Tomaszewska Katarzyna, Majchrowicz Bożena, Hejsak Grażyna. Workload of nurses working in the operating theatre. Journal of Education, Health and Sport. 2020;10(3):164-172. eISSN 2391-8306. DOI http://dx.doi.org/10.12775/JEHS.2020.10.03.018
https://apcz.umk.pl/czasopisma/index.php/JEHS/article/view/JEHS.2020.10.03.018
https://zenodo.org/record/3732185

The journal has had 5 points in Ministry of Science and Higher Education parametric evaluation. § 8. 2) and § 12. 1. 2) 22.02.2019.

Received: 10.03.2020. Revised: 18.03.2020. Accepted: 28.03.2020.

Workload of nurses working in the operating theatre

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Abstract

Introduction: An operating theatre is a place where life-saving treatments are often performed. Nurses working in this place must not only be competent in terms of knowledge and skills, but strong physically and mentally. The article deals with the problem of workload of perioperative and anesthetist nurses.

Aim of the study: comparison of workload of perioperative and anesthetist nurses working in the operating theatre.

Material and methods: The research group consisted of 207 perioperative and anesthetist nurses employed in the operating theatres of hospitals in the Podkarpackie Voivodeship in the first half of 2019. The research method was a diagnostic survey conducted by means of a questionnaire. Statistical analysis was carried out using the SPSS programme and all the relationships are statistically significant when $p \leq 0.05$.

Results and conclusions: Research has shown that nurses working in the operating theatre experience stress during work in the operating theatre due to responsibility for the patient and exposure to occupational exposure, contact with chemical agents and skeletal load.

Key words: operating theater, anesthetist nursing, perioperative nursing, workload.

Introduction

A team is „a group of interacting individuals united by a common goal for which they share equal responsibility".[1] The team working in the operating theatre has an extremely heterogeneous command structure. The anesthesiologists and surgeons working there are direct superiors of nursing and technical personnel, responsible for the patient in the perioperative period. The entire team has completely separate areas of skills, knowledge and responsibilities, which may result in overlapping interests and even conflict of all the people working there. The common goal of the team working in the operating room is to achieve the optimal result of the treatment, however, there is a possibility of discrepancies in the ways in which this goal can be achieved. This is due to the division of the entire team into several crews: surgical, anesthesiologic, perfusionist, nursing and radiological, each of which has its own command hierarchy as well as its own range of goals in the patient's rescue efforts. If all crews work together, one can think about creating a team.[2] Surgical nursing is a specific field of nursing knowledge and practice, sometimes understood as a sub-discipline of surgical nursing. Surgical nurses constitute the most numerous professional groups in the operating theatre, they are authorized to assist nurses in surgical procedures of various surgical disciplines.[3] The specificity of anesthesiologic nurse's work requires constant attention, systematic observation, assessment of sudden changes in the patient's condition and quick decision making. The workload results from working conditions in the operating theatre and intensive care unit. An important role in the nurse's work is played by interpersonal skills, which facilitate functioning and protect against occupational burnout.[4]

The aim of this paper is to compare the workload of nurses working in the operating theatre - perioperative and anesthetist.

Material and methods A questionnaire survey was chosen as a research method of this paper. The questionnaire consisted of 27 questions, which were to provide information on the work of perioperative and anesthetist nurses. The questions were closed, and semi-open, allowing comments. The study was attended by 207 nurses working in the Operating Blocks of the St. Padre Pio Regional Hospital in Przemyśl, Medical Care Centre in Jarosław and Dr Henryk Jankowski Regional Hospital in Przeworsk in the first half of 2019. The questionnaires were completed by 105 anesthetist nurses and 102 perioperative nurses. The study group was selected at random; however, the number of nurses working at specific positions was deliberately selected. Such a procedure results from the necessity to make a comparative analysis, on the groups of similar size, because otherwise the results could be inaccurate. The vast majority of nurses from the professional group of perioperative and anesthetist nurses were women. Out of 207 respondents, there were only 8 men. Four age groups were formed on the basis of years of life in the open question. The highest number of respondents, i.e. as many as 77, was in the 41-50-year age group.

