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VARIABLES MODULATING THE SENSE OF SAFETY IN NURSES AND MIDWIVES FACING EPIDEMIOLOGICAL ENDANGERMENT OF COVID-19

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A – study design, **B** – data collection, **C** – statistical analysis, **D** – interpretation of data, **E** – manuscript preparation, **F** – literature review, **G** – sourcing of funding

ABSTRACT

Background: Nurses and midwives are currently facing new challenges at work related to the epidemiological situation caused by the occurrence of a new SARS-CoV-2 pathogen. An immediate concern during the pandemic is a complete shortage of publications or research concerning safety procedures for the medical staff.

Aim of the study: The aim of the study was to examine the factors affecting work safety for nursing and midwifery teams, to raise awareness about those risks, and gain the knowledge to minimize occupational risk in the pandemic era.

Material and methods: The research group consisted of 550 professionally active nurses and midwives who were interviewed with the use of surveys. The author's survey questionnaire contained 33 questions, including 13 open and 20 closed ones.

Results: The medical staff usually felt safe at work 73.8% of the time (406); however, 7.5% (41) of the respondents always declared that positive feeling. The sense of safety at work in relation to the COVID-19 pandemic decreased to 82.5% (454). Occupational and epidemiological training was attended by 73.45% (404) of the staff. However, only 57.6% (317) of them were instructed on how to proceed with a patient suspected of having a COVID-19 infection, while 42.40% (233) were not. The respondents who did not take part in the training felt less secure more frequently ($p < 0.05$) than the trained ones. The respondents who were provided with increased accessibility to the personal protective equipment (PPE), rarely experienced a decrease in their sense of safety at work.

Conclusions: The sense of safety at work among medical staff undoubtedly depends on regular training on health and safety measures during epidemiological crises. Participation in training sessions about the procedures connected with COVID-19 endangerment significantly increases the sense of safety at work. Guaranteeing the accessibility of PPE daily also substantially influences the feeling of security among the active medical staff who face increased danger from COVID-19 transmission.

KEYWORDS: viruses, nurses, midwifery, work, epidemiology, methods

Background

Direct exposure to patients and their bacterial flora is an inevitable and constant threat for nursing and midwifery teams. Both professions are regularly subjected to physical, biological, and chemical dangers. Biological pathogens include prions, viruses, protozoans, bacteria, fungi, and parasites [1]. These harmful biological agents might enter the human body through direct skin contact, inhalation, exposure to blood, and bodily excretions. The viability of pathogens on various objects is mostly unknown, and will likely increase in duration [2].

Taking into consideration a long and hidden course of some occupational diseases caused by viruses infecting the nursing staff, the bibliography on the subject contains a lot of articles. The most common viral exposures include the actions of hepatotropic viruses (HBV, HCV), human immunodeficiency virus (HIV), tuberculosis, and flu-like viruses [3,4].

Since 2020, the number of dangerous agents at work for the medical staff has been expanded to include the SARS-CoV-2 virus, which causes COVID-19 disease. The first case was noted in Wuhan in China on 31st December 2019 [5,6]. SARS-CoV-2 is an alarming, almost unknown, and highly infectious pathogen, which might constitute the reason for the development of an occupational disease [7].

Building awareness of the exposure risk at work and the knowledge of proper procedures to minimize these risks are two crucial elements for workplace safety for staff in health centers. The functional organization of the workspace also directly influences the sense of accomplishment and safety [8], which correlates directly with the quality of work.

Safety, according to Maslow, is a basic human need manifested by the lack of fear of one's health and life. It is influenced by the work environment and its organization [8]. Among many studies on the subject, Z. Prażak identifies the most important factors which affect work safety in medical institutions, which include educational enterprises, update training about current standards and post-exposure proceedings, procedure verifications, workplace organization, providing the staff with the PPE, and work ergonomics [8]. The research by A. Garus et al. in 2009, who examined the nursing staff practices, revealed that the knowledge about the routes that infections spread and work safety rules are not sufficient [9].

