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Editorial

Cardiovascular risk in the Workplace

EJOHN Editorial Board

Cardiovascular diseases (CVD) are the leading cause of death worldwide. According to the World Health Organization, approximately 18 million people die annually from CVD, representing 32% of all deaths. According to the Ministry of Health's 2021 report, CVD is estimated to account for approximately 30% of all deaths in the country, with around 120,000 annual deaths attributable to these conditions.

The prevalence of cardiovascular risk factors in the work context shows a similar epidemiology to the general population. Kivimäki et al. analyzed data from more than 100,000 workers and found that 30% of them had at least one significant cardiovascular risk factor, such as hypertension, obesity, or diabetes.

Work stress is one of the most significant factors associated with an increased risk of CVD. A meta-analysis by Virtanen et al. identified that chronic stress at work is associated with a 50% increased risk of coronary heart disease. Factors such as workload, lack of control, and workplace conflict are key contributors to this stress.

Physical inactivity is another critical risk factor. A study by Ekelund et al. (2019) found that over 60% of office workers do not meet minimum physical activity recommendations, which has led to an increase in obesity and metabolic diseases. Sedentary work has been associated with a 20-30% increased risk of CVD.

Workplace diet also influences cardiovascular risk factors. Workers often have limited access to healthy food options, which can result in diets high in sugars and saturated

fats. Implementing healthy eating programs in the workplace can significantly reduce cholesterol and blood pressure levels, reducing cardiovascular risk.

Tobacco and alcohol use have a notable impact on cardiovascular health. Smoking workers have a significantly higher risk of coronary heart disease. Excessive alcohol consumption has also been linked to hypertension and arrhythmias, thereby increasing the risk of CVD.

Working conditions such as exposure to noise and chemicals can also affect cardiovascular health. Zha et al. (2022) found that workers exposed to high noise levels have a higher risk of hypertension and heart disease. In addition, night and shift work have been associated with an elevated risk of CVD, likely due to the disruption of circadian rhythms.

Therefore, workplace health programs are essential to addressing CVD. Such programs may include initiatives to promote physical activity, healthy eating, and stress management to significantly reduce cardiovascular risk factors among employees.

Periodic surveillance of workers' health through specific programs is a crucial activity to identify workers at risk and activate preventive measures that reduce the risk and prevent cardiovascular disease.

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Original Article

Study of cardiovascular risk in university workers

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ABSTRACT

Objetive: to analyze the differential cardiovascular risk profile between university professors and administration and service workers.

Methods: A retrospective observational study of a sample of 1,245 workers from a public university in Madrid. Sociodemographic variables (sex, age), physiological variables (BMI, systolic and diastolic blood pressure, glucose, total cholesterol, HDL and LDL) and lifestyle variables (physical activity, alcohol consumption and smoking) were analyzed. The Mann-Whitney U test and the Chi-Square test were used.

Results: 66.7% (n = 830) were university professors compared to 33.3% (n = 415) of administration and service workers. In this last group there was a higher proportion of women (62.9% vs 52.2%, p<0.001), a higher median age (53 [24-66] vs 45 [23-73], p<0.001). Regarding the cardiovascular risk variables, the administration and service workers group presented a higher percentage of smokers (21.7% vs 11.3%, p<0.001), a lower proportion of daily drinkers (7.0% vs 8.5%, p< 0.003), higher BMI (25 vs 24.1 p<0.001), higher LDL cholesterol levels (116 vs 111 p<0.03) and total cholesterol (194.2 vs 188 p<0.004). This group also presented higher levels of systolic (121 vs 118 p<0.001) and diastolic blood pressure (74 vs 71 p<0.001).). No differences were found in the rest of the variables.

Conclusions: Lipid levels, blood pressure and smoking are significantly higher in PAS. It is necessary to study the possible influence of working conditions on the cardiovascular risk of these workers.

Keywords: Administration and service workers; Heart Disease Risk Factors; Occupational Health, university professors.

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Introduction

This work represents an approach to the knowledge of cardiovascular risk in university workers and its relationship with their job. The main tasks of university professors are teaching and research, while administration and service workers are responsible for administrative management, provision of services or support for teaching and research, more sedentary tasks. More sedentary jobs are associated with an increase in cardiovascular risk factors. This consequence is independent of sociodemographic factors, diet, body mass index (BMI) and physical activity since it would not be regulated by greater caloric intake, but by lower energy expenditure (1, 2, 3).

