


# The Relationship Between Nursing Care Delivery Models, Emotional Exhaustion, and Quality of Nursing Care Among Jordanian Registered Nurses

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## Abstract

**Background:** Inappropriately selected models of nursing care delivery and emotional exhaustion of nurses at work not only affect the nurses' health, but also the health of their patients.

**Purpose:** To examine the relationship between nursing care delivery models, nurses' emotional exhaustion, and quality of nursing care.

**Methods:** A cross-sectional survey that used a convenience sampling technique was employed. A total of 160 participants completed the study. Participants provided information about nursing care delivery models, nurses, emotional exhaustion, and quality of nursing care.

**Results:** Participants had a moderate level of emotional exhaustion. No statistically significant difference in the scores of quality of nursing care and emotional exhaustion were found according to the type of care delivery model ( $P > .05$ ). Emotional exhaustion was significantly and negatively correlated with the (nursing staff characteristics) subscale of quality of nursing care ( $r = -.183$ ,  $P = .021$ ). There was a significant difference in emotional exhaustion in regard to shift duty, marital status, education level, years of experience, salary, and working area). Only marital status significantly predicted emotional exhaustion ( $t = 2.57$ ,  $B = -8.98$ ,  $P = .011$ ).

**Conclusions:** Quality of nursing care was associated with nurses' emotional exhaustion rather than models of nursing care delivery. As nurses' emotional exhaustion could negatively affect the quality of nursing care, addressing the emotional exhaustion of nurses is important to improve patient outcomes.

## Keywords

nursing, nursing care delivery models, emotional exhaustion, Jordanian, quality of nursing care, work environment

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## Introduction

### Background

Healthcare workers' shortages, constrained healthcare budgets, and quality and safety issues have resulted in a need for healthcare workforce redesign initiatives (Gage et al., 2022). In any healthcare institution, the objectives of secure and effective care delivery incorporate the pursuit of brilliance in quality, safety, cost-saving, and enhancement of patient and family satisfaction (Havaei et al., 2019a). To meet these goals, the organization must implement a care

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delivery model that aligns with its vision and mission and incorporates all available human and material capital. Nurse directors have a pivotal role in providing proficient practice and decision-making in healthcare institutions (Abu Mansour & Abu Shosha, 2022). Thus, nurse directors are directly involved in determining nursing care organization strategies and creating conditions for their execution (Parreira et al., 2021).

### *Nursing Care Delivery Models*

A nursing care delivery model is the method for organizing and delivering nursing care to clients that is driven by values and beliefs (Parreira et al., 2021). The nursing care delivery model could be also described as the independent or collaborative approach of nurses to the provision of direct care to a group of patients (Havaei et al., 2019a). Nursing care delivery models entail how work is conceptually arranged, coordinated, and distributed to nurses and are based on administration and nursing theories (Jin & Yi, 2019). Organizational approaches describe how nurses coordinate and delegate work in order to provide effective care in a setting where protection is a top priority (Parreira, et al., 2021). Thus, care delivery models do not only involve a list of tasks to complete, but they also offer a way for nurses to choose what they want to do and follow caring ethics (Balducci et al., 2020).

Different forms of care delivery models, such as total patient care, team nursing, and functional nursing, vary in clinical decision-making, job allocation, communication, and management (Parreira, et al., 2021). The two most common nursing care delivery models are total patient care and team nursing. The choice of a specific model is influenced by social (gender, race, ethnicity, and geographical location), economic factors (monthly salary level), and the nature of the patient population (e.g., patient acuity) (O'Brien-Pallas et al., 2010; Winslow et al., 2019). Total patient care necessitates a large number of registered nurses (RNs), each of whom is responsible for at least one patient (Prentice et al., 2021). Team nursing is focused on teamwork and responsibility-sharing among team members, with an RN usually serving as a supervisor (O'Brien-Pallas et al., 2010). The most significant benefit of this style of care delivery is cooperative teamwork: the whole team is accountable for the quality and protection of the care provided (Fernandez et al., 2012). Studies on the models' quality of care, expense, and efficiency provide little evidence for deciding which model is most successful in any given situation. Despite the lack of rigorous evidence; newer models are still being used (Jin & Yi, 2019).