What is more, K. Kosonóg et al. in 2010 found that the knowledge of asepsis and antisepsis is also not adequate, proving that only 60% of the respondents were aware of the Ayliffes' hand washing technique [10]. Finally, Z. Prażak et al. showed in 2017 that the knowledge of work safety measures among nurses is also low [11,12].

In the face of the danger due to the SARS-CoV-2 exposure, it is extremely vital to increase the sense of safety at work by introducing the epidemiological procedures and guidelines published on the website of the Ministry of Health [13]. Such universal procedures include the post-exposure proceedings and health care of a patient suspected of being infected or with confirmed infection with SARS-CoV-2; disinfection of air in the rooms where the risk of infection by SARS-CoV-2 virus is possible; proper application of the PPE by the staff taking care of the infected or suspected infection by SARS-CoV-2 virus patients, and protective masks [14].

European Centre for Disease Prevention and Control first published an official document related to the prevention and control of the infections while caring for COVID-19 patients in medical institutions on 2nd February 2020 [15]. The document contains regulations connected with staff training and points out the necessary PPE as well as makes employers responsible for controlling the effectiveness of the training and proper usage of the PPE [16].

The organization of staff training for nurses and midwives in the field of occupational safety belongs to the responsibilities of an employer. This responsibility was stated in the Regulation of the Ministry of Economy and Labour issued on 27th July 2004 [17]. According to the regulation, first staff training ought to be given to an employee before starting a job, and then periodically, at least every five years [18,19].

The responsibility for the application and adherence to the procedures in a health institution lies in the people holding coordinating and overseeing positions and an epidemiological nursing specialist. The same rules ought to be applied in the situation of a new epidemiological danger [20], such as the appearance of SARS-CoV-2, which causes COVID-19. Those responsible are the Department of Health Inspection, the Ministry of Health, and the World Health Organization (WHO), that are tasked with formulating new epidemiological procedures and guidelines for nursing and midwifery staff. The knowledge of the regulations and proper access to the PPE has a significant impact on decreasing the in-company infection occurrence and increasing the safety of patients and therapeutic teams that provide health services.

Aim of the study

The primary purpose of the work was to demonstrate the need to improve the quality of work for teams of nurses and midwives by raising their awareness about the risks at work, knowledge of the principles of minimizing occupational risk in the pandemic era.

To achieve this aim, we studied the sense of safety among the nursing and midwifery staff related to the actions undertaken by the employers in the areas such as accessibility to the Personal Protective Equipment (PPE), epidemiological and health and safety training as well as rules of proceeding with a patient suspected of being infected by COVID-19.

Material and methods

Study design

The research was carried out from March to April 2020 among the medical staff endangered by patients who might be carrying or be infected by SARS-CoV-2.

Settings

Epidemiological restrictions and lack of opportunities to cooperate with local health centers made access to medical staff difficult and limited. Therefore, the questionnaire was sent via online platforms, which are commonly used by nurses and midwives.

The procedure for accessing the survey questionnaire was regulated by the rules and was only possible after being accepted by the administrator of each group. The publication of the questionnaire on the

forum for each group had prior administrative consent to the research.

The consent to participate in the survey was voluntary and anonymous. The study was carried out in the spirit of the Declaration of Helsinki, dated in 1975 and amended in 2000 as well as *Good Clinical Practice*.

Data sources/measurement

The method used in the study was a diagnostic survey with the use of an author's survey questionnaire. It contained 33 questions; 13 open and 20 closed ones; 27 – single choice and six multiple-choice ones.

The questionnaire was divided into three parts. The first part was aimed at obtaining socio-demographic data, the level of education, working hours, workplace, and work duties (questions 1–10). The second part was designed to assess the level of work safety before the COVID-19 pandemic. Questions 11–21 aimed to examine the awareness of professional risks and fears connected with starting the job, the frequency of hand disinfection and washing as well as changing protective gloves and personal clothes into workwear. Question 14 was to check the sense of safety at work. Question 15 aimed to get access to the information connected with regular health, safety, and epidemiological training provided by the employers. The third part of the questionnaire contained questions related to work conditions at the time of COVID-19 endangerment (questions 22–33).

