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RESEARCH ARTICLE

Caring Behavior and Hourly Rounding: Nurses' Perception

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Abstract:

Background:

Caring behavior impacts care quality and improves patients' satisfaction. Hourly rounding aims at preventing missed care and improving hospital patient satisfaction.

Objectives:

This study aimed to examine the Jordanian nurses' perception of caring behavior and hourly rounding and assess the correlation between perception of caring behavior and hourly rounding.

Methods:

A cross-sectional descriptive correlational design was used to conduct this study. A convenience sample of 1378 nurses completed the online Hourly Rounding Questionnaire (HRQ) and the Caring Dimension Inventory (CDI-25).

Results:

Nurses' lowest agreement about hourly rounding was on the documentation. In comparison, the highest agreement was making patients safer by preventing falls. The mean of caring behavior was 105.39, indicating a high level of care. This study revealed significant differences in nurses' perceptions of hourly rounding concerning hospital type, shifts, working units, and gender. Moreover, a strong positive correlation was found between nurses' perceptions of hourly rounding and their perception of caring.

Implications for Nursing:

Nurses should take the psychosocial aspect of the patients as an essential priority when providing care. The nurse leaders are responsible for supervising, supporting, and evaluating that hourly rounding according to policy and protocols.

Conclusion:

This study demonstrated the importance of hourly rounding and caring behavior and their correlation.

Keywords: Caring behaviors, Documentation, Hourly rounding, Nursing, Vital signs, Patients.

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1. INTRODUCTION

Nursing is a caring profession defined by holistically treating all people, focusing on meeting the patients' needs [1]. Nurses are vital caregivers in hospital settings. They have a crucial role in caregiving, enhancing patient safety, improving communication, assessing and diagnosing changes in health

status, and intervening in high quality to prevent complications and attain patients' satisfaction [1]. Nurses spend most of their time with patients, and caring behaviors have an impact on health outcomes and are positively associated with increased patient satisfaction levels [2]. Nursing practice is greatly centered on caring behavior that impacts patient care quality and is predictive of patient satisfaction [3]. Nursing care behavior is defined as an act, behavior, and mannerism by professional nurses that convey concern, safety, and attention to the patient [4]. Professional nursing practices are

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implemented through direct and indirect nursing care [5]. Direct nursing care is the most prioritized in nursing practice and can be observed in nurses' behavior, quality of nursing care, and patient outcomes care [5].

However, many factors might influence caring behaviors, including work overload, quantity, staffing quality, and shift work [4]. Therefore, the chance to provide direct nursing care and apply caring behavior is limited, as the time available has been diverted to indirect patient care activities [6]. Factors that influence nurses' caring behavior in nursing practice deserve study because nurses' behavior determines their performance and patients' outcomes. Poor performance will affect the quality of patient care, affecting the client's satisfaction with the care they have received from nurses. Still, clarifying the nurses' perceptions and factors that may influence their perceptions of caring behaviors remains a vastly important concern for the international nursing community [3].

Missed nursing care is a problem that occurs in many healthcare settings across the world. Recently, several studies have highlighted this phenomenon that often leads to serious adverse effects on patients (*e.g.*, medication administration errors, falling, bedsores, and hospital-acquired infection) [7], other negative effects on nurses (*e.g.*, work dissatisfaction, burnout, increased absenteeism, and turnover) [8], and eventually, effects on organizational quality outcomes [8]. Nursing caring practices that are most frequently left unfinished include the patients' emotional support, vital signs, physical assessments, patient education, updating care plans, and documentation [9, 10]. Therefore, hospital administrations should seek a practice or protocols of care and ensure proactive and regular checks of hospitalized patients to decrease missing care. A practice, such as hourly rounding, aims to enhance nurses' interactions with patients and improve patient outcomes [11]. Patient rounding is not a new practice, but hourly rounding is a new practical approach to patient care. It was developed to help improve hospitals' patient satisfaction scores [12]. The nursing staff carries this structured rounding to check on their patients during a specific time; however, it also involves nurses making assessments of environments and taking actions to promote safety, develop communication, and improve the quality of patients' care [13]. Hourly rounding is defined by Deitrick *et al.* (2012) as a nurse-led proactive approach to anticipating patient needs while utilizing evidence-based interventions [13]. The approach of hourly rounding has been used across the world in healthcare settings.