[1]Kohn S.E., O'Connell V. D., 6 nawyków wydajnego zespołu, Wydawnictwo Onepress, 2008.
[2]Mayzner-Zawadzka E. (red.), Anestezjologia kliniczna z elementami intensywnej terapii leczenia bólu, Tom I, Wydawnictwo Lekarskie PZWL, Warszawa 2009.
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[4]Cybulska A. Trembecka J, Śmigielska A, Grochans E: Umiejętności interpersonalne pielęgniarek anestezjologicznych a wypalenie zawodowe. Problemy Pielęgniarstwa 2017; 25 (3): 149–153

The remaining persons constituted three groups, almost identical in quantitative terms: the youngest ones aged 20-30, who participated in the number of 34 persons, the surveyed slightly older ones aged 31-40, 44 persons and the oldest ones aged over 50, 42 persons. The age in the most numerous group of respondents can be explained by the need not only for knowledge, but also for experience in such a difficult job as surgical nursing.

In order to take such a serious and responsible position, it is necessary not only to have the appropriate education, but also to acquire appropriate practical skills. The correlation coefficient showed a moderate statistically significant relationship between the analyzed variables. The results obtained indicate that anesthetist nurses have a longer service history compared to perioperative nurses. Since the correlation coefficient showed only a moderate statistically significant relation between the variables analyzed, it can be concluded that the longer seniority of anesthetist nurses is a case. 50 persons from the surveyed group of nurses work in the Operating Theatre over 25 years. Slightly fewer people in the number of 40, work here from 16 to 20 and 18 from 11 to 15 years. A very similar group, 34 people, work in the Block for up to 5 years, and as many as 20 people have only just started working there and have not worked there for another year. The smallest numerical group was 10 people who worked in the block for 6 to 10 years.

Methods

During the statistical analysis, the Chi-square test was used to check the relevance of the relationship between the variables built on the qualitative scales, as well as Tau-b Kendall correlation (for two order variables with the same number of responses) and Kendall Tau-c (for two order variables with different number of responses). In the case of statistically significant dependence, the strength of the relationship was also checked, which is normalized and takes values from 0 to 1. The results from 0 to 0.29 are treated as weak dependence, from 0.30 to 0.49 - moderate dependence and from 0.5 to 1 - strong dependence. For the Chi-quadrant test, the compound strength measures used are Phi (for tables 2 out of 2) and V Kramer (for tables larger than 2 out of 2). The obtained correlation results (Kendall's Tau-b and Kendall's Tau-c) as well as the symmetrical measure of Phi may take negative values, which in this case shall be interpreted as an inverse relationship/correlation. When the cross-table consisted of responses built on a nominal and order scale, the statistics were read at a weaker measurement level. During the analysis with the Chi-square test some assumptions have to be kept in mind, which concern the theoretical quantities or, in fact, the permissible numbers for a given table of theoretical quantities, which have a value between 1 and 5. The result obtained is accurate when none of the theoretical quantities is less than unity and when no more than 20% of the theoretical quantities is less than 5. The analysis was carried out using the SPSS program and all the relationships are statistically significant when $p \leq 0.05$.

Results

People working in the Operating Theatre should have, apart from theoretical knowledge, many years of practice and predispositions, both in the mental and physical sphere. Only such people are able to work in such difficult conditions. Among the respondents this group is the most numerous and constitutes ¼ of the surveyed.

The work system of nurses is usually shift-based. These are one-shift (7 hours 35 min), two-shift (12 hours) and three-shift (8 hours). In Polish hospitals, the most common is a two-shift system of on-call duty lasting 12 hours, from 7:00 to 19:00, or from 19:00 to 7:00.[5] Nurses working in this system have a lot of time after the on-call duty not only to rest and run the house, they can also take additional paid work, and there is no shortage of offers for this professional group. Most of the respondents remain at one workstation, which is probably due to the high psychological and physical burden in the specialty of perioperative nursing. Taking into account that the vast majority of them are married women with children, there is still the issue of running a house.

Almost all respondents admit to experiencing stress at work. Out of 207 people, as many as 192 stated that they are no strangers to stress at work. Working in the Operating Theatre requires a great deal of responsibility, because the activities performed by medical personnel often determine human health and life. The perception of stress at work is not statistically significantly different due to the type of employment or length of service. Few respondents experience stress sporadically and it can be argued that this group includes people with a long history of work in the Operating Theatre. Most respondents, as many as 158 people, stress the responsibility for the patient. Behavior of doctors at work is stressful for 72 respondents, while for 46 - for other nurses. Among other stress factors, the respondents mentioned perceptible nervous tension, the sounds of equipment or smell felt in the operating theatre (Table 1).

