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Comparison of Clinical Competency in Nurses Working in Covid-19 and non-Covid-19 Departments of University Hospitals in Zanjan City in 2020

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Abstract

Background: The importance of clinical competency in nurses indicates the necessity of evaluating this criterion for nurses working in Covid-19 and non-Covid-19 departments.
Objectives: Comparison of clinical competency in nurses working in Covid-19 and non-Covid-19 departments of university hospitals in Zanjan city in 2020.
Methods: Following a convenient sampling method, this cross-sectional study recruited 220 registered nurses working at hospitals affiliated to the Zanjan University of Medical Sciences with at least six months of work experience. Data were collected using a demographic information form and competency inventory for registered nurses (CIRN). Mann Whitney U test was used to compare study groups.
***Results*:** There was a significant difference between nurses working in Covid-19 and non-Covid-19 departments concerning clinical competency, so that those in Covid-19 departments were more competent (p-value=0.001).
Conclusion: The observed difference requires more attention and particular interventions, including promoting teamwork, engaging staff in decision-making processes, job supports, reducing conflicts and role ambiguities, and increasing control over employment-related events.

Keywords: clinical competency; exposure; covid-19

Introduction

Coronavirus disease, which emerged at Wuhan (China) in December 2019, has rapidly widespread to other regions of China and other countries [1]. With 11,327,790 confirmed cases and 532,340 deaths, Iran is one of the top ten most-affected countries [2]. The high infectivity of the SARS-Cov-2 indicates the importance of the clinical competence of health professionals [3]. Several studies warned about the low preparedness of nurses to respond to emergencies while emphasizing their confusion and shock in such situations [4]. Hence, planning to increase their clinical competence is crucial. As a controversial issue, nurses' clinical competence is a significant issue in various medical fields. Several factors contributed to increased attention to nurses' clinical competence, including rapid changes in the health surveillance systems, the necessity of providing safe and affordable services, promoting society's health awareness, increased expectations to receive quality services, and tendencies of healthcare organizations to use competent staff. Clinical competence includes

dimensions of ethics and values and reflects science and skill. Honesty, precision, communication skills, and adaptability are the main signs of professional competence [5,6].

The UK Nursing and Midwifery Council defined clinical competence as "a broad set of knowledge, skills, and attitudes needed to perform a task safely and effectively while no direct supervision is applied". In addition, Australia's national standards of clinical competence defined clinical competence as "a combination of skills, knowledge, attitudes, values, and abilities that underpin effective performance" [7-9]. The World Health Organization (WHO) noted the necessity of providing quality healthcare services at various levels [10]. Clinical competence is mentioned as a significant contributor to surgical outcomes and the safety and satisfaction of patients [11].

In a study on the evaluation of clinical competence of recently graduated nurses, Namadi Vosoghi (2014) used the perspective of nurses and their supervisors and reported that, according to the students, dimensions of safety and comfort of patients and their families and collaboration with the team obtained an excellent to good score. In comparison, professional progress obtained the lowest score. The supervisors noted that teamwork and leadership and management have the highest and lowest level of importance, respectively [12]. In a study titled "determination of nurses' clinical competence in critical care ward in Golestan hospital", Kalantari (2016) reported that 'quality assurance' obtained the lowest score among dimensions of clinical competence [13]. In another study in 2011, factors such as training, experience, professional development, independence and job satisfaction, and evaluation of the quality of care are mentioned as factors that contribute to the competence of medical teams [7].

As nursing competence plays a crucial role in the quality of nursing services, particularly during crises, evaluating this criterion during the Covid-19 pandemic is vital. Such evaluations are useful to increase awareness of medical teams and would provide useful information to address shortages in the field of science and skills. The current study aimed to compare clinical competence in nurses working in Covid-19 and non-Covid-19 departments of public hospitals in Zanjan city in 2020.

Methods

In this descriptive study, a total of 220 nurses working in hospitals affiliated to the Zanjan University of Medical Sciences were recruited using the quota sampling method from October to November 2020, following inclusion criteria. The sample size was estimated as 214.26 subjects based on the mean in Jalali et al.'s study [14], the total number of nurses in Zanjan with a 95% confidence interval, the standard deviation of 2.06, and an error of 0.25. Therefore, 110 subjects were selected for Covid-19 and non-Covid-19 groups.

$$n = \frac{Nz^2s^2}{Nd^2 + z^2s^2}$$

Written informed consent was obtained from all participants before entering the study and after a comprehensive introduction to the study protocol. In addition, they were ensured about the confidentiality of their information. The demographic checklist contains age, gender, education level (bachelorette and master), type of employment (permanent, contractual, compulsory services, and under-a-contract), marital status (single, married, and divorced), and work experience. The clinical competence questionnaire was also used. The clinical competence questionnaire has been introduced as a valid and reliable tool for evaluating clinical competency in different clinical settings, either through self-evaluation or evaluation by researcher, by Liu et al. [15]. It contains 55 items categorized in seven dimensions, which are scored on a five-point Likert scale, ranging from zero (no competency) to four (highly competent). The total score ranges from zero to 220. The higher the score, the higher the clinical competence. A total score of 165-220 was considered a high qualification group; 110-165 was considered medium, and less than 110 was considered a low qualification group. The CIRN has seven dimensions of care (10 items), leadership (9 items), interpersonal relationships (8 items), legal-ethical practice (8 items), professional development (6 items), teaching coaching (6 items), and critical thinking (8 items).

