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FEAR MEMORY AND PREVENTIVE AWARENESS: THE ROLE OF PERSONAL PROTECTIVE EQUIPMENT DURING THE PANDEMIC FROM THE PERSPECTIVE OF NURSING TECHNICIANS

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ABSTRACT

Epidemics and pandemics have affected the global social dynamics, in the historical course of humanity, with the health area being the most affected. This study aimed to describe the perceptions of nursing team technicians regarding the use of personal protective equipment (PPE) in the pandemic context, bringing to light important discussions about safety and vulnerabilities at work. This is a qualitative study, carried out through interviews with 16 nursing technicians working in a philanthropic hospital in Vitória, ES, Brazil. The data were analyzed by content analysis. The research was approved by the ethics committee. The results revealed that, although most professionals have never suffered any type of biological contamination at work, they all say that they know colleagues who have already suffered this adverse event. Due to the constant proximity to patients and because they feel more vulnerable to contamination, technicians have become more informed and aware of the importance of using PPE, routinely adopting them in their practices. However, during the pandemic, the fear of contamination persisted as a significant part of their daily lives, despite the awareness of the importance of the equipment and its permanent use in the care of all patients. In addition to the provision of quality PPE, on-the-job training, with information on the recommended standards, as well as charging for its use, is a factor of essential importance for occupational safety. In addition, pandemics leave in mind the fear and also the importance of using PPE AS crucial tools for facing health crises.

Keywords: Personal Protective Equipment. Pandemics. Epidemics. COVID-19.

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INTRODUCTION

Epidemics and pandemics have affected the global social dynamics, in the historical course of humanity, but without a doubt, the health area is the most affected due to the illnesses and deaths caused by the different viruses that cause different diseases with pandemic characteristics, compromising the work process of health professionals and the health of these workers (Silva et al, 2021).

The AIDS pandemic caused substantial transformations in the incorporation of disposable materials, as well as the correct way to dispose of them, and in the incorporation of personal protective equipment (PPE) in the health area (Ujvari, 2011).

Personal protective equipment, commonly referred to as PPE, is an artifact used to minimize exposure to hazards that cause serious injury and illness in the workplace and that may result from contact with chemical, radiological, physical, electrical, mechanical, or other hazards. Personal protective equipment may include items such as gloves, safety goggles and shoes, earplugs or warm clothing, helmets, respirators or coveralls, vests, and full-body clothing, depending on the professional activity (Fernandes, 2018).

In 2020, with the advent of the COVID-19 pandemic, the incorporation of PPE in the health area was put to the test. If, on the one hand, there was a shortage of these supplies worldwide, due to the resounding increase in the demand of contaminated patients, on the other hand, new incorporations and different guidelines for use and disposal were observed, as well as the quality of these PPEs. Therefore, the COVID-19 pandemic brought the need to redefine PPE in the health area, given its importance as a physical barrier in the protection of workers' health (World Health Organization, 2020).

According to Roma et al. (2016), in all fields of work, there are a number of occupational hazards that put individuals at risk. However, among nursing professionals (nurses, technicians and auxiliaries), these risks are exceptionally high, regardless of the type of place in which they work, being one of the dangerous occupations, in which they are four times more vulnerable than other professions. As the largest category of health professionals, they play a critical role in the care delivery system. However, they are constant victims of occupational risks, including biological risks, resulting from exposure to infectious agents, chemical contacts, physical hazards, ergonomic risks, attacks and beatings, and negative effects of psychosocial and organizational factors.

Among health professionals, human-to-human contact is known to be the key element in the transmission and dissemination of microbial agents. The transportation and

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treatment of patients can put these professionals at risk of occupational exposures to materials of all kinds. Thus, the use of appropriate PPE is essential for them to perform their duties, providing care and protecting themselves and the facilities in which they work (Fernandes, 2018).