Questions 22–24 were directly connected with work during COVID-19 pandemic and the training on the procedures of how to take care of a patient suspected of being infected by the virus (question 22). The questions were designed to collect the information about whether employers increased the access to the PPE and whether the situation connected with COVID-19 had any impact on the level of the sense of safety among nurses and midwives. Questions 29–31 investigated the fear of going to work and performing regular work duties during the pandemic.

Participants

The entering criteria of the participation in the research included age over 18, the license to practice nursing or midwifery, professional activity, being employed in the place where there is a risk of COVID-19 epidemiological danger, and the consent to the research.

The exclusion criteria consisted of the lack of work activity, staying professionally inactive at the time of the COVID-19 pandemic, and the lack of consent for participation in the study.

There were 550 participants qualified for the study, of whom 35.5% were aged 41–50. Most of the respondents were nurses, 95.6% (526), among whom 2.2% (12) were male. The group of midwives constituted 4.36% (24) of the examinees. 54.9% (302) of the nurses and 2.36% (13) of the midwives declared work experience longer than 20 years. Senior nurses and midwives amounted for 57.27% (315) of all the respondents, while 20.50% (113) worked fewer than five years in the profession. For 19.09% (105) of the nurses and 1.45% (8) of the midwives, it was their first year of work experience. Most of the respondents, 83.09% (457), worked in one place. 14.9% (82) of the nurses and 0.72% (4) worked in two places. 0.72% (4) nurses and 0.36% (2) midwives worked in three workplaces. 0.81% (1) nurse worked in four workplaces. 46.4% (249) of the respondents had a university degree: 96.4% (240) nurses and 3.6% (9) midwives. The level of vocational education was not specified by 2.36% (13) respondents. The title of specialist was indicated by 42.2% (232) respondents: 96.55% (224) nurses and 3.44% (8) midwives. The biggest group of the respondents worked in hospital wards – 58.5% (320), and among them, the largest group completed specialization – 46.56% (149) (Tab. 1).

Table 1. Socio-demographic data of the respondents (n=550).

Variables		n	%
Age, years	20–30 years old	113	20.50
	31–40 years old	97	17.60
	41–50 years old	195	35.50
	over 50 years old	145	26.40
Gender	women	538	97.80
	men	12	2.20
Education	medical secondary school	68	12.70
	associate degree	220	41.00
	master degree	249	46.40
Specialization	yes	232	42.20
	no	318	57.80
Profession	nurse	526	95.60
	midwife	24	4.40
Work experience	1–5 years	113	20.50
	6–10 years	51	9.30
	11–20 years	71	12.90
	over 20 years	315	57.30
Workplace	primary Health Clinic/Centre	178	32.54
	specialist's clinic	43	7.86
	hospital ward	320	58.50
	the ER	9	1.65
	long-term nursing home care	35	6.40
	residential home	15	2.74
	nursing facility	3	0.55
	hospice	11	2.01
	others	37	6.76

n – number of respondents, % – percentage in reference to all respondents.

Statistical methods

The research calculations were made with the use of the R software environment for statistical computing – version 3.6.0, PSPP software for analysis, and MS Office 2019. The probability value was presupposed at the level of $p = 0.05$. The variables stated at the nominal scale were analyzed with a chi-squared test. If the conditions did not allow for a chi-squared test, then the

Fisher's test was applied for tables bigger than 2x2. The choice of the test was determined by the distribution of the variables verified by Shapiro–Wilk normality test.

Results

Descriptive data

The results of the survey revealed that 73.8% (406) of the respondents felt safe at their workplace (nurses 96.06%, 390; midwives 3.94%, 16). Only 6.5% (36) declared that they never felt safe (nurses 94.44%, 34; midwives 5.56%, 2) (Fig. 1).

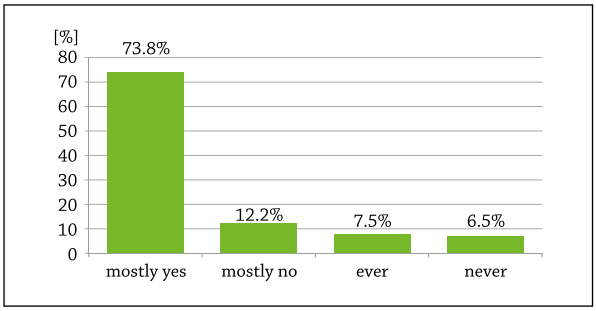

Figure 1. Sense of security of respondents at work (%).