Following the internal consistency method, a cronbach alpha of 0.90 is reported for reliability of this tool, ranging from 0.71 to 0.90 for various dimensions [15]. The validity and reliability of the Persian version of this tool are evaluated by Gasemi et al. (2014). They reported a content validity index of 0.94 for the whole instrument and a value higher than 0.83 for each item [12]. Internal consistency and Cronbach alpha methods were used in this study. The latter was obtained as 0.96 for the whole questionnaire and 0.75 to 0.87 for each dimension. Data analysis was administered using descriptive statistics and Mann Whitney U test by SPSS version 16. It should be noted that due to the difference in the number of items of each dimension and the consequent difference in the value of averages, the score of each dimension was divided by the number of items to calculate the average of each dimension.

Results

In this study, 50% of nurses were working in Covid-19 departments. The non-Covid-19 departments included orthopedic (n=13 nurses), men surgeries (n=18), neurosurgery (n=17), psychology (n=12), and coronary care unit (n=10). For those working at Covid-19 departments, 68.2% of participants were female, 76.4% married, and 2.7% had a history of using anti-depressive drugs. For other nurses, 63.3% were female, 71% married, and 1.8% had a history of using anti-depressive drugs (Table 1).

Table 1: Frequency of demographic factors of nurses working at Covid-19 and non-Covid-19 departments in 2020

Group / Variable		Covid-19		non-Covid-19		Test
		N	%	N	%	
Education	Associate degree	12	10.9	7	6.4	X^2=1.406 P=0.495
	Bachelorette	87	79.1	90	82.6	
	M.Sc.	11	10.0	12	11.0	
Gender	Male	35	31.80	40	36.7	X^2= 0.579 P=0.447
	Female	75	68.20	69	63.3	
Marital Status	Single	26	23.60	31	29.00	X^2=0.797 P=0.372
	Married	84	76.40	76	71.00	
History of using anti-depressive drugs	Yes	3	2.70	2	1.80	Fisher's exact test= 0.204 p=0.652
	No	107	97.30	108	98.2	
Employment status	compulsory services	21	19.30	35	34.00	X^2=8.499* P=0.037
	contractual	19	17.40	8	7.80	
	under -a-contract	22	20.20	18	17.50	
	permanent	47	43.10	42	40.80	

The mean and standard deviation (SD) for the age variable was 36.8±0.633, ranging from 22 to 50 years, for nurses working at Covid-19 departments. The mean and SD were 31.7±7.19 years for the other group, ranging from 22 to 53. The mean and SD of work experience in Covid-19 and non-Covid-19 departments were 10.58±6.66 and 8.3±6.83 years, respectively. The shortest and longest work experience for both groups was one and 26 years, respectively (Table 2).

Table 2: Mean, standard deviation, minimum, and maximum of demographic factors, seprate by Covid-19 and non-Covid-19 deparments

Group / Variable	Covid-19 departments			non-Covid-19 departments			Median	Mann Whiteny U
	mean±SD	Min	Max	mean±SD	Min	Max		
Age (year)	33.88±6.366	22	50	31.79±7.197	22	53	32.00	U=4384.500 P=0.006
Work experience (year)	10.58±6.661	1	26	8.30±6.835	1	26	8.00	U=4532.000 P=0.005

According to the Chi-square and Fisher's exact test, there was no significant difference between the study groups concerning demographic information, including education level, work

experience, marital status, employment status, and history of using anti-depressive drugs.

For both groups, the mean score of clinical competence, either total or separated by each dimension, was moderate (ranging from two to three) (Table 3).