Cardiovascular diseases are a set of disorders that affect the heart and blood vessels. At the beginning of the 21st century, they became the main cause of mortality and morbidity and mortality worldwide (4). According to the latest statistics published by the National Institute of Statistics of Spain, in 2021, 26.4% of deaths were due to diseases of the circulatory system (5).

Atherosclerotic cardiovascular disease occurs as atheroma plaques accumulate, formed mainly by fat on the walls of the arteries. This can progressively evolve and cause more serious cardiovascular diseases such as heart disease, peripheral artery disease and stroke.

According to the 2021 European Society of Cardiology (ESC) Guideline on the prevention of cardiovascular disease in clinical practice, the rate of atherosclerotic disease is decreasing considerably in Europe, although it still causes high rates of morbidity and mortality. Among the main risk factors are cholesterol along with low-density lipoproteins (LDL-C), high blood pressure, obesity, diabetes mellitus and smoking. This guide points out other factors such as

psychosocial stress, ethnicity, frailty, coronary artery calcium, family history, socioeconomic factors, environmental pollution and body composition. Among the non-modifiable factors would be age and gender (6).

In 2022, Brotons et al., in their research, developed a model called IBERLIFERISK2 to calculate cardiovascular risk in the Spanish working population from 18 to 75 years of age. The risk predictors included in this model are: occupation, smoking, alcohol consumption, body mass index, family history of cardiovascular disease and diabetes, kidney disease, antihypertensive and lipid-lowering treatments, blood pressure levels, and cholesterol (7).

The study of risk factors and primary prevention of these diseases is essential to reduce the morbidity and mortality of these diseases. The main interventions are recommendations on healthy lifestyles in terms of nutrition, eating a balanced diet, rich in fruits and vegetables and healthy fats, eliminating alcohol consumption, sugars and processed foods, quit smoking and avoid being overweight and sedentary, leading an active lifestyle (8, 9).

In relation to university workers, regarding the risk factors previously mentioned with respect to the general population, the most prevalent would be due to their working conditions: sedentary lifestyles, work stress and unbalanced food available in university canteens and cafeterias (10). In 2016, a study carried out at the University of Alicante highlighted the need to consume olive oil and exercise as protectors of cardiovascular risk, considering that the work environment of university workers favors healthy lifestyle habits (11). In 2020, López Gónzalez et al., carried out a study with 4,738 professors from different universities in Spain, which concluded that cardiovascular risk in university professors is

mainly related to lack of physical activity and an unbalanced diet, which increases the risk of overweight and obesity (1).

The aim of this study was to determine the levels of cardiovascular risk factors in university workers.

Material and Methods

Design, population and sample

Retrospective observational study of a sample of 1245 workers from a public university in Madrid from January 2023 to December 2023. Data collection was carried out from the initial and periodic health examinations carried out in the Prevention Service of the Complutense University in 2023. The sample is classified into two groups, university professors and administration and service workers.

Variables and Statistical analysis

The variables collected were the following

- Sociodemographic variables:
  - ·sex
  - ·age
- Physiological variables:
  - ·Body Mass Index (BMI)
  - ·systolic and diastolic blood pressure
  - ·glucose
  - · total cholesterol, HDL and LDL cholesterol
- Lifestyle variables:
  - ·physical activity (no physical activity, one day a week, two days a week, three days a week, four days a week, five days a week, six days a week, seven days a week)
  - · alcohol consumption (non-alcohol consumption, daily, weekends, sporadic consumption, former drinker)
  - · smoking habit (non smoker, smoker, former smoker)

Ethical considerations

The development of this study was authorized by the Research Ethics Committee of the Complutense University (Reference: CE_20230713_14_SAL.). The data were processed in accordance with Regulation (EU) 2016/679 of the European Parliament and of the Council, of April 27, 2016, regarding the protection of natural persons with regard to the processing of personal data and free circulation of this data. Informed consent is not required as it is a retrospective study. The data has been collected anonymously without obtaining any data that would identify any worker.

Statistical analysis

Descriptive statistics were performed on the variables, with measures of central tendency and dispersion for quantitative variables, and frequency distribution for qualitative variables. The Mann-Whitney U test and the Chi-Square test were used. The level of statistical significance in the different analyses wasset at $p<0.05$ and the confidence level at 95%. The data will be analyzed using SPSS and Jamovi programs.

Results

Descriptive analysis

A total of 1,245 subjects were included in the study, 66.7% (n = 830) were university professors compared to 33.3% (n = 415) of administration and service workers. In the group of administration and service workers there was a greater proportion of women (62.9%) compared to 52.2% of university professors. The median age is higher in the group of administration and service workers. (53 [24-66] vs 45 [23-73], $p<0.001$).