One literature review was conducted to evaluate the effectiveness of hourly rounding on patient outcomes, including nine studies [13]. The review mentioned two extensive reviews, which were conducted by Meade *et al.* (2006) and Studer Group (2007) to evaluate the effects of structured hourly rounding [11, 14]. Both studies reported an increase in patient satisfaction, a reduction in falls, and a reduction in the use of call bells. There was a significant correlation between the reductions in falls and hourly rounding [13].

Another literature review was performed by Hicks (2015) to review current knowledge about hourly rounding and help guide future nursing practice [15]. The study confirmed that

fall rates were reduced as a result of rounding. According to Hicks, nursing staff needs to be educated and committed to the practice of rounding to gain the benefits of the practice [15]. Fabry's (2015) study results varied considerably among job category, shifts, unit work, and educational level of the registered nurses concerning hourly rounding [16]. Overall only 25% of the registered nurses felt a sense of ownership of the hourly rounding initiative, and only 23.1% agreed that completion of the hourly rounding paper documentation tool was an accurate indication that hourly rounding was actually being done [16]. Another study in Australia conducted by Francis *et al.* (2019) suggested that structured nursing rounds are associated with positive outcomes [17]. However, some barriers to effective hourly rounding have been reported, such as high workload, time pressure, and documentation issues [18]. Furthermore, lack of staff engagement in the process, challenges in meeting specific patient needs, and lack of staff education before implementation were also identified as barriers [18].

Many studies addressed the correlations between caring behavior and nurses' demographic characteristics, such as years of experience, gender, unit work, position, and educational level [19 - 20]. The results of previous studies showed a significant correlation between caring behavior and nurse demographics. Similarly, other studies showed a significant correlation between hourly rounding and nurses' demographics, such as units, work experience, experience in the same setting, position, gender, level of education, hospital sector, and shifts [16, 21].

According to our observations nationally in Jordan, busy nursing units in all health sectors, especially during pandemic periods, escalate the need for objective quality indicators that are more efficient to be established. Indicators are the constant sound of call lights ringing, cases of falling in hospital settings, and patients' satisfaction. Additionally, there are caring behavioral variations and a lack of standardization on how nurses should perform hourly rounds. It has been observed that patient needs are not addressed within each visit by nursing staff, leading to the call light being utilized for many basic needs, such as toileting, repositioning, and pain management. With all these call lights, the standard set of rounds is not only interrupted but also causes reprioritizing for staff duties. Subsequently, it is difficult for nurses to finish one task to move on to the next, which may put patient safety in danger. The lack of consistency in the administration of a standardized, thorough protocol that addresses the basic needs in patient care will cause an increase in call lights, patient falls, decreased quality of care, and finally, increased patient feeling that staff is not there for them when they are in need. This resulted in unsuccessfully addressing the needs of positioning, toileting, pain, having items within reach, and a lack of a safety check. As mentioned, this resulted in more frequent calls for assistance and many disruptions to the nurse while performing other tasks [22].

According to our search, no literature related to nursing caring behavior and hourly rounding was found. Nurses must offer caring behavior efficiently to ensure that patients receive high-quality services, improving satisfaction and outcomes for

both patients and healthcare organizations. Nevertheless, little attention has been paid to how well the structured hourly rounding nurses support and maintain good performance for quality care outcomes. The study was part of a broader funded project by Al-Ahliyya Amman university in Jordan. It was a national survey to measure different nursing concepts, including nurses' perception of hourly rounds, nurses' perception of care, and its effects on hourly rounds, in addition to assessing incivility as perceived by nurses. This study aimed to fill a gap by examining the Jordanian nurses' perception of caring behavior, hourly rounding, and the correlation between selected demographics and both caring behavior and hourly rounding, in addition to assessing the correlation between perception of caring behavior and hourly rounding.

2. MATERIALS AND METHODS

2.1. Design

A cross-sectional descriptive correlational design was utilized.

2.2. Settings

The study was conducted in different hospitals in Jordan that implement hourly rounding. Three were from the private sector, four governmental hospitals, two university-affiliated hospitals, and one military hospital.

2.3. Sample and Sampling

The convenience sampling technique was utilized in this study to recruit nurses from the targeted hospitals. The inclusion criteria were nurses working in the hospitals for at least three months and willing to participate. Registered nurses (RNs), licensed practical nurses (LPNs), and certified nursing assistants (CNAs) working in medical, surgical, pediatrics, orthopedics, oncology, renal, and respiratory units in the selected hospitals were invited to participate in the study. Nurses working in other units, like emergency rooms or intensive care units, were excluded from the study due to different observations and rounding systems.