73.45% (404) of the respondents confirmed their participation in the trainings on health, safety, and epidemiological procedures (nurses: 98.26%, 387; midwives: 0.42%, 17) while 36.7% (202) took part in such trainings every 2 years (nurses: 95.54%, 193; midwives: 4.45%, 9). However, 20.4% (112) of the staff were not provided with such training by their employers at all (nurses: 95.54%, 107; midwives: 4.46%, 5). Other forms of training included on admission training, paper version training, cursory training or the training only when the risk arose and was attended by 6.2% (34) of all the surveyed (nurses 94.1%, 32; midwives: 5.9%, 2) (Tab. 2).

Table 2. Regularity of training at work among the research group.

Health and Safety and epidemiological training	n	%
at least once a year	197	35.8
every two years	202	36.7
never	112	20.4
every five years	5	0.9
others	34	6.2
total	550	100

n – number of respondents, % – percentage in reference to all respondents.

Once a year, 35.81% (197) persons took part in the training (nurses 95.94%, 189; midwives 4.06%, 8). In this group, 74.11% (146) nurses and 2.54% (5) midwives almost always felt safe. Despite training once a year, 5.08% (10) of the nurses never felt safe. In a group of medical staff that were trained every two years, they mostly felt safe 71.78% (145) for nurses and 5 (2.47%) for midwives. Among 95.54% (107) nurses and 4.46% (5) midwives who never had training, those that felt mostly felt safe were 33.49% (71) nurses and 3.57% (4) midwives (Tab. 3).

Table 3. Detailed distribution of the sense of safety, depending on the training.

Sense of safety at work		Frequency of Health and Safety and epidemiological training				
		at least once a year	every two years	every five years	never	others
		n (%)	n (%)	n (%)	n (%)	n (%)
ever	nurses	21 (10.66)	10 (4.95)	0 (0)	5 (4.46)	0 (0)
	midwives	3 (1.52)	2 (0.99)	0 (0)	0 (0)	0 (0)
mostly yes	nurses	146 (74.11)	145 (71.78)	0 (0)	71 (63.39)	23 (67.65)
	midwives	5 (2.54)	5 (4.47)	2 (40)	4 (3.57)	2 (5.88)
mostly no	nurses	12 (6.09)	26 (12.87)	3 (60)	23 (20.54)	5 (14.71)
	midwives	0 (0)	1 (0.5)	0 (0)	0 (0)	0 (0)
never	nurses	10 (5.08)	12 (5.94)	0 (0)	8 (7.14)	4 (11.76)
	midwives	0 (0)	1(0.5)	0 (0)	1 (0.9)	0 (0)
respondents in this group	nurses	189 (95.9)	193 (95.54)	3 (60)	107 (95.54)	32 (94.12)
	midwives	8 (4.1)	9 (4.46)	2 (40)	5 (4.46)	2 (5.9)

n – number of respondents, % – percentage in reference to all respondents in this group.

The analysis dependence between the training and their regularity and the sense of safety in the research group showed that the influence of regular training in the field of safety was statistically vital $p<0.05$ (Tab. 4). The average level of sense of security increased with the frequency of training. Persons trained in health, safety, and epidemiological procedures once a year had a significantly higher level of security compared to respondents undergoing training every two years (M=2.96, SD=0.62 vs. M=2.80, SD=0.64, $p<0.001$). In contrast, people undergoing training every two years had a higher level of sense of security compared to those undergoing

Table 4. Dependence between the sense of safety and the frequency of Health and Safety and epidemiological training.

Health and Safety and epidemiological training		χ^2	df	p	M	SD	Me	95% CI	
								low	top
The sense of safety at work	once a year	20.83	2	<0.001	2.96	0.62	3.00	2.87	3.05
	every two years				2.80	0.64	3.00	2.71	2.89
	less than every two years				2.68	0.68	3.00	2.57	2.78

χ^2– test statistics, df – degree of freedom, p – probability value, M – average, SD – standard deviation, Me – median, CI – confidence interval.

training less than every two years (M=2.80, SD=0.64 vs. M=2.68, SD=0.68, p<0.001) (Tab. 4).