Regarding the cardiovascular risk variables, the group of administration and service workers had a higher percentage of smokers (21.7% vs 11.3%, $p<0.001$), a higher BMI (25 [16.9-42.8] vs 24.1 [16.7-46.7], $p<0.001$), higher levels of LDL cholesterol (116 [33-232] vs 111 [24-266], $p<0.03$) and total cholesterol (194.2 [89] -334] vs 188 [105-372], $p<0.004$). In the group of

university professors, daily alcohol consumption is higher (8.5% vs 7.0%, p< 0.003). Table 1 describes the average value obtained for each variable according to lifestyle.

Table 1. Lyfestyles variables

		2023 (N=1245)				
		Universtiy Professors (n=830)		Administration and Service Workers (n=415)		p Value
		n	%	n	%	
Sex	Men	397	**47,8%**	154	37,1%	**<0,001**
	Women	433	52,2%	261	**62,9%**	
Physical activity (University Professors n=821, Administration and Service workers n=413)	No physical activity	191	23,3%	106	25,7%	0,234
	One day a week	88	10,7%	22	5,3%	
	Two days a week	165	20,1%	73	17,7%	
	Three days a week	141	17,2%	80	19,4%	
	Four days a week	89	10,8%	43	10,4%	
	Five days a week	65	7,9%	41	9,9%	
	Six days a week	28	3,4%	13	3,1%	
	Seven days a week	54	6,6%	35	8,5%	
Alcohol consumption (Men n=538, Women n=674)	No alcohol consumption	203	25,1%	135	**33,6%**	**0,003**
	Daily	69	**8,5%**	28	7,0%	
	Weekends	116	**14,3%**	35	8,7%	
	Sporadic consumption	421	**52,0%**	203	50,5%	
	Former drinker	1	0,1%	1	0,2%	
Smoking habit (Men n=550, Women n=693)	Non smoker	608	**73,30%**	241	58,20%	**<0,001**
	Smoker	94	11,30%	90	**21,70%**	
	Former smoker	127	15,30%	83	**20,00%**	

The administration and service workers group also presented higher levels of systolic (121 [87-193] vs 118 [79-174], p<0.001) and diastolic blood pressure (74 [49-117] vs 71 [48-113], p<0.001).). No differences were found in the rest of the variables. Table 2 shows the descriptive analysis carried out on the physiological variables.

Table 2. Physiological variables

	2023				
	University Professors (n=830)		Administration and Service workers (n=415)		p Value
	Median	Max-Min	Median	Max-Min	
Age	45	23-73	53	24-66	**<0,001**
Weight (Univ Prof=829, Adm.ServWorkers=415)	70	41-142	70	41-124	0,438
Height (Univ Prof=829, Adm.ServWorkers=415)	169	147-198	166	147-197	<0,001
SBP (Univ Prof=828, Adm.ServWorkers=414)	118	79-174	121	87-193	**<0,001**
DBP (Univ Prof=828, Adm.ServWorkers=414)	71	48-113	74	49-117	**<0,001**
BMI (Univ Prof=829, Adm.ServWorkers=415)	24,1	16,7-46,7	25	16,9-42,8	**<0,001**
Glucose	85	62-141	85	61-234	0,114
Cholesterol	188	105-372	194,2	89-334	**0,004**
LDL cholesterol	111	24-266	116	33-232	**0,031**
HDL cholesterol	59	33-114	60	34-108	0,362

SBP: systolic blood pressure; DBP: diastolic blood pressure; BMI: Body Mass Index

Discussion

The results of this study have found that cholesterol, blood pressure and smoking levels are significantly higher in the group of administration and service workers. In relation to physical activity, in the group of teachers (23.3%) does not carry out physical activity and in the group of non-teaching staff (25.7%), although there are no statistically significant differences between both groups, it is worth highlighting the importance of lack of physical activity as a cardiovascular risk (3,6,12,).

According to a descriptive cross-sectional study, carried out in Spain, whose objective was to analyze the risk factors in workers at the University of Alicante, with a sample of 124 people

aged between 25 and 68 years, it was found that the majority of workers carried out physical activity. They usually did not smoke and were of normal weight, except for men over 44 years of age (11). In our study the BMI is not higher in any of the two groups of 25 and the highest percentage in both groups are non-smokers.

In another cross-sectional study carried out in 2023 at the University of Alicante, the following cardiovascular risk factors were evaluated: overweight/obesity, high blood pressure, hypercholesterolemia, type 2 diabetes mellitus, sedentary lifestyle and smoking in teaching and research workers, administration and service workers. and students, adding a total of 98 people. Differences were found in the prevalence of risk factors for cardiovascular disease among the studied population, as occurred in our study (13).