On March 11, 2020, the World Health Organization (WHO) announced that coronavirus disease 19 (COVID-19), caused by severe acute respiratory syndrome caused by coronavirus 2 (SARS-COV2), was officially a pandemic, after reaching 114 countries in three months and infecting more than 118,000 people. The disease is caused by SARS-CoV-2, a new strain of coronavirus that had not previously been found in people and spreads through airborne droplets produced when an infected person coughs or sneezes (Almico, Goodwin, Saraiva, 2020).

Undoubtedly, health professionals were the most affected, when analyzed from the perspective of protecting workers' health, based on the physical barriers promoted by PPE. Among health professionals, nursing, due to its characteristics of bedside care by interrupted shifts, was the most affected, when we analyzed the number of infected and dead in the health area.

Of the health professionals involved in the care of those infected by SARS-CoV-2, none was more present on the front line of the crisis than nursing professionals and no other professional spent more time inside these infection zones caring for patients. The COVID-19 pandemic has led to intensified work in hospitals, as well as increased concerns about biosecurity, leading to increased awareness and important changes in nursing work processes.

During the pandemic, the scarcity of resources, lack of knowledge about the virus, controversies about treatment and especially the shortage of PPE further aggravated this problem. Although vaccines have reduced the number of cases, questions remain about new variants of the disease, how long vaccines last, and how much they protect people from transmitting the virus to each other. Thus, the sensitization of the nursing team about the use of PPE is of great relevance, and it is important to analyze the conceptions of these professionals on this theme.

In this context, this study aims to describe the perceptions of nursing team technicians regarding the incorporation of personal protective equipment in health in the pandemic context.

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METHOD

This is an exploratory study, with a qualitative approach, carried out through interviews with nursing technicians who have worked since the initial period of the COVID-19 pandemic, in 2020.

The study was carried out at the Hospital da Santa Casa de Misericórdia de Vitória, located in the city of Vitória, in the state of Espírito Santo, Brazil. This is a general hospital, of a philanthropic nature, which aggregates teaching, research and assistance activities.

16 nursing technicians who work at the Santa Casa de Misericórdia de Vitória Hospital participated in the research, in all sectors.

The choice of participants was made by indication of the institution's human resources sector, depending on the length of service. Nursing technicians over 18 years of age who have been working at the institution since the initial period of the pandemic, in 2020, were included.

Nursing technicians who were on vacation or away from work for any other reasons during data collection or who started their duties at the institution from 2021 onwards, because they had not worked in the most critical period of the COVID-19 pandemic, were excluded from the study selection.

INSTRUMENT FOR DATA COLLECTION

The data were collected from interviews, following a script of open questions, whose objective was to encourage the participant to talk about their view of the research object. The instrument has two parts: the first, which aims to characterize the sociodemographic characteristics of the participants, and the second, composed of open questions, where it was sought to identify the knowledge and use of PPE by professionals, as well as their availability by the institution and the possible changes brought about by pandemics.

The interviews were previously scheduled and held in a reserved place, following the list of questions, in September 2022. The participants' testimonies were recorded and then transcribed. The interviewees were invited to participate in the research and, after being informed about its objective, they signed the Informed Consent Form (ICF).

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DATA ANALYSIS

The results were analyzed through content analysis, which aims to ponder on what was said in the interviews, written in the research instruments or observed by the researcher, in order to make inferences from the text produced for its social context.

To verify the most cited words in relation to the professionals' memory of the pandemic, the word cloud elaborated through the Wordart word cloud generator was used, which can be accessed at: https://wordart.com/create.

ETHICAL ASPECTS

Research Ethics Committee of the School of Sciences of Santa Casa de Misericórdia de Vitória – EMESCAN, having been approved by Opinion No. 5,137,340. The study complied with the guidelines and criteria established in Resolution No. 466/2012 of the National Health Council (CNS), following the established ethical precepts, with regard to ensuring the legitimacy of information, privacy and confidentiality of information.