Table 3: Mean and standard deviation of dimensions of clinical competence, separated by Covid-19 and non-Covid-19 deparments

Group	Covid-19 departments					Non-Covid-19 departments					U	p
Dimension	Mean±SD	Min	Max	Mean score	Sum	Mean±SD	Min	Max	Mean score	Sum		
Care	2.44±0.48	1.30	3.90	92.10	10130.50	2.75±0.65	0.60	4.00	128.90	14179.50	4025.500	0.0001
Leadership	2.42±0.48	1.44	3.78	95.99	10558.50	2.68±0.69	1.22	4.00	125.01	13751.50	4453.500	0.001
Interpersonal relationships	2.41±0.51	0.88	3.88	92.18	10139.50	2.74±0.65	1.13	4.00	128.82	14170.50	4034.500	0.0001
Legal-ethical practice	2.56±0.52	1.13	4.00	93.49	10284	2.84±0.60	1.38	4.00	127.51	14026	4179.000	0.0001
Professional development	2.48±0.47	1.33	4.00	90.37	9941	2.83±0.62	1.33	4.00	130.63	14369	3836.000	0.0001
Teachingcoaching	2.36±0.53	1.17	4.00	95.35	10489	2.66±0.79	0.33	4.00	125.65	13821	4384.000	0.0001
Critical thinking	2.29±0.52	1.25	3.88	91.70	10087.50	2.65±0.64	1.25	4.00	129.30	14222.50	3982.500	0.0001
Total	2.43±0.44	1.33	3.91	91.63	10079.50	2.74±0.61	1.22	3.95	129.37	14230.50	3974.500	0.000

In addition, the dimension of legal-ethical practice obtained the highest mean, followed by professional development, for both groups. On the other hand, critical thinking obtained the lowest mean in both groups. There was a significant difference between study groups concerning the mean score of all dimensions, i.e., higher values were obtained for those in Covid-19 departments

Discussion

In this study, the mean [(SD) of clinical competence, either total score or for each dimension, was moderate for both groups. The mean score of clinical competency and its dimensions, based on self-assessment, were higher for those working at non-Covid-19 departments, and there was a significant difference between study groups. Meanwhile, there was no significant difference between study groups concerning demographic information. However, following a systematic and meta-analysis design, Gunawan et al. (2020) mentioned age and type of employment as variables with little impact on clinical competence [16]. Kim and Choi (2019) mentioned work experience as an influential variable [17]. Some researchers argued that managers should pay great attention to nurses' complaints, listen to them patiently, guide them effectively, encourage a work-life balance, reduce stress, promote a relaxing atmosphere, and help them to understand psychological issues better [18]. Lower self-competence of those working at Covid-19 departments can be attributed to working in a stressful situation, high mortality rates of patients, and the necessity of having high skills.

Labrague et al. (2021) reported that fear of Covid-19 was associated with reduced job satisfaction and increased psychological sadness. They also mentioned increased fear of Covid-19 among nurses who did not participate in Covid-19 training courses and were not full-time. Labarge argued that nurses working at Covid-19 departments are at increased risk of infection compared to the general population, which can be intensified by fear of infecting others, including family members and friends. Meanwhile, the increased number of hospitalized patients and preventive measures, such as social distancing and lockdowns, may intensify this condition, which may influence the clinical skills [19]. In this study, lower clinical competence of nurses working in Covid-19 departments can be attributed to fear of infection due to direct exposure to the virus and contracting to family members, increased number of hospitalized patients, increased workload, shortage of personal protective equipment (PPEs), and demanding working conditions when wearing PPEs.

Faraji et al. (2019) reported an excellent level of clinical competence for Iranian nurses [20]. In the same vein, Jalali et al. (2019), in a study on nurses working at intensive care units (ICUs), reported a relatively high level of clinical competence [14].

In Kalantari et al.'s study (2016), the clinical competency of nurses working in ICU of educational medical centers in the Golestan province is reported as optimal [13]. Kajander-Unkuri (2014) reported that the clinical competence of recently graduated nursing students was good [21]. These studies are not in line with the findings of the present study. In this study, the lower level of clinical competence can be attributed to problems caused by the Covid-19 pandemic and the need for professional skills to care for these patients, which due to the emergency, there was no time to provide necessary training to nurses [22].

According to the findings, for both groups, the dimension of legal-ethical practice obtained the highest mean, followed by professional development. On the other hand, the critical thinking dimension obtained the lowest mean. In a study on the evaluation of clinical competence of clinicians of operating rooms in Grecce, Karathanasi et al. (2013) mentioned decision-making, ethical principles, and effective communications as the essential competencies. They mentioned financial competence as the minimum requirement of operating room staff [23].

Conclusion

This study demonstrated that the clinical competence of nurses working at non-Covid-10 departments was higher than their counterparts in Covid-19 departments. Since biological crises cannot be predicted, it is necessary to develop programs to increase the skills of nursing staff, which play a considerable role in the management of emergencies. In addition, particular attention should be paid to psychological interventions to address job-related stress and increasing flexibility at the workplace. Several researchers argued that these interventions not only should be provided at the workplace but also should be embedded in the context of healthcare settings.

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Conflict of interest

There is no conflict of interest in publishing this article.

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