There are similar studies on the prevalence of cardiovascular risk at an international level, a study carried out at the University of Colombia in 2021 focused on administrative staff, whose most striking results are that 47.46% did not perform physical activity (14). Another study from Ecuador focused on health sciences university professors, in which the average total cholesterol exceeded normal levels (15).

In Spain, Martínez-Sánchez and Balaguer described in 2016 a healthy university model that would be implemented at the University of Cataluña (16) with the objective of establishing interventions and health promotion programs together with the occupational risk prevention service of university.

It is important to consider the sedentary lifestyle in university workers and inadequate diets. As well as the continuous work demands on teaching and research workers. Based on an adequate identification of risk factors, the need to implement health promotion and prevention strategies to minimize non-communicable diseases would be a priority.

LIMITATIONS

The main limitation of this study is the absence of variables such as the type of contract, salary and purchasing power and diet, which suggests that in the future similar studies should be carried out with these variables to specifically determine cardiovascular risk and be able to implement adequate prevention and health promotion measures.

CONCLUSIONS

From this study the following conclusions can be drawn: Lipid levels, blood pressure and smoking are significantly higher in administration and services workers. It is necessary to study the possible influence of working conditions on the cardiovascular risk of these workers.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Original Article

Conflict Situations in a Hospital in the Community of Madrid, Spain: Impact of Training in Conflict Management and Intervention Strategies

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ABSTRACT

Objetive: To evaluate the impact of training in "Management of Conflict Situations" on SERMAS workers in our hospital, analysing causes, patterns and areas most exposed to conflicts, and identifying the changes observed after the training.
Methods: We performed a retrospective analysis of the years 2021, 2022 and 2023 by collecting data on conflict situations using the REMAC form (Madrid Register of Aggressions and Conflicts).
Results: 103 conflict situations were recorded, highlighting verbal aggressions and threats, mainly directed at women. Internal Medicine and the Emergency Department accounted for 29.13% and 16.50%, respectively. 34.95% were related to dissatisfaction with hospital care received, and there was a 2.5-fold increase since March 2022.
Conclusions: We attribute the increase to growing awareness following the training provided in March 2022. We further propose, with the results obtained, a risk map focused on critical areas to guide formative and preventive actions in response to the findings.

Keywords: Aggression; Health care personnel; Violence; Workplace

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Introduction

Violence in the health sector, a global problem according to the ILO (International Labor Organization) threatens the health and well-being of workers and the efficiency of health systems (1).

Workplace violence has grown globally, reaching alarming levels in countries such as Canada and the United Kingdom. In the healthcare sector, this problem has recently become particularly relevant. Approximately 25% of cases of workplace violence occur in this sector, and nearly 50% of its professionals have experienced some type of violent incident in their working career (2).

The ILO differentiates between internal and external workplace violence. Internal violence occurs among workers, including middle managers and managers. External violence occurs between workers and legitimate third parties in the workplace, such as customers or patients, which is what we will consider in this article.

The WHO, the ILO and other organizations published guidelines against workplace violence in healthcare institutions in 2002. In the EU (European Union) the 1957 Treaty of Rome called for improving working conditions and protecting the health of European workers. In 2012, the Spanish Senate asked the government to strengthen the protection of healthcare professionals. The Ministry of the Interior created in 2017 an instruction to prevent assaults on healthcare workers, with a network of interlocutors from the National Police and Civil Guard for its implementation (3).

A working group was created to develop an information system on assaults on NHS professionals. This group established a minimum data set on assaults and began collecting 2017 and 2018 data from the Autonomous Communities and INGESA (National Institute of Health Management) of Ceuta and Melilla. Annual reports on assaults were published, covering 2017-2018, 2019-2020, and 2021, available on the Ministry's website (4).

In 2020, the Ministry of the Interior added a function in the Alertcops App to protect healthcare professionals. It can be downloaded via mobile application and is also accessible on the website of the Ministry of Health (5).

Some Autonomous Communities have implemented, developed or updated regulations, action protocols, guides, campaigns and other measures to deal with assaults within the

National Health System. In the Community of Madrid, in 2008, the "Central Registry of Aggressions against Workers by Citizens (REMAC)" was created by the Ministry of Health. In 2009, instructions were issued to set up this centralized registry of assaults on workers (6). The centralized registry is vital for monitoring and adapting protocols for assaults on healthcare workers. However, many incidents are not reported, making it difficult to have a complete picture of the magnitude of the aggressions (7).