RESULTS AND DISCUSSION

16 nursing technicians participated in the research, of which the female sex was predominant, with a higher percentage of blacks and browns and only two professionals have higher education, while the others have completed high school. The average age was 38.9 years, with an average time since graduation of 9.1 years, length of service of 8.4 years, and monthly income of 1.9 minimum wages.

Regarding the sample profile, the data from this research coincide with a survey carried out by (Portela, Reis, Lima, 2022), which describes as a characteristic of the health workforce the predominance of 70% of women, low remuneration, which leads these professionals to have more than one job and/or extension of working hours, as a way to compensate for precarious work.

When asked to list the main activities they perform on a daily basis and that put them at risk, and how they protect themselves, it was found that bathing and administering medication were the most cited actions. Regarding self-protection actions, only one professional mentioned the use of PPE, while the others did not answer.

The functions described by one of the interviewees are:

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Refer patients to bathing, changing bed linen, taking prescribed medications, controlling vital signs, giving food in the mouth when necessary, among other care that we have to provide to patients.

Regarding the functions of the work environment, it was found that the professionals perform direct care to the patient, performing basic functions and, therefore, are the ones who are most directly vulnerable to accidents. According to Cucolo, Perroca, 2010), the Brazilian health system has undergone major changes to contain costs and some trends are apparent within the structure and organization of hospitals throughout the country, as a result of these reforms, among which the general reduction of hospital staff and the organization of nursing functions, which generally includes the reduction in the number of nurses and the corresponding increase in nursing technicians and assistants confirm this situation, when they state that Brazil has 611,133 nurses and a contingent of 1,867,433 nursing assistants and technicians.

Nursing technicians and assistants are a regulated group of workers whose duties are to provide basic nursing care to patients. These professionals can perform a variety of tasks, while the nature of the work of graduate nurses includes care activities with a higher degree of complexity, as well as the coordination and supervision of care, leaving less time for this basic patient care (Castilho et al., 2010).

When asked if they have suffered any biological contamination at work or know any colleague who has been contaminated while performing their duties, 11 professionals have never suffered any type of biological contamination at work, however, they all know any colleague who has already suffered this adverse event. According to one interviewee:

I have never been in an accident, but I know colleagues who have had an accident, were sent to the laboratory, done the tests and took medication.

Another stated that:

At the beginning of my profession I pierced myself with a needle while performing a puncture, all the exams were performed on both me and the patient, the CAT was filled out, it was not necessary to take the cocktail.

In the conception of Tibães et al. (2014), health workers are considered the most vulnerable professionals to biological risk, as they are exposed to the patient population, whose prevalence can differ significantly from that of the general population. Every year, hundreds of health workers are exposed to dangerous viruses, such as hepatitis (mainly B and C) and HIV, when injured by needles and other sharp objects.

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Biological hazards refer to the presence of microbial agents in the workplace, including bacteria, viruses, fungi, and parasites, which can be transmitted to other individuals through contact with infected patients or contaminated body secretions/fluids, which can cause occupational diseases. These agents are considered occupational, because they can be affected by direct exposure at work (Moura et al., 2021). Among health professionals, nursing is at greater risk of exposure and transmission of infectious diseases.

Regarding the professionals' knowledge about PPE, they were first asked to say what they know about their emergence in health and whether they have always received or receive PPE to carry out their activities. They were also asked to report on how this supply was throughout the COVID-19 pandemic.

Table 1 – Professionals' knowledge about the emergence and supply of PPE.

Knowledge about the emergence of PPE	Absolute frequency (n)	Relative frequency (%)
Has	1	6,3
It does not have	15	93,7
Receiving guidance on the use of PPE		
Yes	5	31,2
No	0	0
No Response	11	68,8
Provision of PPE throughout the COVID-19 pandemic by the institution		
Yes	16	100
No	0	0

Source: Prepared by the author.