### *Quality of Nursing Care*

The quality of nursing care is a major concern for both healthcare providers and patients, and it must be improved,

thus meeting patient needs is a priority (Tsogbadrakh et al., 2020). The first priority of any health care organization is quality of care. As a response, the World Health Organization (WHO) released the national quality policy and strategy as a practical tool that provides step-by-step guidelines on how to establish and execute concrete measures and approaches that will increase the health system's capacity for quality and patient safety (WHO, 2018). The WHO defined the quality of care as the degree to which health services for individuals and communities increase the probability of desired health outcomes while remaining consistent with existing professional knowledge, safe, effective, timely, efficient, equitable, and people-centered (WHO, 2018). Nurses, as frontline healthcare providers, play an important role in improving the quality of patient care and thus influencing the economic status of healthcare organizations (Wei et al., 2018). Nurse self-reports using surveys are often used to measure the perceived quality of nursing care. Nursing care delivery models can influence the quality of nursing care delivered to the patients. Havaei et al. (2019b) reported that some of the involved nurses were not functioning effectively in their team-based delivery model as they reported a higher number of unfinished nursing tasks compared to nurses working in units utilizing a total patient care delivery model.

### *Emotional Exhaustion*

Emotional exhaustion is characterized by losing work interest and enthusiasm (Hewitt et al., 2020). It is considered a reaction to conflict between resources and job-related strains that result in feelings of emotional fatigue (Lahana et al., 2017). Psychological and physical stress factors that lead to conflict include long working hours, excess work demands, changes in work conditions, nursing care priorities, and financial or managerial priorities (Muhamad Robat et al., 2021). Within hospitals, nurses face grief and death situations daily that further contribute to the development of emotional exhaustion (Block et al., 2020). Sacadura-leite et al. (2019) for instance, found that high levels of emotional exhaustion among nurses were associated with a high fatality rate and a high proportion of deceased and elderly patients.

Recent research shows that poor quality of care was associated with higher levels of emotional exhaustion (Poku et al., 2020; Salyers et al., 2017). Emotional exhaustion, one of the foundations of "burnout syndrome," is a syndrome characterized by a loss of enthusiasm for work, and is conceptualized as a reaction to a disparity between job-related demands and resources that manifests as feelings of emotional fatigue (Lahana et al., 2017; Poku et al., 2020). Among health workers, the nursing workforce is mostly found to report a constantly complex intensity of emotional exhaustion (Collins, 2020; Poku et al., 2020). Increased work-related infections, increased drug error, high incidence

of patient falls, poor nurse–physician ties, low personal achievement of the nurse, job dissatisfaction, and increased turnover intention have all been linked to the emotional exhaustion of nurses (Baeriswy et al., 2017; Balducci et al., 2020). When emotional exhaustion is reduced, effective quality of care is delivered to patients in hospitals (Poku et al., 2020).

### **Significance of the Study**

Nursing care delivery models used in health care facilities can further influence nurses' competency and commitment to providing safe and high-quality patient care (Havaei et al., 2019a). The relationship between nursing care delivery models and quality of patient care and emotional exhaustion among RNs is not well studied in the literature. Further, the few studies that have been conducted on this research topic were all conducted in Western countries (Hall & Doran, 2004; Havaei et al., 2019a, 2019b). Therefore, this study is important because it adds to the scientific literature by addressing this gap. Understanding this relationship may help in generating and creating new models that help in improving the quality of care and reducing emotional exhaustion, which in turn affects patient care (Winslow et al., 2019).

### **Aim**

The purpose of this study is to examine the relationship between nursing care delivery models, quality of nursing care, and emotional exhaustion among Jordanian RNs, and to answer the following research questions:

1. What is the level of emotional exhaustion among RNs in Jordan?
2. Is there a significant difference in the quality of nursing care and emotional exhaustion according to the type of care delivery model?
3. What is the relationship between quality of care and emotional exhaustion?
4. What is the difference between emotional exhaustion and quality of care according to the demographic data?
5. What are the demographic factors that are independently associated with the emotional exhaustion of the study participants?