In the SERMAS in 2019, the Protocol for Prevention and Action against Violence in the Workplace in healthcare institutions of the Madrid Health Service was approved. In addition, security measures such as presence and volumetric detectors, controls, as well as alarm and emergency buttons were installed to prevent these incidents (8).

In line with the recommendations made by the SNS for the prevention of occupational violence through training and safety protocols (3), in March 2022 the hospital's SPRL offered training in 'Management of Conflict Situations' to raise awareness among staff on how to handle tensions and aggressions, and the importance of reporting incidents, seeking a safe and collaborative work environment.

Objectives

General Objective:

To assess the impact of the 'Managing Conflict Situations' training delivered in 2022 at the hospital to prevent conflicts with patients and citizens.

Specific Objectives:

- To find out the underlying causes of conflict situations in the hospital.
- To identify patterns of conflict before and after the training.
- To analyse any changes in the incidence and management of conflict after training.
- Determine critical areas to target preventive actions.
- Present the results and conclusions of the study.

Methods

Study Design. Participants

A retrospective descriptive study was conducted using data extracted from the REMAC form between 2021 and 2023. In addition, training in 'Management of Conflict Situations' was implemented in March 2022, using this course as an intervention to evaluate its impact on emotional management, safety and external conflict management in SERMAS hospital staff.

The participants in the study were SERMAS hospital workers who voluntarily enrolled through the hospital's health training APP to attend the 'Managing Conflict Situations' course (9).

Intervention

The course 'Management of Conflict Situations' lasted 20 hours and was given in the afternoon shift. It was attended by 30 workers. It focused on imparting emotional management skills, addressing topics such as effective communication, non-verbal language, empathy, active listening and techniques for managing anxiety and anger. In addition, creative strategies for conflict resolution and recording conflict situations were included. The SPRL of the hospital delivered the course together with psychologists, according to the training programme established by the hospital's training unit.

Variables

The data were collected from the REMAC register between 2021-2023, before and after the intervention in March 2022: age, sex, causes of the incident, type of aggressor, type of aggression, physical injuries, request for private security, psychological assistance, injury report, filing of a complaint and need for medical leave.

Data analysis

Microsoft Excel pivot tables were used to analyse the data collected before and after the educational intervention. The data were presented in tables and graphs.

A bibliographic review of the most updated literature in the last 5 years in English and Spanish on occupational violence in healthcare personnel was carried out, using the descriptors Mesh: 'workplace violence' 'aggression' 'healthcare personnel'. The following

databases were searched: SCIELO, PUBMED and ENFISPO. Of the 63 documents found, the titles and abstracts of the most relevant articles related to the subject of the study were read and finally 6 original articles were included (4 quantitative studies and 2 qualitative studies).

Results

In the period analysed (2021-2023), 103 conflict situations were recorded; 29 in 2021, 21 in 2022 and 53 in 2023, of which 29 occurred before the training given in March 2022 and 79 after this training (Figure 1).

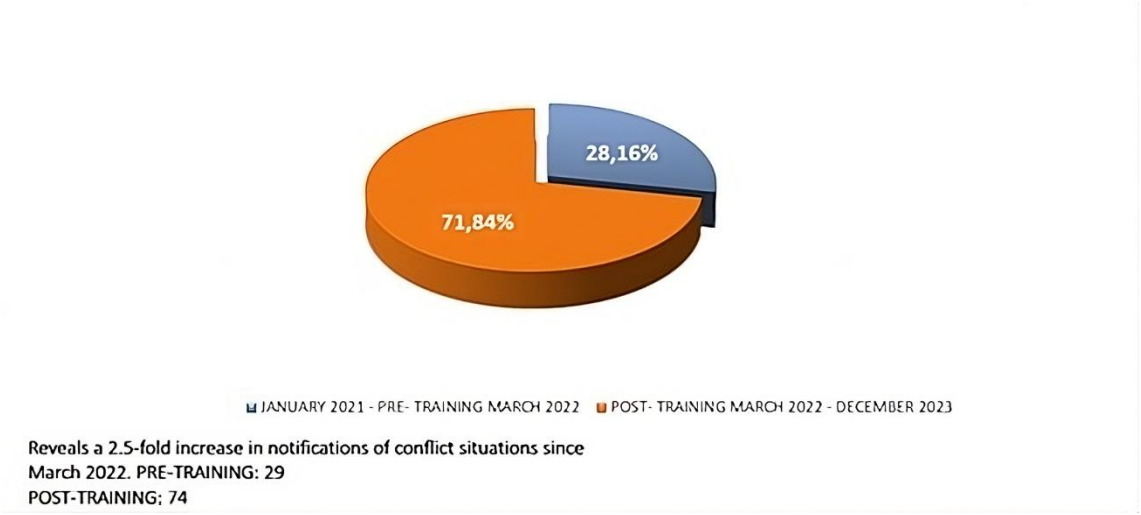

Figure 1. Time distribution of reported conflict situations between the period 2021 and 2023