The sample size was calculated using a survey calculator [23]. The estimated sample was calculated based on a 95% confidence interval, a three-confidence level, and a 24000 population, which resulted in at least 1022 participants. One thousand five hundred questionnaires were distributed to compensate for missing data. The response rate was 95.2% (N=1428). The final sample size was 1378, excluding 50 responses due to (10 items or more) missing data.

2.4. Ethics Considerations

The ethical approval was obtained from the ethical and research committee at Al-Ahliyya Amman University (12/1825/ص/رج). Participants received a cover letter outlining the study's goal, the respondents' anonymity, their right to withdraw at any time, and the data's confidentiality, with no one other than the researcher having access to the data. Moreover, a consent statement must be checked before participants respond to questionnaire items. Permission was obtained from the authors of the CDI questionnaire and hourly

rounds questionnaire to adopt and use in the study.

2.5. Data Collection

Data collection began after obtaining the required ethical approvals. The study adopted electronic self-administered questionnaires using google forms due to the COVID-19 pandemic lockdown and to minimize human contact and disease transmission. The data was collected between Sep/2020 and Mar/2021. A facilitator was assigned in each hospital to serve as a resource and liaison person to reach all nurses at different shifts and provide the needed information to the participants. The researcher's contact information was available to participants for any further inquiries.

2.6. Measures

The online questionnaire consisted of three parts: the demographic data sheet, the Hourly Rounding Questionnaire (HRQ), and the Caring Dimension Inventory (CDI-25).

2.6.1. The Demographic Data Sheet

The first part of the questionnaire contained nurses' demographic information like age, gender, job title, hospital type, duty shifts they often work, the unit they work in, total years of experience, total years of experience in the current job, and type of duty.

2.6.2. The Hourly Rounding Questionnaire (HRQ)

The second part assessed nurses' perceptions of hourly rounding using the HRQ. It consists of 21 positive statements on hourly rounding based on the developer's literature review, Rogers' theory, and observations at various hospitals [16]. The questionnaire items were a five-point Likert scale (i.e., strongly disagree, somewhat disagree, undecided, somewhat agree, and strongly agree). The tool was tested for content validity by the tool developer [16]. The Cronbach's coefficient alpha reliability for the questionnaire in this study was 0.95, indicating excellent reliability.

2.6.3. The Caring Dimension Inventory (CDI-25)

The third part included the CDI-25, which was designed by Watson and Lea (1997) as an instrument to gather data on nurses' perceptions of what represents caring in nursing [24]. It consists of 25 items, each of which specifies a nursing action and asks nurses to rate whether or not they agree that they consider this aspect of their nursing practice to be caring. It consists of five-point Likert scale items ranging from "strongly agree" to "strongly disagree". The content validity of the CDI-25 has been reported [24]. The reliability of the CDI-25, measured by the internal consistency of the 25 core items, was acceptably high, with Cronbach's alpha greater than 0.90 [25]. In the current study, Cronbach's alpha reliability was 0.935.

The questionnaire was translated into Arabic after obtaining permission from the author. The translated Arabic version was back-translated to English by researchers, experts in the field, and a translator [25]. The final draft was compared with the original form of the questionnaire to ensure consistency. Only minimal linguistic modifications were made.

2.7. Data Analysis

Data were analyzed using the Statistical Package for Social Science (SPSS) version 21 [26]. Descriptive statistics, including frequencies, mean, percentage, and standard deviation, were calculated to describe demographics, HRQ items, and the CDI-25 items. T-test and Kruskal-Wallis H test were conducted to examine differences in nurses' perceptions of hourly rounding and caring according to demographic characteristics. Pearson r was used to examine the correlation

between age, hourly rounding, and caring.

3. RESULTS

The total number of nurses who completed the questionnaire was 1378. The majority, i.e., 1192 (86.5%), were registered nurses, 1332 (96.7%) working full-time jobs, 691 (50.1%) in governmental hospitals, and 763 (55.4%) had duties in different shifts (shift rotation). The average age for nurses was 32.44 (SD= 6.41), ranging from 20 to 57 years. Other demographic characteristics are shown in Table 1.

Table 1. Demographic characteristics of the sample. N=1378.