## **Methodology**

### **Design**

A descriptive cross-sectional design was used to answer this study's research questions. An online structured survey was used to collect the study data.

### **Population and Sample**

The target population of this study was all Jordanian RNs. Nurses who have served for at least one year (So that the nurse is familiar with the system of providing nursing care and practiced it well and not under training and supervision, meaning that the nurse receives cases alone) in an acute care hospital (full time) were eligible to participate in the study and invited to participate in the online survey. Nurses who hold a diploma degree are not qualified to work in some nursing care delivery models such as the total care model and are thus excluded from the study. Also, nurses not involved directly in bedside patient care (e.g., nurse administrators) were excluded. Further, nurses employed in wards or units that practice according to varying care delivery models were excluded.

For estimating sample size, the G-power program was employed to accomplish this task. Using a conventional power estimate of 0.80 with an alpha set at .05, a medium effect size of 0.15, and a total of 9 possible predictors it is estimated that for a multiple linear regression analysis the required sample size is 139 participants. To allow for an approximately 30% possible non-response rate (Islam, 2018), 41 more nurses were invited, resulting in a total of 180 nurses being invited.

### **Data Collection Procedures**

A convenience data collection technique was used to obtain the required number of eligible respondents based on the inclusion criteria. A study invitation letter that includes details of the study including its purpose, eligibility criteria, procedures, and participants' rights were distributed through the online link using Google forms. The link was sent to the staff nurses who meet the inclusion criteria by head nurses in the departments. The time required for completing the study questionnaire was 15–20 minutes. The response rate was 88.8%, As 180 questionnaire links were sent to the participants, and only 160 were answered.

### **Settings**

The health care system in Jordan consists of four main sectors: public, private, military, and university affiliation. There are a total of 106 hospitals in Jordan, providing 12,081 beds. The public sector accounts for the majority of these hospital beds (67%) (Al-Ajarmeh et al., 2021). In Jordan, the hospital bed rate of about 18 beds per 10,000 people is higher than the bed rates in several other Arab countries but lower than the global rate. With the recent increase in the population and the high influx of refugees to Jordan, the current bed rate is considered suboptimal.

Most hospitals in Jordan have more than one care delivery model within the same institution, and many times within the same nursing ward or unit. The focus of this study was on

wards or units where nurses consistently practice according to a single care delivery model. Thus, the largest referral hospitals in Jordan that include at least one unit or ward following one of the three care delivery models (i.e., total patient care, functional nursing, or team nursing) were targeted in this study. The number of hospitals included was eight, divided into three governmental hospitals, three private hospitals, one university-affiliated hospital, and one military hospital. The total patient care model was applied in some critical care units and some emergency departments. Functional nursing was applied in recovery rooms and some medical and surgical units. Team nursing was rarely applied and was found in one medical and one surgical unit. The number of nurses in the selected settings was 318. The number of male nurses was high in critical care units and emergency departments, while the gender of nurses was approximately evenly distributed across other wards included in the study.

### *Data Collection Instruments*

Data were collected using a demographic data sheet, and three instruments: Nursing Care Delivery Models, Good Nursing Care Scale for Nurses (GNCS-N), and the Emotional Exhaustion subscale of the Maslach Burnout Inventory (MBI).

### *Demographic Data Sheet*

Consists of age, gender, marital status, monthly salary, educational level, years of experience, type of hospital (University, Private, Governmental, Military), type of clinical unit (Emergency room, medical ward, surgical ward, ICU, recovery room), and shift duty: A (7 a.m.–3 p.m.)/B (3 p.m.–11 p.m.)/C (11 p.m.–7 a.m.), or day (7 a.m.–7 p.m.)/night (7 p.m.–7 a.m.).

### *Nursing Care Delivery Model*

A single item that asked nurses to select the option that best describes how care was delivered in their primary unit was used to measure the nursing care delivery model; response options include (1) Total patient care, (2) Functional Nursing, and (3) Team nursing.