When analysed by area, the Emergency, Psychiatry, Surgical Hospitalisation and Neurology Service units have been identified as the most affected, together accounting for 42.72% of the incidents reported (Figure 2).

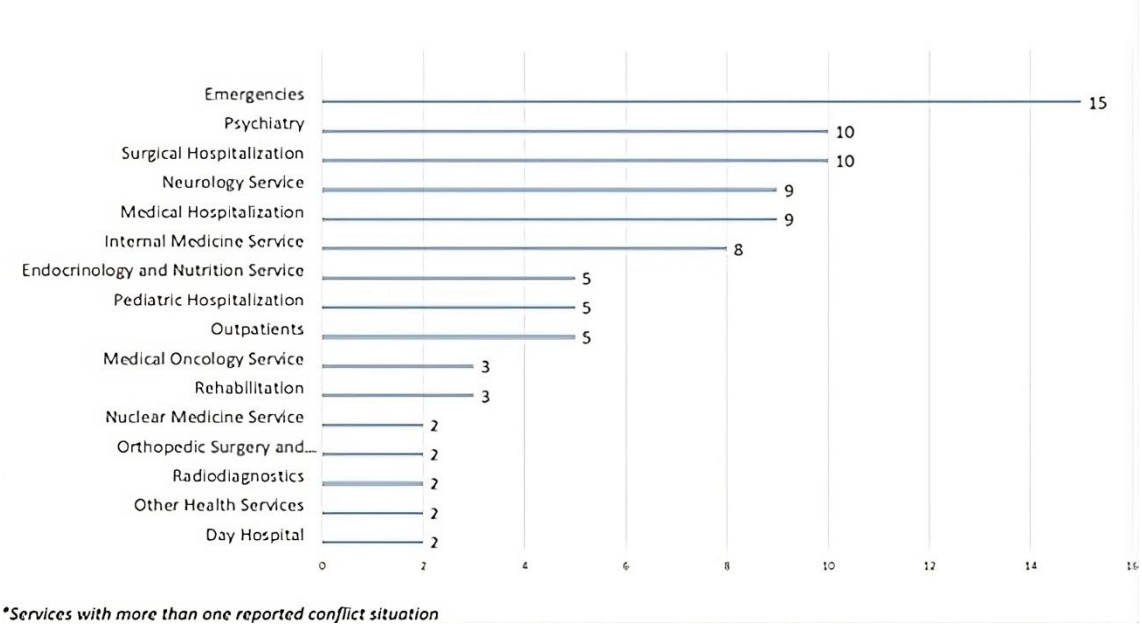

Figure 2. Conflict situations reported by service

In terms of job categories, it was observed that Nursing was the most likely to report conflicts, accounting for 51.46% of the reports, followed by Nursing Assistants with 22.33%. Together, these two categories accounted for 73.79% of the cases (Figure 3).