Variable	N (%)
Gender	
Male	604(43.8)
Female	774(56.2)
Job title	
RN	1192(86.5)
LPN	127(9.2)
Other	59(4.3)
Hospital type	
Governmental	691(50.1)
Private	354(25.7)
Military	134(9.7)
Educational	199(14.4)
Total years of experience	
Less than one year	79(5.7)
1-5 years	399(29)
>5-10 years	398(28.9)
>10-15 years	286(20.8)
>15-20 years	151(11)
More than 20 years	65(4.7)
Years of experience in the current job	
Less than one year	102(7.4)
1-5 years	485(35.2)
>5-10 years	413(30)
>10-15 years	240(17.4)
>15-20 years	102(7.4)
More than 20 years	36(2.6)
Most often working unit	
Medical	279(20.2)
Surgical	319(23.1)
Pediatrics	114(8.3)
Orthopedics	44(3.2)
Oncology	28(2)
Renal	43(3.1)
Respiratory	47(3.4)
Different units	504(36.6)
Most often working shift	
Day	468(34)
Afternoon	67(4.9)
Night	80(5.8)
Shift rotation	763(55.4)
Type of duty	
Full-time	1332(96.7)

(Table 1) contd....

Variable	N (%)
Part-time	46(3.3)

3.1. Nurses’ Agreements on Items Related to Hourly Rounding

The lowest agreements (strongly disagree and somewhat disagree) between nurses were on the items “Putting the documentation tool on Soarian would make it more convenient to complete,” 233 (16.9%), and “After implementation of hourly rounding, there was continued support and resources available,” 239 (17.3%). On the other hand, the highest agreements (somewhat agree and strongly agree) between nurses on the items “Hourly rounding makes my patients safer by preventing patient falls,” 1211 (87.9%), and “Hourly rounding makes my patients safer by preventing hospital-acquired pressure ulcers,” 1201 (87.2%) (Table 2).

3.2. Nurses' Perceptions of Caring

The mean of the participants caring total scores was 105.39 (SD = 14.92), ranging between 25 and 125, indicating a high level of caring. The possible range was between 25 and 125. The highest means were for the items “measuring the vital signs of a patient (e.g., pulse and blood pressure)” (m = 4.61, SD = 0.75), “providing privacy for a patient” (m = 4.6, SD = 0.79), and “being neatly dressed when working with a patient” (m = 4.51, SD = 0.87). However, the lowest means were for the items “sitting with a patient” (m = 3.96, SD = 1.062), “exploring a patient’s lifestyle” (m = 3.76, SD =1.127), and “sharing your personal problems with a patient” (m = 2.22, SD = 1.59) (Table 3).

Table 2. Nurses’ agreements on items related to hourly rounding. N=1378.

Item	Strongly Disagree N (%)	Somewhat Disagree N (%)	Undecided N (%)	Somewhat Agree N (%)	Strongly Agree N (%)
My nursing unit consistently carries out hourly rounding on all shifts according to the recommended protocol.	46 (3.3)	99 (7.2)	135 (9.8)	557 (40.4)	541 (39.3)
I was provided with enough education to carry out hourly rounding effectively.	56 (4.1)	131 (9.5)	157 (11.4)	553 (40.1)	481 (34.9)
I have a good understanding of how to incorporate hourly rounding in my daily assignments.	42 (3)	66 (4.8)	130 (9.4)	586 (42.5)	554 (40.2)
The RNs and PCAs work together to divide up rounding responsibilities on our shift.	35 (2.5)	80 (5.8)	119 (8.6)	609 (44.2)	535 (38.8)
There was clear communication on the benefits of hourly rounding for patients.	60 (4.4)	120 (8.7)	153 (11.1)	566 (41.1)	479 (34.8)
There was clear communication on the benefits of hourly rounding for the nursing staff.	64 (4.6)	128 (9.3)	155 (11.2)	555 (40.3)	476 (34.5)
I feel a sense of ownership of the hourly rounding program because I was involved in the planning of the initiative.	91 (6.6)	177 (12.8)	237 (17.2)	512 (37.2)	361 (26.2)
Completion of the hourly rounding documentation tool is a true indication that hourly rounding is being done.	68 (4.9)	147 (10.7)	191 (13.9)	551 (40)	421 (30.6)
Putting the documentation tool on Soarian would make it more convenient to complete.	101 (7.3)	132 (9.6)	163 (11.8)	538 (39)	444 (32.2)
After the implementation of hourly rounding, there was continued support and resources available.	87 (6.3)	152 (11)	207 (15)	570 (41.4)	362 (26.3)
Improved patient satisfaction scores are a good reflection of safe and high-quality patient care.	47 (3.4)	73 (5.3)	126 (9.1)	591 (42.9)	541 (39.3)
Hourly rounding has contributed to better management of patients’ pain.	40 (2.9)	76 (5.5)	136 (9.9)	637 (46.2)	489 (35.5)
I use scripted statements such as, “is there anything else I can do for you? I have the time.”	43 (3.1)	97 (7)	124 (9)	599 (43.5)	515 (37.4)
When I am doing my rounds, I always address my patient’s pain level.	30 (2.2)	64 (4.6)	141 (10.2)	616 (44.7)	527 (38.2)
When I am doing my rounds, I always address my patients’ positions.	19 (1.4)	54 (3.9)	106 (7.7)	590 (42.8)	609 (44.2)
When I am doing my rounds, I always address personal needs, such as toileting.	36 (2.6)	89 (6.5)	158 (11.5)	589 (42.7)	506 (36.7)
Hourly rounding makes my patients safer by preventing patient falls.	27 (2)	56 (4.1)	84 (6.1)	532 (38.6)	679 (49.3)
Hourly rounding makes my patients safer by preventing hospital-acquired pressure ulcers.	28 (2)	58 (4.2)	91 (6.6)	568 (41.2)	633 (45.9)
The education I received included the current research that hourly rounding decreases patient call light use.	42 (3)	84 (6.1)	121 (8.8)	554 (40.2)	577 (41.9)