### *Quality of Nursing Care*

The Good Nursing Care Scale for Nurses (GNCS-N, version 2) was used to measure nurses' quality of nursing care. The GNCS-N (Leino-Kilpi et al., 2015) includes 54 items covering eight subscales: (1) respondent's background data, (2) nursing staff characteristics, (3) care-related activities, (4) preconditions for care, (5) nursing environment, (6) course of the nursing process, (7) patients' coping strategies, and (8) collaboration with relatives. The responses are collected

on a 5-point Likert-type scale ranging from "fully agree" = 4 to "fully disagree" = 1 (Istomina, et al., 2011). Only four relevant subscales were used in this study (nursing staff characteristics (five items), care-related activities (six items), preconditions for care (five items), and nursing environment (five items) with a total of 21 items. The Good Nursing Care Scale for Nurses has a Cronbach  $\alpha$  value of .88 (Stolt et al., 2019).

### *The Emotional Exhaustion*

The Emotional Exhaustion dimension of the MBI developed by Maslach and Jackson (1981) was used to measure emotional exhaustion. The scale consists of nine items with respondents indicating how much they feel about these emotions on a seven-point Likert scale ranging from "never" (0) to "every day" (6). The possible total score range from 0 to 36. The emotional exhaustion score is calculated by adding the items. Low, moderate, and high emotional exhaustion is indicated by scores ranging from <17, 18–29, to >30, respectively. The scale has been found to have sufficient parameters for internal reliability as well as convergent and discriminant validity (Rayan et al., 2019). The emotional exhaustion scale had composite reliability of 0.89 and convergent validity of 0.61 (Kassim et al., 2019).

### *Ethical Considerations*

The study was approved by the university's Institutional Review Board where the researchers are working. Participants provided implied consent by proceeding to complete the online questionnaire if they agree to participate in the study. Potential respondents assured that their participation is completely voluntary and purely for academic/research purposes. By not asking respondents to write their names on the questionnaire and assuring them that their responses were not linked to them in any way, respondents' privacy and confidentiality were assured. Finally, the collected electronic data were kept on Google Drive and this drive was secured with only one password kept with the researcher.

### *Data Analyses*

Data analysis was performed using the Statistical Package for the Social Sciences, version 23 (SPSS 23). Descriptive statistics were employed to present the characteristics of socio-demographic variables of the participants and main study variables. Pearson correlation was used to examine the relationship between quality of care and emotional exhaustion. One Way Analysis of Variance (ANOVA) was conducted to examine differences in quality of nursing care and emotional exhaustion based on the type of the nursing care delivery model. Independent sample t-test and one-way ANOVA test were conducted to examine differences in emotional

exhaustion and quality of care according to the demographic data. Multiple linear regression analysis was used to identify the factors uniquely correlated with emotional exhaustion. In the current study,  $P$ -value  $< .05$  was considered statistically significant. Assumptions regarding the parametric tests were evaluated before conducting the principal analysis (i.e., assessment of normality and homogeneity of variances, etc.).

## Results

### Sample Characteristics

As shown in Table 1, a total of 160 participants completed the study including 96 (60.0%) males and 64 (40.0%) females. The age group with the highest percentage was  $<30$  years (62.5%). The participants ( $n = 73$ , 45.6%) were single and more than three-fourth of the participants ( $n = 125$ , 78.1%) have a Bachelor's degree level of education. In addition, the participants had a monthly salary of less than 500 JD ( $n = 78$ , 48.8%). About 60.6% of the participants

**Table 1.** Characteristics of the Study Sample ( $N = 160$ ).

Variable	Group	Frequency	Percentage
Age	<30 years	100	62.5
	31–40 years	43	26.9
	41–50 years	14	8.8
	>50 years	3	1.9
Gender	Male	96	60.0
	Female	64	40.0
Marital status	Single	73	45.6
	Married	72	45.0
	Divorced/ widowed	15	9.4
Educational level	Bachelor degree	125	78.1
	High diploma	17	10.6
	Postgraduate	18	10.6
Monthly salary	< 500 JD	78	48.8
	501–800 JD	74	46.3
	> 800 JD	8	5.0
Years of experience	1–5 years	97	60.6
	6–10 years	38	23.8
	> 10 years	25	15.6
Type of hospital	University	42	26.3
	Private	45	28.1
	Governmental	46	28.8
	Military	27	16.9
Type of clinical unit	ED*	37	23.1
	Medical ward	37	23.1
	Surgical ward	27	16.9
	CCU**	54	33.8
	Recovery room	5	3.1
Shift duty	A/B/C	96	60.0
	Day/night	64	40.0