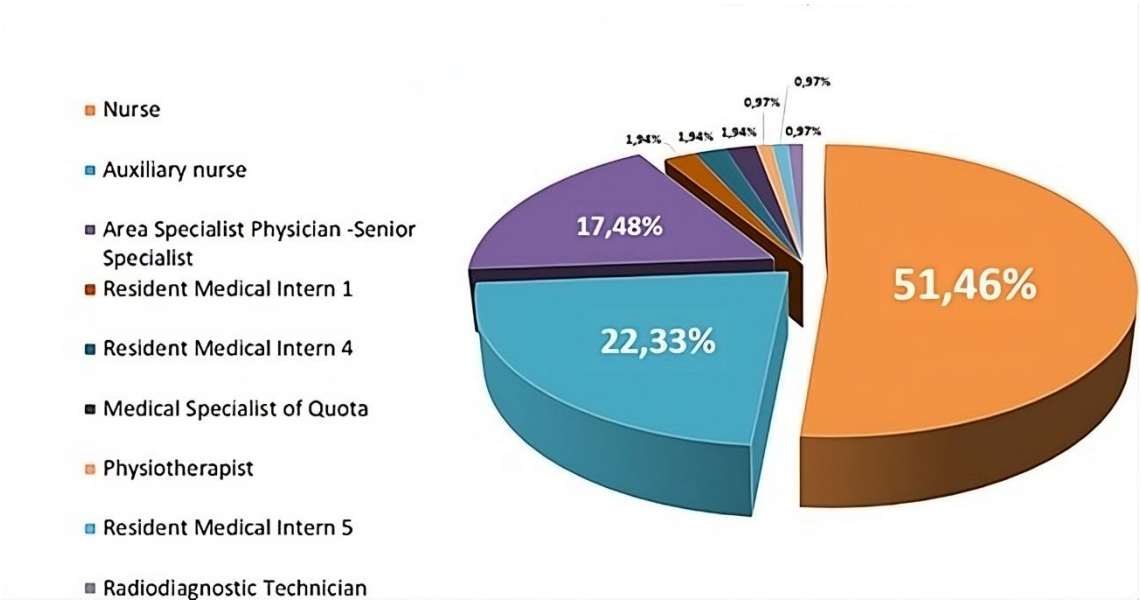

Figure 3. Conflict situations reported by category

Of the workers who reported incidents, 5 required psychological assistance, 2 in 2022 and 3 in 2023. All of them after training.

In relation to the profile of the aggressor, 55 were men, 46 were women and 2 were of indeterminate sex (Table 1).

Private security personnel intervened on 25 occasions, with 16 interventions prior to the training and 9 after.

As for verbal assaults, 77 cases were recorded, distributed as follows: 22 in 2021, 16 in 2022 and 39 in 2023. Of these, 22 occurred before the training and 55 after.

16 physical assaults have been declared: 1 in 2021, 3 in 2022 and 12 in 2023. Of these 14 were after the date of the training.

Table.1 Results with respect to Aggressors

			Age of aggressor							
Aggressor gender	**Aggressor type**	**Causes of the Incident**	**from 19 to 30 years old**	**from 31 to 40 years old**	**from 41 to 50 years old**	**from 51 to 60 years old**	**Over 60 years old**	**Under 18 years of age**	**No record**	**Overall total**
Male	Family or companion of the patient	Delayed attendance			1	1		1		3
		Dissatisfaction with the treatment received				2		1		3
		Dissatisfaction with attendance			1	2	1			4
		Disagreement with clinical information							2	2
		Disagreement with non-clinical information		1						1
		Disagreement with the prescription		1						1
		Other causes				1				1
	Others	Other causes				1	1		1	3
	Hospitalized patient	Delayed attendance		1						1
		Dissatisfaction with the treatment received						2		2
		Dissatisfaction with attendance			1	1	5	1		8
		Disagreement with refusal of testing				1	1			2
		Disagreement with the prescription			1					1
		Other causes					3	3		6
	Non-hospitalized patient	Delayed attendance	1							1
		Dissatisfaction with the treatment received	1				1			2
		Dissatisfaction with attendance			2	1	5	1		9
		Disagreement with clinical information				1				1
		Disagreement with the prescription		1		1				2
		Other causes			1		1			2
Total Male			**2**	**4**	**7**	**12**	**18**	**9**	**3**	**55**
Female	Family or companion of the patient	Delayed attendance			1		1			2
		Dissatisfaction with the treatment received			1		1	1		3
		Dissatisfaction with attendance	1	1	1	2		4	1	10
		Disagreement with clinical information			1					1
		Disagreement with non-clinical information	2		4					6
		Other causes		1			1			2
	Others	Dissatisfaction with the treatment received						1		1
		Dissatisfaction with attendance				1		1		2
		Other causes				1			1	2
	Hospitalized patient	Dissatisfaction with attendance	1							1
		Disagreement with clinical information				1				1
		Disagreement with the denial of the petition on pharmaceuticals				1				1
		Disagreement with the prescription					1			1
		Other causes	1					3		4
	Non-hospitalized patient	Delayed attendance				1				1
		Dissatisfaction with attendance				1				1
		Disagreement with clinical information				1				1
		Disagreement with the prescription				1	1			2
		Other causes		1			1			2
		Patient arriving late				1				1
Total Female			**5**	**3**	**9**	**11**	**6**	**10**	**2**	**46**
Undetermined	Family or companion of the patient	Delayed attendance							1	1
		Dissatisfaction with attendance			1					1
Total Undetermined					**1**				**1**	**2**
Overall total			**7**	**7**	**17**	**23**	**24**	**19**	**6**	**103**

In 6.8% of cases an injury report has been filed out of a total of 88 workers who have reported injuries, all after the educational intervention.