The analysis of the results concerning the change in the sense of safety connected with the COVID-19 pandemic showed that in most of the respondents, the sense of safety decreased to a level of 82.5% (454). Only 16.5% (91) of them claimed that the sense of safety at work was not changed during the pandemic.

57.6% (317) of all the respondents were trained at work in matters of new procedures connected with COVID-19 occurrence; nurses 94.95%, (301); midwives 5.05%, (16), whereas 42.4% (233) were not (nurses: 96.57%, 225; midwives: 3.43%, 8) (Tab. 5).

Table 5. Detailed data from training and changes in the safety of nurses and midwives.

Changes in the sense of safety		COVID-19 procedure training			
		yes		no	
		n	%	n	%
decrease	nurses	233	77.4	200	85.84
	midwives	14	87.5	7	3
no change	nurses	66	21.9	22	9.44
	midwives	2	12.5	1	0.43
others	nurses	2	0.66	3	1.29
	midwives	0	0	0	0
respondents in this group	nurses	301	94.95	225	96.57
	midwives	16	5.05	8	3.43

n – number of respondents, % – percentage in reference to all respondents in this group.

Respondents who had no opinion (0.9%, 5) regarding the sense of safety at work during the pandemic were excluded from further analysis (Tab. 6–8).

Respondents undergoing training in COVID-19 procedures significantly less often felt a decrease in the sense of security compared to people who did not undergo such training and significantly more often felt the lack of change in the level of perceived safety (p=0.001) (Tab. 6).

Table 6. Statistically significant differences between the sense of safety and the COVID-19 procedure training in the research group.

Variables			The COVID-19 procedure training		Test results
			yes	no	
The change in the sense of safety	decrease	n	247	207	χ^2=13.462 df=2 p=0.001
		%	77.9%	88.8%	
	no change	n	68	23	
		%	21.5%	9.9%	
The sum of all the answers		n	315	230	–
		%	100%	100%	

χ^2 – test statistics; df – degree of freedom; n – number of respondents; p – probability value.

The accessibility to the PPE provided by an employer before the pandemic outbreak was estimated at the following levels: protective gloves – 99.09% (545); uniforms – 52.91% (291); protective glasses – 25.64% (141); protective head caps – 23.82% (131); shoe protectors – 14.36% (79); face masks – 7.82% (43). Interestingly, 1.09% (5) of the respondents claimed they were not supplied with the PPE at all.

After the occurrence of biological endangerment of COVID-19, according to the examinees, the accessibility to the PPE increased in 35.5% (195) of the cases (nurses 95.38%, 186; midwives 4.62%, 9), was the same in 28.9% (159) (nurses: 96.23%, 153; midwives 3.77%, 6), and in the opinion of 35.6% (196) of them, it decreased (nurses: 95.41%, 187; midwives: 4.59%, 9).

The analysis of the results collected in the study indicated the impact (p<0.05) between the accessibility to the PPE at the time of the COVID-19 pandemic and the change in the sense of safety. Along with the increase in the availability of PPE, respondents significantly less often felt a decrease in the sense of security due to the COVID-19 epidemic (Tab. 7).

Table 7. Dependence between the change in the sense of safety caused by COVID-19 and the increase of accessibility to the PPE.

Variables			The accessibility to the PPE at the time of COVID-19 pandemic			Test results
			increased	no change	decreased	
The change in the sense of safety caused by COVID-19	decreased	n	150	122	182	χ^2=22.594 df=4 p=0.001
		%	76.9%	76.7%	92.9%	
	no change	n	43	35	13	
		%	22.1%	22%	6.6%	
The sum of all the answers		n	193	157	195	
		%	100%	100%	100%	

χ^2 – test statistics; df – degree of freedom; n – number of respondents; p – probability value.