(Table 2) contd....

Item	Strongly Disagree N (%)	Somewhat Disagree N (%)	Undecided N (%)	Somewhat Agree N (%)	Strongly Agree N (%)
I believe that having an hourly rounding resource person or unit-based champion on each shift would help us improve the process.	36 (2.6)	76 (5.5)	112 (8.1)	557 (40.4)	597 (43.3)
I believe that hourly rounding is the right thing to do for our patients.	36 (2.6)	76 (5.5)	112 (8.1)	557 (40.4)	597 (43.3)

Table 3. Nurses' responses of the (CDI-25) items. N=1378.

CDI #	Item	Mean	SD
18	Measuring the vital signs of a patient (e.g., pulse and blood pressure)	4.61	.745
23	Providing privacy for a patient	4.60	.794
6	Being neatly dressed when working with a patient	4.51	.868
14	Consulting with a doctor about a patient	4.49	.800
20	Being technically competent with a clinical procedure	4.48	.791
11	Being honest with a patient	4.46	.824
12	Organizing the work of others for a patient	4.44	.802
22	Giving reassurance about a clinical procedure	4.44	.805
25	Observing the effects of a medication on a patient	4.43	.825
9	Reporting a patient's condition to a senior nurse	4.41	.857
13	Listening to a patient	4.41	.808
24	Being cheerful with a patient	4.40	.871
5	Explaining a clinical procedure to a patient	4.40	.877
10	Being with a patient during a clinical procedure	4.38	.837
21	Involving a patient in his or her care	4.34	.882
15	Instructing a patient about an aspect of self-care (washing, dressing, etc.)	4.22	.927
2	Making a nursing record about the patient	4.20	.995
19	Putting the needs of a patient before your own	4.17	.982
17	Keeping relatives informed about a patient	4.03	1.016
3	Feeling sorry for a patient	4.02	1.055
4	Getting to know the patient as a person	4.01	1.157
1	Assisting a patient with an activity of daily living (washing, dressing, etc.)	4.00	1.176
7	Sitting with a patient	3.96	1.062
8	Exploring a patient's lifestyle	3.76	1.127
16	Sharing your personal problems with a patient	2.22	1.592

3.3. Differences in Nurses' Perceptions of Hourly Roundings According to Selected Variables

Kruskal–Wallis H test revealed significant differences in nurses' perceptions of hourly rounding in relation to hospital type $\chi^2(3) = 50.678$, $P \leq .001$; nurses in private hospitals reported the highest mean rank (MR = 793.27), and the lowest mean rank was for the educational hospitals (MR= 549.83). Moreover, the test showed significant differences in the shifts nurses most often work $\chi^2(3) = 34.205$, $P \leq .001$; nurses working in shift rotation reported the highest mean rank (MR= 744.24), and the lowest mean rank was for nurses working in afternoon shifts (MR= 581.01). Lastly, the test revealed significant differences in nurses' perceptions of hourly rounding in comparison to their working units $\chi^2(7) = 51.380$, $P \leq .001$; nurses working in respiratory units reported the highest mean rank (MR=948.29), while the lowest mean rank was for nurses working in orthopedic units (MR=614.56).