[5] Kuriata E., et. al., Specyfika pracy pielęgniarskiej w szpitalu – warunki pracy i aktualne wyzwania, Część I, Piel. Zdr. Publ. 2011, 1, 2, 163–167.

Table 1. Exposure by type of work performed in the operating theatre.

What factors are you exposed to during your duty?		What position are you employed in the operating theatre?		Total
		anesthetist nurse	perioperative nurse	
noise	yes N	60	38	98
	yes %	**54,5%**	**36,5%**	**45,8%**
p=0,06				
vibration	yes N	34	16	50
	yes %	**30,9%**	**15,4%**	**23,4%**
p=0,06				
microorganisms (bacteria, viruses, fungi, protozoa)	yes N	98	82	180
	yes %	**89,1%**	**78,8%**	**84,1%**
p=0,15				
physical strain	yes N	98	84	182
	yes %	**89,1%**	**80,8%**	**85,0%**
p=0,23				
neuropsychological load	yes N	98	88	186
	yes %	**89,1%**	**84,6%**	**86,9%**
p=0,49				
the risk of being stabbed with sharp tools,	yes N	98	92	190
	yes %	**89,1%**	**88,5%**	**88,8%**
p=0,58				
weight lifting (medical equipment, patients, infusion fluids)	yes N	92	82	174
	yes %	**83,6%**	**78,8%**	**81,3%**
p=0,53				
ionizing radiation, laser	yes N	88	94	182
	yes %	**80,0%**	**90,4%**	**85,0%**
p=0,13				
contact with devices connected to high voltage current	yes N	70	60	130
	yes %	**63,6%**	**57,7%**	**60,7%**

p=0,53					
detergents that may cause skin sensitisation and inflammation	yes	N	94	74	168
		%	**85,5%**	**71,2%**	**78,5%**
p=0,07					
aerosols that can cause conjunctival, nasal and pharyngeal mucosa irritation	yes	N	72	48	120
		%	**65,5%**	**46,2%**	**56,1%**
p=0,04, Phi=0,19, Chi-square=4,04 (df=1)					
direct contact with chronically and terminally ill people	yes	N	78	54	132
		%	**70,9%**	**51,9%**	**61,7%**
p=0,04, Phi=0,20, Chi-square=4,08 (df=1)					
insufficient equipment of workstations with medical equipment and apparatus, preparations for disinfection	yes	N	44	32	76
		%	**40,0%**	**30,8%**	**35,5%**
p=0,32					

Source: own.

The vast majority of the respondents (197 people) experience pain in the skeletal-articular system. Nearly half of them (101 people) experience this type of pain very often and 78 only sometimes. The rest of the respondents feel this type of discomfort rarely. There was no statistically significant relationship between the analysed variables. Working in the Operating Theatre requires good physical condition. Surgical procedures often last several hours, during which the personnel must stand motionless often in an uncomfortable pose, hold the tools in the right position, move quickly and without any collisions between the equipment and other employees. Such situations require not only agility and dexterity, but also physical endurance from the surgical nurses. However, over time the skeletal-articular system loses its resilience and is no longer as robust. There is a moderate statistically significant correlation, which indicates that the longer the length of time the patients have worked, the more often they experience pain in the skeletal-articular system ($p<0.001$, Kendall Tau-c =-0.30).

Anesthetist nurses, compared to perioperative nurses, are more exposed to various types of bad factors during their duty, but only to two responses: "aerosols likely to cause conjunctival, nasal and pharyngeal mucous membrane irritation" and "direct contact with chronically and terminally ill people" differences proved statistically significant. In the first case $p=0.04$, Phi=0.19, Chi2=4.04 (df=1), in the second case $p=0.04$, Phi=0.20, Chi2=4.08 (df=1).

Most respondents know the legal consequences of mistakes during operations/procedures very well. Only 5 respondents admitted to being poorly oriented in this subject.

The knowledge of legal consequences of mistakes during procedures was not statistically significantly different due to the type of work performed.

