variables	1	2	3	4
Performance-enhancement bundle	1			
Employee support bundle	0.776**	1		
Hospitals' performance excellence	0.676**	0.580**	1	
Nurses' job performance	0.719**	0.631**	0.792***	1

*** $p < 0.001$

**Figure 1.** Nurses' job performance as a mediator in the effect of nurses' perceptions of HRP on achieving hospitals' performance excellence**Table 4.** Results of the mediation analysis of nurses' job performance in the effect of nurses' perceptions of HRP on achieving hospitals' performance excellence (n=329).

Path	β	SE	t	p	95% CI _{lower} Bootstrap BC 95% CI	
					Lower	Upper
Nurses' perceptions of HRP to mediator (a path)	0.724	0.039	18.410	0.000	.646	0.801
Nurses' performance to hospitals' performance excellence (b path)	0.834	0.060	13.839	0.000	0.716	0.953
Direct effect of nurses' perceptions of HRP on achieving hospitals' performance excellence (c' path)	0.260	0.061	4.253	0.000	0.140	0.380
Indirect effect	0.603	0.056			0.498	0.716
Total effect	0.863	.054	16.023	.000	0.757	0.969

Note: controlling for hospital type, age, gender, level of education, position, years of experience in nursing, and work experience in current position. Estimate based on 5,000 bootstrap re-samples

the application level of the seven Malcolm Baldrige Criteria in Jordanian private hospitals and concluded that there is no statistical evidence was available for their application. The result contradictory with a study in Indonesia by Wahyudi and Permanasari (31) who claimed that hospitals passed the minimum requirement of hospital accreditation version judging from Malcolm Baldrige's Criteria from the viewpoints of nurses.

In this study, nurses rated their job performance as a poor performance. The possible explanation is that nurses felt frustration and lack of motivation caused by the perceived low level of HRP submitted to them. The result of the study is in line with nurses' job performance levels reported in researches in Korea (32) and those in Ethiopia (33). However, this result is lower than that in U.S.A. (34). Varied measurements and regional differences may explain some discrepancy.

Consistent with the study hypothesis, the current study found nurses' perceptions of HRP has a direct and positive effect on achieving hospitals' performance excellence. These findings reinforce the idea that nursing is critical human input in healthcare organizations and introducing effective HRP to nurses is a fundamental issue to enable healthcare organizations to achieve excellence in their performance. This is an interesting finding, which is in accord with the theoretical assumption that the management of human resources considered the most important factor in creating high-performing healthcare organizations which provide high quality and excellent customer services (35). These findings also, coincide with prior study demonstrated that HRP can predict higher levels of healthcare organizations' performance (36).

The current study found, nurses' perceptions of HRP have a direct and positive effect on their job performance. The reasonable explanation is that when nurses feel that they receive support from their work setting on professional and personal level, they do all of the best and exert more effort for their organizations. This finding support Sharma and Dhar (2) finding that improvement in nurses' performance does not only depend on effective operational systems but also on the effective HRP that support the maintenance of the emotional attachment of nurses toward an organization.

In the same line,, a study in Ghana by Gyensare and Asare (37), studied the relationship between HRP and perceived performance of psychiatric nursing and reinforced that there was significant positive correlation between the two variables. Also Xerri and Reid (38) mentioned that Australian nurses who reported more satisfaction with HRP, had higher levels of psychological wellbeing and exert greater effort to be innovative in the workplace.

As expected (H2), there is a significant positive effect of nurses' job performance on achieving hospitals' performance excellence. This is may be due to nurses are involved in main hospitals' programs related to patient safety, infection control and achieving quality and they are the people were able to decrease medication errors, eliminate patient falls, and increase patient mobility. This finding is in agreement with research that found effective nursing performance is an integral part of performance improvement and quality initiatives in healthcare organizations (39). Besides, this result supports Abdallah (40) in arguing that nurses seem to be a valuable asset to achieve excellence model in healthcare organizations.

Supporting the study hypothesis, the current study found a mediating role of nurses' job performance between their perceptions of HRP and achieving hospitals' performance excellence, which possibly revealed the mechanisms through which nurses' perceptions of HRP can help hospitals to achieve performance excellence. This finding is consistent with prior researches in other sectors which asserted that there was a positive indirect relationship between HRP and organizational performance, mediated by employees' attitudes and behavior (41). In addition, this makes sense in the context of what previous study in nursing has found that nurses who perceive effective HRP are likely to demonstrate improved performance which is positively affect outcome (3).

In conclusion, the study findings indicated that nurses' perceptions of HRP could help hospitals achieve excellence in their performance. Also, this study provides a better understanding of this relationship as the results of this study showed that higher level of nurses' perceptions of HRP could improve their job performance which helps hospitals achieve excellence in their performance.

The study has some limitations that should be addressed in the future. First, the study was a cross-sectional, and the cross-sectional study does not allow causal inferences. While the authors acknowledge this limitation, the mediation prediction outlined reflects the most theoretically plausible sequential ordering of variables. That is, hospitals should first offer HRP to nurses, which in turn can improve their performance, which ultimately help in achieving excellence in their performance. However, further longitudinal research should be conducted to strengthen the study findings. Second, the study variables were assessed through self-reported measurements and only from the nurses' point of view, so bias cannot be entirely ruled out. Therefore, future studies should incorporate multisource data to further validate the relationships among HRP, nursing performance and hospitals' performance excellence. Third, the study participants were from one city in Egypt, which can limit the generalizability of these findings. As a result, a multicenter research is suggested for further study. Lastly, the study investigated only nursing performance as a mediator between HRP and hospitals' performance excellence. Other mediators (such as job satisfaction and work engagement) are required to be examined in future studies.

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Conflict of Interest: Authors declares that they has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

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