The t-test showed significant differences in nurses' perceptions according to their gender ($t(1062) = -2.98$, $P < 0.05$). Male nurses reported lower mean scores (83.14) than female nurses (85.82). No significant differences or associations were found between nurses' perceptions of hourly rounds and their age, job title, years of experience, and years of experience in the current job.

3.4. Differences in Nurses' Perceptions of Caring According to Selected Variables

Nurses' perceptions of caring differed significantly according to age, duty shifts, hospital type, and nursing units where nurses usually work. No statistically significant differences or associations were found in nurses' perception of caring according to years of experience, years of experience in the current job, job title, and gender.

A Pearson correlation coefficient was computed to assess the linear relationship between nurses' perceptions of caring

and their age. There was a positive correlation between the two variables, $r(1376) = .061, p = .024$, which means that nurses' perceptions of caring increase with age. The Kruskal–Wallis H test revealed significant differences in nurses' perceptions of caring according to hospital type, $\chi^2(3) = 32.468, P \leq .001$, with the highest mean rank for nurses working in private hospitals (MR= 728.87) and the lowest mean rank for nurses working in military hospitals (MR= 580.71). Moreover, the test showed statistical differences in nurses' perceptions of caring according to their duty shifts, $\chi^2(3) = 20.242, P \leq .001$; the highest mean rank was for the nurses working in shift rotation (MR= 724.71), while the least mean rank was for the nurses working in night duty (MR= 551.45). Lastly, the test revealed statistical differences in nurses' perceptions of caring based on the nursing units in which they usually work, $\chi^2(7) = 40.487, P \leq .001$. Nurses working in respiratory units reported the highest mean rank (MR=932.4), while nurses working in orthopedic units reported the lowest mean rank (MR= 619.55).

A Pearson correlation coefficient was computed to assess the linear relationship between nurses' perceptions of hourly rounding and their perception of caring. The test revealed a strong positive correlation between the two variables, $r(1376) = .473, p = <.001$.

4. DISCUSSION

4.1. Nurses' Agreements on items Related to Hourly Rounding

The majority of participants perceived hourly rounding to be useful in making patients safer by preventing patient falls and hospital-acquired pressure ulcers. This is similar to many studies [27]. Studies suggest that hourly rounds in which patients are regularly asked if they need help with movement or using the toilet would also reduce patient falls because patients are less likely to have an urgent need to go to the toilet before a caregiver can assist them. Likewise, other studies reported that nurses perceived hourly rounds as an excellent tool to change the patient's position that would be expected to reduce pressure ulcers [23, 28]. While most of the participants in this study perceived documentation on Soarian as a burden, this result was in line with other studies reporting a concern about the documentation requirement and completion associated with hourly rounding [17, 29, 30]. The previous result may be due to the heavy workloads of the nurses that made it challenging to achieve rounding visits on an hourly basis, and the obligation to document the rounding was perceived to be a burden and considered to be of last priority. Also, some nurses may look at documentation as a waste of time and irrelevant. Moreover, most participants perceived continuous support and resource availability after the implementation of hourly rounding as the lowest-ranked item, reflecting a negative perception in this domain. This may be due to a lack of support by the units leaders and hospital administrators after implementing hourly rounds and this lack of leaders or available resources that act as a role model to provide nursing staff ongoing educational and emotional support and help ensure the commitment of the process [14, 24, 30].