In this study, despite being unaware of the history of PPE, the professionals stated that they receive and received this equipment throughout their professional lives, even in the initial period of the pandemic, when the shortage was evident worldwide. Regarding the receipt of guidance on the use of PPE, 11 did not respond. An interviewee's report states that:

About the emergence of PPE, I don't remember the story, I always received protective equipment both here and other hospitals I've worked in, in the pandemic the equipment was controlled, especially the use of masks, now everything is fine, everything is normalized.

Many hospitals have reported shortages of PPE, which has led to the use of low-quality equipment or its reuse in patients with and without COVID-19. According to Moura et al. (2021), one third of the deaths caused by COVID-19 in nursing professionals occurred in

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Brazil, which demonstrates that hospital institutions suffered from a shortage of PPE, as well as a lack of knowledge about its use. In addition to these problems, the authors also point out that some professionals, despite their knowledge, do not adopt the necessary precautionary measures. A major demand shock triggered by the needs of the health system, as well as the panicked behavior of the market, depleted PPE stocks. In addition, major disruptions in the global supply chain, given that China is the largest manufacturer of masks, for example, and its production turned to domestic consumption, as it was the epicenter of the pandemic, caused a sharp reduction in PPE exported to countries (Miranda, 2020).

When asked if they are aware of the Regulatory Standard for PPE in the health area and asked to talk about it, the answers of the professionals are presented in table 2.

Table 2 – Knowledge of professionals about the PPE Regulatory Standard.

Knowledge about the PPE Regulatory Standard	Absolute frequency (n)	Relative frequency (%)
Know	9	56,2
Don't know	3	18,7
Knows little	4	25,1

Source: Prepared by the author.

In this study, it was found that the institution offers training on the protection measures contained in Regulatory Standard 32 and only three stated that they were unaware of its content. According to the National Health Surveillance Agency (2020), occupational health and safety legislation determines that employers have a duty to ensure that risk assessments are carried out and control measures implemented to reduce the risk of harm to employees and patients. The hierarchy of controls should be prioritized and used to guide safe practice in the workplace. This hierarchy contains various risk controls to assess and manage the use of PPE and (in the case of SARS-Co-V2 management) includes actions such as isolation of suspected or known COVID-19 patients, safe systems of work, policy provision, education/training, and finally the use of PPE.

Every employer must ensure that adequate PPE is provided to professionals who may be exposed to a risk to their health or safety while on the job and must also provide training in its use. Practitioners should have the equipment readily available, or at least have clear instructions on where they can obtain it (Loro et al., 2014).

When asked about how protection against HIV contamination occurs and what risks they have already been subjected to, the professionals' answers are presented in Table 3.

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Table 3 – Professionals' knowledge about protection against HIV contamination and the risks to which they have already been subjected.

Knowledge about protection against HIV infection	Absolute Frequency (n)	Relative frequency (%)
Use of gloves	16	100,0
Use of protective masks	16	100,0
Goggles	5	31,2
Correct disposal of materials	2	12,5
Hand washing	1	6,2
Cloak	1	6,2
Perception of biological risks, accidents, etc.		
Use of PPE in the care of all patients	9	56,3
Not reported	7	43,7

Source: Prepared by the author.

Regarding the prevention and use of PPE in the care of HIV-seropositive patients, the professionals demonstrated that they were conscious. Nursing professionals are considered the group with the highest risk of piercing and cutting accidents, compared to other health service professionals. Thus, these professionals face many challenges, including exposure to the human immunodeficiency virus (HIV), while providing care. According to the World Health Organization (2018), HIV is among the top ten causes of death worldwide and one of the most essential measures used to control its spread in the healthcare environment is the application of standard precautions.

Exposure can be better controlled by organizational measures that minimize exposure to contaminated body fluids or infected patients. The most important preventive measure is the proper organization of the hospital to avoid contact without proper protection from PPE and, once implemented, the main strategy to reduce physical exposure to highly infectious diseases is through the use of PPE, preventing the skin and mucous membranes from being contaminated (Oliveira et al., 2021).