\*ED: emergency department; \*\*CCU: critical care unit.

have 1–5 years of experience. The majority of the participants ( $n = 46$ , 28.8%) were employed in governmental hospitals, worked in critical care units ( $n = 54$ , 33.8%), and worked on rotating shift duty (A/B/C) (60.0%) (see Table 1).

### Level of Emotional Exhaustion and Nurses' Perception of Quality of Care

The mean score of emotional exhaustion was 23.62 (SD = 13.96), which indicates a moderate level. The emotional exhaustion scores ranged between 4 and 49. The mean score of nurses' perception of quality of care was 3.17 (SD = 0.72), ranging between 1.25 and 4.00. The nursing environment subscale had the highest mean score ( $M = 3.36$ ,  $SD = 0.39$ ), while nursing staff characteristics had the lowest mean score ( $M = 3.29$ ,  $SD = 0.39$ ).

### Differences in Quality of Nursing Care and Emotional Exhaustion According to the Model

A one-way ANOVA test was used to examine differences in quality of nursing care and emotional exhaustion according to the type of care delivery model. The results showed no statistically significant difference in the scores of quality of nursing care and emotional exhaustion according to the type of care delivery model ( $P > .05$ ) (see Table 2).

### Relationship Between Quality of Care and Emotional Exhaustion

Pearson correlation coefficient was employed to calculate the correlations between quality of care and emotional exhaustion. The results revealed that emotional exhaustion was significantly and negatively correlated with the nursing staff characteristics subscale ( $r = -.183$ ,  $P = .021$ ). However, there was no significant correlation between emotional exhaustion and the other three quality of care subscales (care-related activities,  $P = .65$ ; preconditions for care,  $P = .077$ ; and nursing environment,  $P = .251$ ).

### Differences in Emotional Exhaustion and Quality of Care According to the Demographics

The results of the independent t-test revealed that emotional exhaustion differed significantly based on the shift duty ( $t = -2.39$ ,  $P = .018$ ). The mean score for nurses working day/night shifts was 26.769 (SD = 14.769), while the mean score for nurses working A/B/C shifts was 21.474 (SD = 13.037). No significant difference was found in the quality of nursing care based on shift duty. Also, the results of the independent t-test revealed no difference in the emotional exhaustion and quality of care according to the gender of the study participants. Regarding differences in emotional exhaustion according to demographic variables with more

**Table 2.** Differences in Quality of Nursing Care and Emotional Exhaustion According to the Type of Care Delivery Model (N = 160).

Scales	Type of Care Delivery Model	N	Mean	SD	F	P-value
Nursing staff characteristics	Total patient care	89	3.29	0.394	0.040	.960
	Functional nursing	42	3.30	0.41		
	Team nursing	29	3.27	0.39		
	Total	160	3.29	0.39		
Care-related activities	Total patient care	89	3.33	0.39	0.136	.873
	Functional nursing	42	3.35	0.36		
	Team nursing	29	3.37	0.35		
	Total	160	3.34	0.37		
Preconditions for care	Total patient care	89	3.34	0.41	0.189	.828
	Functional nursing	42	3.31	0.36		
	Team nursing	29	3.36	0.33		
	Total	160	3.34	0.38		
Nursing environment	Total patient care	89	3.40	0.40	1.077	.343
	Functional nursing	42	3.35	0.39		
	Team nursing	29	3.28	0.36		
	Total	160	3.36	0.39		
Emotional Exhaustion	Total patient care	89	22.58	13.84	1.897	.153
	Functional nursing	42	27.16	14.65		
	Team nursing	29	21.69	12.82		
	Total	160	23.62	13.96		