4.2. Nurses' Perceptions of Caring

In our study, it was recognized that the level of perception of caring behavior among nurses was high, similar to many other studies [17, 31 - 32]. It is agreeable that the level of perception regarding caring behavior was high among the nurses in our study. However, technical aspects, such as "taking vital signs," have been seen as a crucial caring activity in our study and ranked as the highest item by the participants. Assessment of vital signs and interpretation of the results are valued in nursing, which could monitor and guide the patient's treatment. This is similar to the studies conducted by Akansel *et al.* (2012) and Ayyub *et al.* (2015), where the participants agreed on the same item [32, 33]. Sometimes technical aspects of nursing, such as taking vital signs, are considered time-consuming because of the number of patients assigned to each nurse. At the same time, in our study, it was the opposite, possibly due to two reasons. First, nurses usually assess their patients while taking vital signs and monitoring the changes that may occur to the patient. Second, nurses perceive taking vital signs as primary nursing practice. Other studies mentioned that previous results might be due to priorities in nursing care activities which could change according to patients' and nurses' expectations and nurses' willingness to practice the nursing profession [34, 35]. In addition, providing privacy for a patient was considered the second highest ranked item in our results, similar to many other studies [32, 33]. Middle eastern culture and the Islamic region emphasize the importance of the protection of the privacy of all people. Moreover, providing privacy by nurses is the most satisfaction to patients from the nursing care they receive [34]. The third-ranked item to be one of the most agreed caring behaviors among our study participants was nurses being neatly dressed when working with a patient. This is clearly related to how much the nurse will appear to be professional in front of the patients. Professional characteristics of the nurses are considered to be one of the most important factors affecting patient satisfaction and improving their perception of nurses [35]. This result is similar to Erol and Turk's (2019) study, which indicated that professional appearance and attitude are essential indicators of caring behavior; they improve self-confidence among healthcare professionals, increase competency, and consequently will improve the quality of care that is reflected by the high level of patients satisfaction [19].

However, as perceived by the participants, the lowest ranked item in our study was in consecutive order: sitting with a patient, exploring a patient's lifestyle, and sharing nurses' personal problems with a patient. This result is similar to the findings of a study conducted by Akansel *et al.* (2012), supporting the fact that psychosocial aspects of nursing, such as spending time with the patients and exploring their lifestyles, are essential concepts that should not be ignored in nursing care [32]. Many other studies highlighted that nurses sitting with patients is a valuable caring behavior for hospitalized patients that helps them to pass their fears and concerns [34, 36]. This result may be due to nurses' inability to spend time getting to know the patient because of high patient ratios and work overload. However, the third lowest ranked item, "sharing nurses' personal problems with a patient," is realistic and common sense because it is one of the most

important professional attitudes that all nurses should implement.

4.3. Differences in Nurses' Perceptions of Hourly Rounding According to Selected Variables

Significant differences were reported in nurses' perceptions of hourly rounding with hospital type, as nurses in private hospitals reported the highest positive perception of hourly rounding, while the lowest was for educational hospitals. This is because private hospitals have strong, well-developed policies and protocols for providing nursing care, improving the quality of care services, and, consequently, patient satisfaction. This may force the private hospital's place in a highly competitive healthcare market. According to our literature review, no studies globally correlate the hospital type to hourly rounding, making this result very important to hospital administrators and stakeholders. Moreover, the results showed significant differences in the shifts in which nurses most often work; nurses in shift rotation reported high perception, and the lowest was for nurses working afternoon shifts. These results are similar to Fabry's (2015) study results [16]. The nurses in shift rotation need to assess their patients so they will get familiar with the changes that might happen in other shifts. On the other hand, the afternoon shift is considered the time for patients' family visits, mainly in Jordanian hospitals, so nurses try to minimize unnecessary interactions with the patients during family visits. This result supports the fact that hourly rounding needs continuous observation, support, and evaluation by the leaders and administrators to keep the workflow during hourly rounding. Still, in the afternoon shift, with the absence of each unit administrator, nurses may feel unsupported, so their accountability may be affected.

There were significant differences in nurses' perceptions of hourly rounding compared to their working units; nurses working in respiratory units reported the highest positive perception, while the lowest was for nurses working in orthopedic units. This may be related to the type of work in respiratory units, which needs a continuous critical extensive assessment of the patient, especially respiratory rate and pattern, to prevent deterioration of the patients. In contrast, in orthopedic units, the patient mainly needs analgesics that act for a long time, and during this period, a patient usually needs rest and sleep. Lastly, significant differences were detected in nurses' perceptions according to their gender. Male nurses reported lower perception in our study than female nurses, which is similar to Shin and Park's (2018) study [37]. These results are related to the gender role, not the sex role because female nurses tend to reach perfection in work more than male nurses so that they will improve their status and position in the units. Also, the female ability to handle multiple tasks that need effort and concentration is also recognizable by many studies [37].