Professionals were asked to report whether they observed any changes related to PPE in the context of COVID-19 and what risks they were subjected to. The answers are presented in table 4.

Table 4 – Changes observed by nursing technicians in the use of PPE during the COVID-19 pandemic.

Changes observed in the use of PPE during the COVID-19 pandemic	Absolute frequency (n)	Relative frequency (%)
Higher charge for use	7	43,7
Increase in the types of PPE used	6	37,5
Greater guidance on use	5	31,2
Wearing masks more often	4	25,1

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Increased availability of PPE	4	25,1
More reinforced overcoats	2	12,5
Guidelines on dressing and undressing	2	12,5
Improvement in the quality of equipment	1	6,2
He did not notice any changes	1	6,2

Source: Prepared by the author.

It was found that the biggest changes, in the view of the professionals interviewed, are related to a greater demand for the use of PPE and an increase in the types of PPE used in patient care. To improve the safety of nurses in the workplace, especially in the care of patients with HIV and AIDS patients, control is needed that includes training, provision of PPE, and implementation of safe working practices. Safe practices should include correct hand washing, correct use of PPE, management of medical equipment, management of needles and sharp objects, and waste management (Pereira et al., 2015).

The participants in this study felt that the perceived changes were based on safety measures, with guidance focused on the risk of exposure and the correct use and removal of PPE. In institutions, the prioritization of PPE for health professionals has contributed to reducing mortality rates (Humerez, Ohl, Silva, 2020).

When asked to say what came to mind when talking about PPE and pandemics, it was decided to present the answers in a word cloud, as shown in figure 1.

Figure 1 – Word cloud over the most cited words in relation to the professionals' memory of the pandemic.

Source: Prepared by the author

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It was found that the most cited words were masks, pandemic, use of PPE, coronavirus and fear. According to the reports of the interviewees: "Pandemic comes fear". Regarding PPE, "comes the use of protective masks"; and the feeling that "the Covid pandemic is still present in our midst".

Regarding the feeling of fear, reported by almost the entire sample, the fear of being infected by COVID-19 was described by many and, for Pappa et al. (2020), this fear caused anxiety, symptoms of stress, and exhaustion. Many who had contact with COVID-19 in their work environment showed elevated levels of emotional exhaustion. In addition, the authors further report that a higher percentage of work hours spent in close contact with COVID-19 patients was associated with higher levels of depression, anxiety, and burnout.

A considerable percentage of nursing professionals developed symptoms, in particular feelings of sadness, anxiety, depression and stress, and poor quality of life. Certain stressors were the complexity of COVID-19 patients' symptoms, leading them to feel unprepared for the pandemic (Prado et al., 2020).

Concerns about the worsening of pre-existing diseases, mental health conditions, job dissatisfaction, and concerns about contracting the disease were factors associated with moderate to severe emotional distress. Health workers who were diagnosed with COVID-19 reported higher levels of depressive symptoms, anxiety, and burnout (National Health Surveillance Agency, 2020).

FINAL CONSIDERATIONS

By analyzing the perceptions of professionals regarding the incorporation of personal protective equipment in health in the context of pandemics, it was found that, because they work for longer with patients and, therefore, feel more vulnerable to contamination, these professionals have become more informed and aware of the importance of PPE, recognizing them as essential elements to reduce the risk of contamination.

It was found that PPE was made available consistently throughout the pandemic and that participants noticed improvements in the quality of the equipment. However, despite the knowledge, awareness of the importance of the equipment and its permanent use in the care of all patients, the fear of becoming contaminated was and is part of the daily work of all participants in this research.

These findings highlight the importance not only of adequate PPE supply, but also of continuous training and supervision programs that reinforce safe equipment use practices

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and promote a culture of safety in the hospital environment. Investments in training and safer working conditions are essential to ensure the protection of nursing technicians, contributing to a safer and more resilient care environment in the face of future health crises.

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