than two categories, the results of one-way ANOVA revealed a statistically significant difference in the mean scores of emotional exhaustion with marital status ( $F = 6.942$ ,  $P < .001$ ). The post hoc (Scheffe test) revealed that divorced participants have higher emotional exhaustion scores than single participants ( $P < .05$ ). In addition, there is a statistically significant difference in the mean scores of emotional exhaustion according to the education level ( $F = 3.359$ ,  $P = .037$ ). The post hoc (Scheffe test) revealed that participants who have a high diploma degree had higher emotional exhaustion scores than those who have a bachelor's degree ( $P < .05$ ). Also, there is a statistically significant difference in the mean scores for emotional exhaustion according to the monthly salary ( $F = 12.642$ ,  $P < .001$ ). Post-hoc analysis (Scheffe test) indicated that participants who get paid >800JD had higher scores of emotional exhaustion than those who get paid less than 500JD ( $P < .05$ ). The results of one-way ANOVA have also revealed a statistically significant difference in the mean scores of emotional exhaustion according to the years of experience ( $F = 3.915$ ,  $P = .022$ ). Post-hoc analysis (Scheffe test) indicated that participants who have 6–10 years of experience had higher emotional exhaustion than those who have 1–5 years ( $P < .05$ ). Finally, there was a statistically significant difference in the mean scores for emotional exhaustion according to the type of clinical unit ( $F = 2.769$ ,  $P = .029$ ). Post-hoc analysis (Scheffe test) indicated that participants who work in the emergency room had higher levels of emotional exhaustion than those who work in surgical ward ( $P < .05$ ). However, the results of one-way ANOVA revealed no statistically significant difference in the mean

scores of emotional exhaustion according to age and type of hospital.

Regarding the differences in quality of care based on demographic variables, there was a statistically significant difference in the mean scores of the nursing environment subscale according to the type of clinical unit ( $F = 2.766$ ,  $P = .029$ ). Post-hoc analysis (Scheffe test) indicated that participants who worked in the surgical ward had higher quality of care than those who worked in the emergency department, and those who worked in the critical unit had higher quality of care than those who work in the surgical ward ( $P < .05$ ). However, the results of one-way ANOVA revealed no statistically significant difference in the mean scores of the other subscales of quality of care based on demographic variables. The significant results are shown in Table 3.

### Demographic Variables Independently Associated with Emotional Exhaustion

Multiple linear regression analysis was used to identify the factors uniquely correlated with emotional exhaustion. The characteristics of the study participants that were not significantly associated with emotional exhaustion were excluded and not entered in the regression analysis. The dependent variable was continuous (i.e., emotional exhaustion). To meet the linearity assumption of the multiple linear regression analysis, the categorical independent variables were dummy coded (using 0, 1 codes) before being entered into the regression model. The dummy coded variables were: shift duty (Day/Night), being single, level of education (Bachelor's degree),

**Table 3.** Differences of Emotional Exhaustion and Quality of Care According to the Demographics ( $N = 160$ ).

Variable	Variable	Categories	Mean	SD	F	P	Mean Differences in Post-hoc Pairwise Comparisons	
Emotional exhaustion	Marital status	Single	20.301	12.33	6.94	.001	Single	
		Married	24.775	14.33				
		Divorced	33.688	14.51			13.387*	
Emotional exhaustion	Education	Bachelor degree	22.597	13.60	3.35	.037	Bachelor degree	
		High Diploma	32.063	14.85			9.466*	
		Postgraduates	23.250	13.93				
Emotional exhaustion	Monthly salary	< 500 JD	18.459	12.08	12.64	.00	Less than 500 JD	
		501–800 JD	19.625	13.95				
		> 800 JD	28.96	12.43			10.477*	
Emotional exhaustion	Years of experience	1–5 year	21.464	13.05	3.91	.022	1–5 year	
		6–10 year	28.789	15.24			7.325*	
		> 10 years	24.160	13.81				
Emotional exhaustion	Type of clinical unit	ED	22.08	11.24	3.878	.005	ED	
		Medical ward	29.08	14.93				
		Surgical ward	35.73	13.25			–13.645*	
		Critical unit	29.02	14.36				
		Recovery room	30.40	14.22				
Nursing environment subscale	Type of clinical unit	ED	3.442	0.378	2.76	.029	ED	CCU
		Medical word	3.360	0.417				
		Surgical word	3.156	0.244			0.286* 0.277*	
		Critical unit	3.433	0.433				
		Recovery room	3.320	0.363				

\* $P < .05$ ; ED: Emergency department; CCU: critical care unit.