Among the respondents who noticed a decrease in the sense of safety at the time of the COVID-19 pandemic, 86.1% (391) were afraid of going to work. However, in those whose sense of safety did not change, 47.3% (43) did not experience the fear. The analysis of the results collected in the study indicated the impact (p<0.05) between the change in the sense of safety and the fear of going to work in the research group (Tab. 8).

Table 8. The results of the respondents' assessment in the change of the sense of safety vs. fear of going to work and performing professional duties during the COVID-19 pandemic.

Variables			The change in the sense of safety caused by COVID-19		Test results
			decreased	no change	
Fear of going to work caused by COVID-19	yes	n	391	48	χ^2=54.838 df=2 p=0.001
		%	86.1%	52.7%	
	no	n	63	43	
		%	13.9%	47.3%	
Avoiding professional duties because of COVID-19	yes	n	96	22	χ^2=0.419 df=2 p=0.811
		%	21.1%	24.2%	
	no	n	358	69	
		%	78.9%	75.8%	

χ^2 – test statistics; df – degree of freedom; n – number of respondents; p – probability value.

Among the respondents 21.60% (119) avoided going to work (nurses: 94.96%, 113; midwives: 5.04%, 6), while 78.40% (431) did not (nurses: 95.82%, 413; midwives 4.18%, 18).

The analysis of the results collected in the study indicated no influence between the change in the sense of safety at the time of COVID-19 and avoiding professional duties ($p > 0.05$) (Tab. 8).

Discussion

The current epidemiological situation connected with the occurrence of the new pathogen SARS-CoV-2 creates new challenges for medical staff as nurses and midwives. The rapid outbreak of the pandemic reveals a lack of proper publications and research concerning safety procedures for these professions. Due to the epidemiological and pandemic situation in Poland, scientific research in this area is in the initial phase of implementation.

Key results

The study shows the sense of safety among the nursing and midwifery staff is related to the actions undertaken by the employers in the areas such as accessibility to the Personal Protective Equipment (PPE), epidemiological and health and safety training as well as rules of proceeding with a patient suspected of being infected by COVID-19.

A decrease in the sense of security was felt by trained and untrained people, but the decline in the sense of security was less pronounced in those who had received such training. People who felt a decrease in their sense of security during the COVID-19 pandemic were afraid to go to work. In contrast, a change in the sense of security did not affect avoiding professional duties.

The accessibility to the PPE at the time of the COVID-19 pandemic has an influence on the change in the sense of safety.

Interpretation

Safety at work is closely related to the notion of professional risk. It is defined as the appearance of endangerment of unexpected events and factors at work. Employers, regardless of the workplace, ought to guarantee the performance of professional duties in the conditions which ensure safety and protect workers from a negative impact of biological agents [21,22]. To effectively protect employees from a disease, it is compulsory to provide them with proper work conditions, the PPE, and regular training on new procedures [23]. The self-reported results of the research on training among medical staff were similar to those collected by A. Dyk-Duszyńska in 2013. Those results revealed that only 68.81% of the nurses were trained on the procedures related to the prevention of professional endangerment to potentially infectious materials [24]. Both studies show the lack of sufficient training among medical staff. The nurses surveyed in 2010 by Jarosik also identified the need for improving their knowledge and the benefits of participating in regular training [25].

The self-reported study showed that 73.45% of the respondents felt safe at work. The report of the poll carried out in 2014 confirmed that 87% of Poles felt safe at their workplace [26]. Since the outbreak of COVID-19, 82.5% of the nurses claim that their sense of safety decreased and that it was dependent on training. Participation in the training had a positive impact on the feeling of professional security. It suggests that the number of professional health, safety, and epidemiological training should be increased. Well-trained employees will use the PPE properly if supplied. According to the guidelines issued by the European Centre for Disease Prevention and Control, 2000/54/EC directive, to prevent COVID-19, the primary PPE should include face surgical masks, protective gloves, uniforms, and glasses [27]. The highest risk of COVID-19 infection occurs when there are basic PPE and prophylaxis shortages [28,29]. In light of the research, the quantity of the PPE correlates positively with the sense of safety among medical staff. It might be, then, concluded that art. 2376 § 1 of The Labour Code, which makes an employer responsible for providing an employee with proper PPE was not met [30]. Shortages of PPE and proper training might potentially influence the number of COVID-19 infections and deaths among nursing staff. The situation actually took place in Italy, where 97 doctors and 26 nurses died of COVID-19 [31].

