

Correlations between performance and shift work in the nursing activities: a pilot approach

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Abstract. *Background and aim of the work.* Performance assessment is a key administrative function and an essential component of organizational quality programs, by quantifying it in relation to set goals, standards, expectations and guides to improvement initiatives. The present study aimed to assess any differences existing in nursing performance levels perceived according to shift work. *Methods.* An on-line questionnaire was administered from June to August 2021 through nursing groups present on the Facebook and Instagram pages to all Italian nurses who voluntarily agreed to participate. The questionnaire collected both socio-demographic information and nursing performance evaluations, assessed thanks to the “Six-Dimension scale of nursing performance”, such as: leadership, critical care, teaching/collaboration, planning/evaluation, interpersonal relations/communications and personal development. *Results.* 305 nurses were recruited in this research. By considering nursing performance according to shift work, significant differences were recorded in the “critical care frequency” sub dimension ($p=.001$), in the “interpersonal relations” sub dimension ($p=.018$) and the frequency dimension of the six-dimension scale of nursing performance ($p=.018$). Meanwhile, as regards the quality sub dimension in the six-dimension scale of nursing performance, none significant differences were reported according to shift variable. *Conclusions.* Professional commitment and performance in nursing appeared to be influenced by several organizational factors. Therefore, further studies in this field will be desired with the inclusion of a wide variety of variables, too. (www.actabiomedica.it)

Key words: Nursing, performance, organizational, shift

Introduction

Performance assessment is a key administrative function and an essential component of organizational quality programs, by quantifying it in relation to set

goals, standards, expectations and guides to improvement initiatives (1). Several reports of the Institute of Medicine (IOM) emphasized the necessity to assess performance and so to adequately implement it thanks to instrument which could better quantify performance

in the different healthcare settings. Furthermore, literature highlighted how nurses always represented the largest body of health care professionals and played a crucial role in the health care delivery system (2,3), including both nursing interventions and coordination and administration of all the interventions indicated by physicians and other members of the healthcare team. In this way nurses acted as guardians of health care as well nursing systems served as important leverage points for amelioration. Therefore, literature reported the centrality of nursing in the health care system, but also large gaps in performance appraisal policies (4,5). In fact, most health care practices included general quality performance programs which very often did not include any nursing advantages. Health policies might aim a robust ongoing development in performance measurement system for nursing, as the current set of approved measures did not adequately reflect the complexity of the nursing care system and the range of contributions nursing care by patients (6-8) and, at the same time, it represented an opportunity for the introduction of new performance indicators (9). The development of new measures was restrained by a poor conceptualization of how nursing services were delivered and how they potentially affected patient and organizational outcomes. Since 1978, Schwirian (10) tried to develop a model for nurses' job performance by defining it as how well the job was done in accordance to established standards. So, job performance was defined as an action that could be observed and assessed (11,12). However, job performance was always a complex phenomenon (13), mostly in the nursing context, in which there were multiple variables which positively influenced nurses' job performance and at the same time predicted nurses' job performance (14), as: young age (15), recognition of achievement (16,17), work satisfaction and employee's educational level and training (12,13), social support (18), supportive communication and feedback (17), and competent nursing practice (19-21). Also nursing experience was important for better performance of jobs. On the other hand, long working shifts and heavy workload (22-25), job stress (18,23), punitive corrective actions and motivational and skill difficulties (11), and older shift workers (23) were reported to negatively influence nurses' job performance. Additionally, Dubois

et al. (26) identified a different conceptual framework for nursing services with a combined total of 51 performance measures. However, no single picture was identified that actually photographed the full aim of nursing services; therefore, each picture was linked to discrepancies in performance assessment. Moreover, nursing performance was largely defined as "the demonstrated ability of an organization or organizational unit to acquire the necessary nursing resources and use them sustainably to produce nursing services that effectively improve patients' conditions" (26). Literature suggested three subsystems of nursing care, as: the acquisition and implementation or maintenance of nursing facilities; the transformation of nursing resources into nursing services; and the production of changes in patients' conditions, by highlighting multiple dimensions and hypothesizing inter-functional correlations. Additionally, studies supported that, despite coherent relations between nursing staff assessments and patient outcomes, causal mechanisms by which staff influenced consequences have not been sufficiently explained (6,27-28). Probably, nursing staff, which included the recruitment and assignment of nurses, influenced patient outcomes through the ability to adequately and promptly employ nursing processes. However, this supposed cross-functional relationship could not be considered without clear conceptualizations and strong appraisals of nursing procedures (29). Additionally, literature suggested also the negative effect of night shiftwork in healthcare workers, especially nurses, usually provoking tiredness, sleepiness, humor alteration and weight increase (30-33) and many problems in job performances and psychosocial health (31,34). Night shiftwork, also significantly modified the circadian rhythm of influenced individuals (35). Some studies reported that night shiftwork was correlated to reduced performance (36,37). Although, there were very few evidences concerning the impact of night shiftwork on nurses (37,38) and their consequential challenges in the nursing job performance linked to dissatisfaction and absenteeism (39). However, none of the previous researchers specifically assessed the impact of the night shift work on nursing performance (40). Therefore, the present study aimed to assess any differences existing in nursing performance levels perceived according to shifting work in Italian nurses.