**Table 4.** Demographics That Independently Associated with Emotional Exhaustion of the Study Participant.

Model	Unstandardized Coefficients		Standardized Coefficients		t	P
	B	Std. Error	Beta			
(Constant)	71.453	25.286			2.826	.005
Shift duty (day/night)	3.851	2.128	.136		1.810	.072
Being single	–8.979	3.493	–.193		–2.571	.011
Bachelor degree	–6.248	3.695	–.135		–1.691	.093
Year of experience (1–5 years)	–3.618	2.748	–.111		–1.317	.190
Monthly salary (less than 500 JD)	1.669	4.891	.026		.341	.733
Working in emergency room	3.452	2.745	.105		1.258	.210

year of experience (1–5 years), monthly salary (Less than 500 JD), and working in the emergency room.

Overall, the regression models were found to be significant,  $F(4.091)$ ,  $P < .001$ . The model accounted for 13.5% of the variance in emotional exhaustion. Only marital status significantly predicted emotional exhaustion ( $t = 2.571$ ,  $B = -8.979$ ,  $P = .011$ ) (see Table 4).

## Discussion

The study participants had a moderate level of emotional exhaustion. This outcome is consistent with a descriptive cross-sectional study conducted by Alfuqaha and Alsharah

(2018) in Jordan with a sample of nurses ( $N = 120$ ) from the University of Jordan Hospital and found that nurses had a moderate level of emotional exhaustion. This result can be explained by the fact that nurses are physically and emotionally exhausted, tired, face high demand, have to deal with sick people, help save patients' lives, and work too hard and under pressure on a variety of nursing tasks. However, the level of emotional exhaustion in this study is somewhat lower than that of previous studies such as Block et al. (2020) and Sacadura-leite et al. (2019) who found a high level of emotional exhaustion among nurses. Despite that, emotional exhaustion should be a concern for nurse administrators in Jordan due to its negative

consequences such as reducing the ability to communicate with others on a personal or emotional level, increasing rates of absenteeism from work, as well as a lack of enthusiasm at work, which negatively affect the quality of health care and increasing mortality rates (Sacadura-leite et al., 2019). Emotional exhaustion is still a major concern worldwide with a prevalence rate of moderate to severe emotional exhaustion of more than 90% among RNs in a recent study (Poku et al., 2020). Cultural factors in Jordan and Arab countries could play a role in emotional exhaustion. For example, one of the most common challenges facing working women in the Arab world is society's perception regarding the roles of both women and men that women have greater social responsibilities regarding the home and family besides the profession. At the same time, the male nurse in the Arab world is obligated to independently spend money on his family. These factors could lead to an increased burden and emotional exhaustion on both men and women.

No statistically significant difference was found in the scores of quality of nursing care and emotional exhaustion according to the type of care delivery model. The study findings are consistent with the study of Havaei et al. (2019b) who found no difference in the quality of care and emotional exhaustion between total patient care and team nursing. On the contrary, Hall and Doran (2004) found that patient care delivery models were important predictors of the quality outcomes studied, as the total patient care model was found to have a statistically significant negative influence on nurses' perceptions of the quality of care provided to patients. Team nursing, on the other hand, was linked to a higher number of patient adverse events, such as unfinished nursing tasks across all patient acuties (Havaei et al., 2019a, 2019b). From my point of view, this difference in results may be due to the difference in nurses' perceptions about the application of care delivery models, their effectiveness, and their impact on workflow and consequently on the quality of care.

High-level emotional exhaustion may impair nurses' ability to provide safe and high-quality care while providing high-quality services should still be a core priority of the health care system (Denning et al., 2020). In this study, the nursing staff characteristics subscale was negatively correlated with emotional exhaustion. The nursing staff characteristics subscale is about the extent of the nurse's commitment to high-quality care towards patients from several aspects such as being friendly toward patients, performing nursing duties, providing answers to patients' questions, being patient-oriented, and being honest with the patient. These aspects seem to be negatively impacted by emotional exhaustion. The outcomes of this study are consistent with the study of Salyers et al. (2017) who reported that high levels of emotional exhaustion among health care providers are associated with low quality of patient care. Effective interventions to reduce emotional exhaustion are recommended to enrich the quality of care provided to patients (Poku et al., 2020).