Nurses and midwives, according to the employment laws, might withdraw from their work duties in case of not being provided with proper work conditions or when their mental and physical state does not allow for safe duty fulfillment [32]. Avoiding work and work duties is one of the elements of professional burnout. By taking into consideration the median age of the respondents (41±50) and work experience (57.3%, >20 years), it may be concluded that the respondents in this study have already experienced burnout. The research by A. Sadomska et al. carried out in 2014 showed that the syndrome is mostly found in nurses between their 10th to 19th years of working in the profession [33]. The sense of safety in daily work was normally at a high level and accompanied 73.8% of the respondents in our study. Only 6.50% claimed to have never felt safe. After the COVID-19 outbreak, the sense of safety decreased in 82.50% of the surveyed. Lack of a sense of safety is a stress factor, which affected 96% of the respondents in the study by B. Trętkiewicz in 2008 [34]. According to the self-reported study, a low sense of safety was found in 82.5% of the nurses and midwives. But, although 80.4% of them were afraid of going to work because of COVID-19, only 21.60% admitted to having avoided professional duties. Performing the job and its duties in such a situation may only be the result of a high sense of obligation in the staff and applying effective techniques of stress management, which otherwise could affect work absence [35]. Therefore, it might be assumed that, together with a prolonged

epidemiological situation, the ability of stress management may decrease, and the aversion to daily work duties and work absence will increase.

Limitations of the study

The main limitations of the study were the epidemiological restrictions, which enabled direct interviews. However, online polling allowed surveying a larger group of respondents than it was initially assumed.

By taking into account multiple aspects in the study (employer's duties, organization, and participation in training on health, safety, and epidemiological COVID-19 procedures, accessibility to the PPE, the sense of safety at the time of pandemic), this may constitute a sound basis for further studies in the subject.

Recommendations

The study aimed at answering the question, to what degree the measures undertaken by the employers in the area of occupational and procedural training at the time of the pandemic, as well as the application of the PPE, influence the sense of safety in nurses and midwives. The results collected might be preliminary to further studies at the time of the COVID-19 pandemic. They might also indicate the main issues experienced in these two medical professions, which may help develop a consistent system and supporting procedures as well as training programs to improve the quality of work in such dangerous situations.

The results of the research might strengthen the structure of the comprehensiveness of nursing services, which might also have a positive impact on the quality of patient care at the time of the pandemic. It may also improve the quality of medical services as well as the level of patients' satisfaction.

1. In order to achieve a higher, satisfactory level of security among medical personnel, the recommendations of the Ministry of Health regarding the implementation of epidemiological procedures and training should be met. The number of training sessions in epidemiological and health and safety training should be increased in nurses and midwives.
2. To monitor the sense of safety in the work of nurses and midwives, standard tools should be implemented. The systematic use of standardized tools will enable a thorough examination of factors that reduce the sense of security and improve these areas.
3. In order to minimize the negative effect of a decrease in the sense of security, nursing teams and midwives should be given constant access to psychological support in the workplace.
4. Employers and the Ministry of Health should provide both professional teams with unrestricted access to PPE regardless of the place of work. Nursing teams and midwives should not agree to work without sufficient PPE protection.

Conclusions

1. The regularity of training connected with COVID-19 and epidemiological procedures as well as health and safety at work influence the sense of safety among nurses and midwives. Due to the COVID-19, a significant decrease in the sense of security has been observed, especially among untrained persons.
2. Along with the occurrence of the epidemiological endangerment due to COVID-19, nursing and midwifery teams declare a substantial decrease in the sense of safety at work.
3. Decreased accessibility to the PPE negatively influences the sense of safety at work. The reduced sense of security indicates that nursing teams and midwives do not have sufficient access to PPE.
4. The decrease in the sense of safety at work caused by COVID-19 significantly influences the anxiety of going to work. However, it has no clear statistical impact on work performance. This means that Polish nursing teams and midwives have a strong sense of duty and are professional.

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