154 respondents often think about the legal consequences of errors during the operation/convention, while 40 do so, but rarely. Seven respondents do not think at all and 6 did not answer. This kind of behaviour in the nurses working in the Operating Theatre proves that they approach their duties with great commitment and take them very seriously. The thought that it is important not only to help, but also to make sure not to hurt another person by negligence or a moment's inattention makes us responsible. Bearing in mind the legal norms, we follow them, and knowing the consequences makes our actions thoughtful.

Discussion

The aim of this paper was to compare the workload of nurses working in the Operating Theatre - perioperative and anesthetist. The analysis of the research material and verification of detailed hypotheses should demonstrate that the duties of nurses during procedures are equally burdensome.

The medical team, consisting of doctors and nursing staff, may make mistakes, both during the diagnosis, treatment, including treatment, care or other activities related to the stay in the hospital, the following types of medical mistakes are distinguished: decision-making, diagnostic, therapeutic, opinion making, executive and organizational. Apart from performing tasks ordered by the doctor, nurses have the right to undertake certain activities on their own initiative. They may therefore, like doctors, make a mistake for which they are responsible. The operating theatre is a place with increased attention of medical staff, but also with an increased risk of making a mistake. Therefore, knowing the legal consequences can be a boost for the nurses to focus even more attention, but it can also cause more stress.

Anna Wzorek conducted a study to determine the level of stress among nurses working in hospital wards of different characteristics. Of the many stress factors present in the workplace, the greatest source of stress for 70% of nurses from intensive care units was patient death, while for 71% of nurses from neurological wards and 66% of nurses working in outpatient clinics, the source of stress is a nervous atmosphere at work and bad organization. The study shows that for 63% of the respondents from the intensive care units the most stressful situation is resuscitation, for 47% of nurses working in outpatient clinics - conflicts with supervisors or doctors, while for 55% of the respondents from the neurological wards - patient death.[6]

Kędra and Sanak conducted a questionnaire survey on a group of 357 nurses working in various entities of the therapeutic activity. In the opinion of the respondents, the decisive factors (to a large or very large extent) turned out to be the responsibility for the health and life of another person, indicated by 76 respondents.[7]

Suchocka's research carried out in hospitals in Olsztyn focused on factors causing stress among nursing staff. Out of 100 respondents, 76 indicated that the most psychologically stressful factor is responsibility for the patient's life. No less mentally burdensome is the care

[6]Wzorek A., Porównanie przyczyn stresu wśród pielęgniarek pracujących na oddziałach o różnej specyfice, Studia Medyczne nr 11/2008: pp. 33–37.

[7]Kędra E., Sanak K., Stres i wypalenie zawodowe w pracy pielęgniarek Piel. Zdr. Publ. nr 3(2)/2013, pp. 119–132.

of critically ill and dying people.[8] Other results were obtained by Grzegorzewska among thoracic surgery nurses working in Mazovian hospitals, where it was found that "unfavorable commuting to work burdens 44% of workers".[9]
Other studies carried out on groups of nurses throughout Poland also obtained similar results. Suchocka's research showed that over 95% of nurses considered their profession to be definitely stressful, a similar percentage of respondents declared that they were exposed to stress at work. Additionally, it turned out that almost 60% of the respondents were exposed to stress every day and 1/3 of them experience stressful factors several times a week.[10] On the other hand, the survey of Kowalczuk et al., conducted among nurses from Podlaskie Voivodeship, showed that even 72.6% of respondents felt stress related to their work.[11] The research conducted by Modzelewska and Kulik among nurses employed in Lublin hospitals showed that 73.6% of the respondents were exposed to stress at work.[12]

Results

1. Stress is a feeling present in the operating theatre due to the high degree of responsibility for the patient's health and life. Additionally, surgical procedures require medical personnel to react quickly, make the right decisions and act professionally.
2. The work of perioperative and anesthetist nurses in the operating theatre is very similar in nature, therefore the intensity of stress in both patients is similar.
3. Perioperative and anesthetist nurses are aware of legal consequences of errors during operations/procedures, which may also stress them.

The analysis of the research material and verification of detailed hypotheses should be based on the fact that the duties of perioperative and anesthetist nurses during procedures are equally burdensome.

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