Materials and Methods

The questionnaire

The questionnaire was divided into two main sections. The first part included some socio-demographic information, as:

- sex, between female and male;
- age expressed in years;
- years of work experience, expressed also in years;
- shift work performed, as the interviewee worked only during the morning and the evening (1 or 2 shifts) or also during the night;
- the nursing education level, as the nurse had basic training (3 years), or the interviewee had post-basic training up to 5 years of nursing training or if the nurse had a consolidated post-basic training exceeding 5 years of training nursing, only considering university nursing education.

In the second section the “Six-Dimension scale of nursing performance” was administered (10,41-42). This questionnaire consisted in a list of activities in which nurses engaged with varying degrees of frequency and skill. It included a total of 52 nurse behaviors grouped into six performance subscales, as: leadership (5 items), critical care (7 items), teaching/collaboration (11 items), planning/evaluation (7 items), interpersonal relations/communications (12 items) and personal development (10 items). The scale was used to obtain self-assessment of performance or perceived adequacy. Specifically, for the first 42 items nurses were invited to answer twice, as the first answer regarded the number that better described how often the interviewee performed the activities in the performance of the current nursing activity. Therefore, for each item a Likert scale was associated that varied from “1”, as “not expected in this job” to “4”, as “frequently”. Whereas, the second answer concerned how well nurses performed these activities in the current nursing activity and all the same answers were associated also to a Likert scale which ranged from “1”, as “not very well” to “4”, as

“very well”. Additionally, in the second part relating to the quality of the nursing performance perceived, it was included additional 10 items, which regarded the “professional Development” sub dimension. The scale revealed self-evaluations of performance, employer assessments of performance, or perceived adequacy of nursing school training for performance. The condition was composed by the frame and pragmatic validity of the Six-Dimension Scale, and all six sub-dimensions demonstrated high reliability and validity. The instrument was recognized as suitable for performance assessment as well as a helpful research tool (10).

Recruitment and Ethical considerations

All Italian nurses who voluntarily agreed to participate in this survey were included. The questionnaire was created and administered thanks to the Google Modules function from June 2021 to August 2021 through some pages and nursing groups present on the following Facebook and Instagram.

All the information collected were treated confidentially, guaranteeing complete anonymity. The study was evaluated and approved by the Ethics Committee of the University Hospital of the Policlinic of Bari, Italy (ID number: 6885/2021).

Data analysis

Data were collected in an Excel spreadsheet and subsequently statistically processed thanks to the IBM statistic SPSS program, version 20.

Categorical variables, such as: sex, shift work typology and instruction levels were reported as frequencies and percentages the continuous variables, such as: age and years of work experience have been assessed with means (μ) and standard deviations (SD). Descriptive analysis, with means (μ) and standard deviations (SD) were also performed for the Six dimension scales, both for the Frequency and Quality dimensions and also t-test for independent sample was performed according to shift variable. All p values < .05 were considered as statistically significant.

Results

305 nurses were recruited in this research. 157(51.5%) were females and 148(48.5%) were males. All socio-demographic characteristics of the respondents were collected in the Table 1.

For each sub-dimension of the Six-Dimension of nursing performance questionnaire means and standard deviations were assessed according to shift variable and t-test for independent sample was performed for each sub dimension (Table 2).

By considering nursing performance according to shift work, significant differences were recorded in the “critical care-frequency” sub dimension ($p=.001$), as nurses who worked also during the night shift reported higher levels in this aspect ($3.49\pm.39$) than nurses who worked only during the daily shift ($3.30\pm.54$), respectively. Additionally, nurses who worked during the night shift also reported significantly higher levels in “interpersonal relations-frequency” sub dimension than their daily colleagues ($p=.018$). Finally, by considering total values in the frequency sub dimension of the six-dimension scale of nursing performance, nurses who worked also during the night shift reported higher levels than their daily colleagues ($p=.018$). Meanwhile, as regards the quality sub dimension in the six-dimension scale of nursing performance, none significant differences were reported according to shift work variable (Table 2).

Table 1. Socio-demographic characteristics collected (n=305).

Socio-demographic characteristics	Frequencies (%) ^a $\mu\pm s.d.$ ^b
Sex:	
Female	157(51.5%) ^a
Male	148(48.5%) ^a
Age	40.04 \pm 12.47 ^b
Years of work experience	15.50 \pm 12.21 ^b
Shift work:	
Daily shift	182(59.7%) ^a
h24 shift	123(40.3%) ^a
Instruction level in years:	
Until 3 years	175(57.4%) ^a
3-5 years	100(32.8%) ^a
>5 years	30(9.8%) ^a

Table 2. Nursing performance assessment according to shift work.