4.4. Differences in Nurses' Perceptions of Caring According to Selected Variables

Nurses' perceptions of caring differed significantly according to age, duty shifts, hospital type, and nursing units where nurses usually work. The nurses' perceptions of caring

increase with age as their years of experience increase, and the perception of caring behavior and the nursing profession as a whole will be articulated and improved [38]. Nurses working in private hospitals showed a more positive perception than those working in military hospitals. This may be due to the heavy workload and high nurses patients ratio of military hospitals, which are considered barriers for nurses to spare time for patients and focus on providing the utmost care needed by the patients. Also, our study results showed statistical differences in nurses' perceptions of caring according to their duty shifts; the highest was for the nurses working in shift rotation, while the least was for the nurses working on night duty, which were similar to the findings of a study conducted by Oluma and Abadiga (2020) [4]. According to Oluma and Abadiga, nurses caring behaviors were associated with a caring environment, especially the presence of empowering nursing leader management that will support nursing staff while providing care [4]. Night shifts may pressure nurses because of the low staff ratio and having to be accountable alone for decisions without sharing critical decisions with leaders. Concurrently, night shifts may also have a negative effect on nurses [39, 40].

Nurses working in respiratory units reported the highest perception of caring, while nurses working in orthopedic units reported the lowest. This also related to the type of cases and work environment in the previously mentioned units and the burden that existed on the nurses regarding making decisions and a sense of responsibility and accountability concerning the patients.

Lastly, a positive correlation was reported between nurses' perceptions of hourly rounding and their perception of caring. This means that when the perception of caring behavior is higher, the perception of hourly rounding consequently will be better, which is consistent with the findings of a study conducted by Papastavrou *et al.* (2015) [40]. Furthermore, it can be interpreted as the following: caring is a moral action that, once the nurses' respect, will be reflected in caring practices, and their accountability regarding hospital protocols and nursing actions will be increased, such as hourly rounding. Hourly rounds are an essential part of quality patient care. Future qualitative research should focus on nurses' and patients' perceptions of hourly rounding, especially the time nurses spend with the patients. Future research also should examine a possible correlation between a caring environment and staff perception and practice of hourly rounds. Attention should be focused on assuring the presence of the staff leaders and administrators who act as champions, supporters, and encouragers for staff nurses in their workflow during hourly rounding in each shift. In addition, it is strongly recommended to establish a protocol and procedure for hourly rounding in all sectors and train the nurses on them. As implications for the education system, course teachers must drive nursing education toward patient center approach so the students will not focus only on technical and practice skills. Patient-centered approach, which supports the practice of hourly rounding and improves caring, can be included within the study programs at the level of intended course-learning outcomes. Nursing programs should cultivate between students the culture of the patient-centered nursing approach to make the patient the center of the care and nursing process by focusing on the

patient's unique needs, wants, desires, and goals. The limitations of this study are that the cause and effect relationship cannot be confirmed in this study since the research design is cross-sectional, the lack of randomization and the use of a convenience sampling method that might have affected the generalizability, and the use of a self-completed questionnaire that might lead to a self-report bias.

CONCLUSION

This study has added to the body of knowledge demonstrating the importance of hourly rounding and caring behavior and the correlation between them. The concept of hourly rounding is gaining national and international concern, as shown by our study and other studies. Patient safety, privacy, and taking vital signs were nurses' major concerns in this study, reflecting the importance of technical and professional competence according to the nurses' perceptions. At the same time, the hospital administration should consider the workload and nurses-patients ratio so the nurses will take the psychosocial aspect and needs of the patients as important and priority when caring for patients. The nurse manager is responsible for supervising, supporting, and evaluating hourly rounding according to policy and protocols. Moreover, nursing leaders and educators need to listen to the nurses' perceptions regarding documentation tools of hourly roundings and modify them according to nurses' concerns so the hourly rounding process will become a little easier. It is also essential that nurses feel supported after implementing hourly rounds, especially on night shifts.

LIST OF ABBREVIATIONS

HRQ	=	Hourly rounding questionnaire
CDI-25	=	Caring dimension inventory
RNs	=	Registered nurses
LPNs	=	Licensed practical nurses
CNAs	=	Certified nursing assistants
SPSS	=	Statistical package for social science

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The ethical approval was obtained from the ethical and research committee at Al-Ahliyya Amman University (12/1825/ص/ج).

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committees and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from all participants.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The datasets generated and/or analyzed during the current study are available from the corresponding author [R.A.] upon request.

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CONFLICT OF INTEREST

The authors have no financial or any other conflicts with this article.

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