The current study shows that emotional exhaustion differed significantly according to (shift duty, marital status, education level, monthly salary, year of experience, and type of clinical unit). However, only marital status significantly predicted emotional exhaustion. In addition, the current study shows that the quality of patient care differed significantly according to monthly salary and type of clinical unit. Previous research found that the demographic factors of nurses such as employment contract (e.g., permanent or temporary), marital status, level of education, nursing experience, age, and gender could have an impact on nurse and patient outcomes such as emotional exhaustion and the quality of patient care (Poku et al., 2020; Zhang et al., 2021). According to Aiken et al. (2011) in a study conducted among nurses from 665 hospitals in the United States, an increase in the proportion of nurses with a bachelor's degree by 10% reduced the chances of 30-day inpatient mortality and no rescue by about 4%. Surprisingly, the results of this study showed that emotional exhaustion was positively correlated with nursing experience. Nurses are exposed to various stress from physical, psychological, and social work environments with time, and nursing has been considered a risky profession due to these pressures that could cause emotional exhaustion with time.

The results of our analysis showed that people without a partner had higher levels of emotional exhaustion. This may be due to the fact that the family environment provides security and support, and protects the subject from developing impersonal, cynical, and negative attitudes toward colleagues in the workplace. These results are consistent with those reported by other studies such as (Ortega et al., 2018). Nurses' educational levels have been linked to nurse and patient outcomes. According to a large survey of patients and nurses from 665 US hospitals, a 10% increase in the proportion of nurses with a bachelor's degree lowered 30-day inpatient mortality and failure to rescue by roughly 4%. (Aiken et al., 2011). From my point of view, demographic characteristics play an important role in predicting emotional exhaustion among nurses, and thus we can predict the level of quality of patient care nursing.

### *Limitations*

Despite its strengths, this study is subject to some limitations. First, the study utilized a cross-sectional survey design and a convenience sampling technique that would limit the generalizability of the study results and the generation of any causal conclusions. However, collecting data from eight facilities could enhance representativeness and address this limitation. Second, nurses with diplomas were not included in the study, which may also affect generalizability. Excluding nurses with diplomas was required to enhance the credibility of the study as they are not qualified to work in some nursing care delivery models such as the total care model. Finally, study results are subject to self-report bias



as the data were collected via a self-administered questionnaire. The anonymity of the questionnaires in this study could reduce this risk and enhance reporting of accurate answers.

### Study Recommendations

There are many potential research avenues to consider based on the results of this study. One can see that there are areas of improvement that can be made in the future. The recommendation is to include a larger and more diverse sample size so that detailed conclusions can be drawn. Once a larger sample size is obtained, a more detailed analysis of the demographics and survey results should be implemented. The study showed that there is no difference in the quality of nursing care and emotional exhaustion among RNs according to nursing care delivery models. Therefore, it is important for future research to include all categories of nursing care delivery models as needed.

The results of the current study have significant implications for nursing practice. This guidance needs assessment of presented hospital officials about the extent of emotional exhaustion of nurses and their impact on the quality of services provided. Thus, it is imperative to reduce the emotional exhaustion of nurses in order to enhance the quality of care provided. Furthermore, the findings of this study should inform the development and implementation of proposed solutions for formal guidance including the selection of department head nurses, incentives, and working hours.

### Conclusions

The current study illustrates the relationship between nursing care delivery models, nurse emotional exhaustion, and quality of nursing care. Therefore, this study added to the scientific literature by addressing this gap. Quality of nursing care was associated with nurses' emotional exhaustion rather than models of nursing care delivery. As the emotional exhaustion of nurses negatively affects the quality of nursing care, addressing the emotional exhaustion of nurses is important to improve patient outcomes. This can be achieved by improving the work environment and work conditions.

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