Six-dimension scale sub dimensions:	Daily shift $\mu\pm s.d.$	h-24 shift $\mu\pm s.d.$	p-vaue
Six-Dimensions Frequency:			
Leadership	3.34 \pm .46	3.40 \pm .49	.237
Critical Care	3.30 \pm .54	3.49 \pm .39	.001*
Teaching/Collaboration	3.32 \pm .49	3.41 \pm .47	.099
Planning/Evaluation	3.34 \pm .50	3.46 \pm .48	.051
Interpersonal Relations/ Communications	3.39 \pm .45	3.51 \pm .40	.018*
Total	3.33 \pm .43	3.458 \pm .40	.018*
Six-Dimensions Quality:			
Leadership	3.03 \pm .56	3.05 \pm .56	.762
Critical Care	3.06 \pm .56	3.05 \pm .50	.808
Teaching/Collaboration	3.05 \pm .45	3.06 \pm .45	.624
Planning/Evaluation	3.08 \pm .56	3.05 \pm .51	.643
Interpersonal Relations/ Communications	3.08 \pm .53	3.06 \pm .51	.644
Professional Development	3.04 \pm .53	3.07 \pm .52	.583
Total	3.06 \pm .48	3.05 \pm .44	.890

* $p<.05$ is statistically significant.

Discussion

The present study aimed to assess any differences existing in nursing performance levels perceived according to shift work in Italian nurses, especially if the night shift work could influence the frequency or the quality in the nursing performance appraisal.

The present findings showed that, according to shift work, significant differences were recorded in the “critical care-frequency” sub dimension ($p=.001$), as nurses who worked also during the night shift reported higher levels in this aspect than nurses who worked only during the daily shift, respectively. Additionally, nurses who worked during the night shift also reported significantly higher levels in “interpersonal relations-frequency” sub dimension than their daily colleagues ($p=.018$). Finally, by considering total values in the frequency sub dimension of the six-dimension scale of nursing performance, nurses who worked also during the night shift reported higher levels than their daily colleagues ($p=.018$). Meanwhile, as regards the quality sub dimension in the six-dimension scale of nursing

performance, none significant differences were reported according to shift work variable.

In literature there were no overlapping studies to the present, both for method and purpose. In fact, in the current literature the aspect of nursing performance was a topic characterized by wide complexity of the subject, due to both the important number of nursing services that should be considered, areas of application that are vast in the entire health organization of any country all around the world. In this regard, the World Health Organization considered nurses to be one of the most important work forces in the healthcare sector, as nurses played a vital role in the supplying of healthcare worldwide, connecting to the productivity and quality of care provided by healthcare institutions (43). Therefore, nurses could be considered as the starting point of healthcare systems and might be provided with the best conditions allowing them to achieve their tasks in the best possible way (10,41-42). In fact, the success of healthcare organizations depended on several significant elements and nurses' devotion to their organizations played an essential role, which helped the organization in realizing its goals, encouraging organizational efficiency and effectiveness and developing the quality of healthcare services. However, the 2030 Agenda for sustainable development goals (SDGs) report indicated that nursing staff was understaffed and unbalanced distributed (10).

Our data supported evidence demonstrated in the scientific literature, as nursing performance in the frequency dimension differentiated both in the critical care, in interpersonal relations and also in the total dimension of frequency of the nursing performance scale, reported significant higher levels than the other colleagues who worked only during the daily shift (44). In this regard, high stressful nursing job (45) influenced the physical, mental, and awareness skills of the individual. In fact, nurses who performed long hours (46), were stressed or sleep deprived (47,48), supporting heavy workloads (49-51). All these aspects negatively influenced nursing performance during their job hours and affected the timely provision. Anyway, all the literature reviewed were in agreement to consider that the nursing performance was poorly defined in the literature in terms of skills, nursing-sensitive quality indicators, and task-specific performance assessments (1).

Moreover, literature reviews encouraged research in shift work research approach and methodology, by comparing studies available (52) and searching more information which could benefit the nursing management, too (53).

Conclusions

Managerial interventions will be need to improve nursing performance. Moreover, professional nursing commitment and performance appeared to be influenced by several organizational factors; therefore, further studies in this field will be desire with the inclusion of a wide variety of variables (54). Although the present study could be considered pilot for method and purpose, it will be necessary to perform further studies that will include a larger sample size in participants to generalize data and the trend between nursing performance and shift work.

Finally, the present findings might offer useful information for nursing leaders. For example, with regard to the significant predictors obtained from the current analyses. However, literature suggested that there was no perfect schedule (55) and recommendation should be pertinent to specific groups and work systems. It is to be noted that each setting has its own specific requirements.

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