One complaint has been filed in 2023, although no information on subsequent follow-up has been found.

In addition, one worker required medical leave in May 2023 due to psychological damage resulting from aggression and threats.

CONCLUSIONS

Our study supports the effectiveness of the 'Managing Conflict Situations' training delivered in 2022 at the hospital in preventing conflict with patients and citizens, by identifying an increase in the reporting of violent incidents compared to the years prior to the educational intervention (current figure 1 but by quarterly intervals). This finding is consistent with previous research that identified 17 studies focused on the prevention and management of workplace violence. These studies found that training in workshop format was effective in improving professionals' perceived ability to cope with situations that lead to violence. These results suggest that strategies to mitigate violent episodes can be useful for both professionals and health managers in creating safer workplaces (10) (Figure 2).

Our results suggest risk mapping focused on critical areas.

By Services:

✓ Emergency

✓ Psychiatry

✓ Surgical Hospitalisation

✓ Neurology Service

By Category:

Coinciding with our results, several studies indicate that nurses are the occupational category most affected by assaults, with a higher number of incidents reported compared to other professionals. Therefore, the Occupational Risk Prevention Service (SPRL) should investigate solutions and adopt measures to reduce violence against nursing staff (11).

About the profile of the aggressors (Table 1), it can be seen that in most cases the

aggressors are men, but the assaulted professionals are mostly women. Given that the aggressions that occur tend to follow the same pattern, we could include gender awareness programmes, training in communication skills and conflict resolution, as well as institutional policies against gender-based violence.

In the incidents recorded, physical aggression represents a smaller proportion than other forms of aggressive behaviour, with verbal aggressions and threats being more frequent in this specific context.

Although most of the incidents are not serious, indicating a high propensity to report, the need for a thorough follow-up of serious cases is underlined. We consider that further studies are needed in relation to the psychosocial impact, as indicated in other articles (12).

It is essential to promote a policy of zero tolerance for assaults on healthcare workers, supported by campaigns aimed at the general population to raise awareness of the importance of respectful and collaborative treatment in healthcare settings (13).

Our article highlights that the emergency department is one of the areas most affected by workplace violence, supporting the need for particular attention in this setting. Furthermore, as other studies suggest, it is crucial to investigate the factors that influence different types of workplace violence, to identify the emergency department professions most at risk and to develop effective interventions to prevent violence in this setting (14).

We believe that we must continue to provide training in the areas and personnel most at risk since, as some studies indicate, it is urgent to provide specific training in the prevention of workplace violence for healthcare professionals, not only by imparting knowledge about the procedures to follow in the event of incidents, but also by insisting on the importance of reporting and denouncing these aggressions. It is essential to change the perception that assaults are simply an unavoidable aspect of working in the health sector and to promote a culture of safety and respect in the workplace (15).

We must consider that bureaucracy and administrative procedures are tedious (16) and that we can confirm in our study with only one reported case of complaint in 2023. We urge to improve specificity in REMAC records to optimise subsequent data mining.

We consider it essential to integrate the findings of this study into future training initiatives to raise awareness among workers on the importance of dealing with conflict situations. In

addition, we propose to involve middle management in the management of these situations, thus facilitating a more effective and collaborative approach to dealing with conflict in the workplace. It is essential to promote a zero-tolerance policy by engaging both workers, institutions and citizens to ensure a safe and respectful working environment for all (17).

Ultimately, eradicating violence in the workplace not only represents a justice imperative, but also strengthens the will of medical professionals and ensures greater safety for patients, as well as improved clinical quality contributing to better health for all (13).

Conflict of interest: The author declares that she has no conflict of interest in relation to this article.

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Original Article

Previous knowledge about the specialty of Occupational Nursing in undergraduate nursing students at the University of Cadiz (Spain)

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ABSTRACT

Objetive: To explore knowledge about the specialties, particularly in relation to occupational nursing and occupational health concepts.
Methods: Cross-sectional study in October 2023 in third-year nursing students in Algeciras (Cádiz). An ad hoc pre-test post-test questionnaire was administered. For quantitative variables, median and minimum and maximum values were calculated due to non-normality of the sample. For qualitative variables, frequencies and percentages were calculated. Chi^2 test and Fisher's exact test were used to compare pre- and post-test variables, considering a statistical significance level of $p<0.05$.
Results: The prevalence of the female sex (92.1%), the majority of patients were from Cadiz (28.9%) followed by Malaga (23.7%). There was a high level of knowledge about the duration of the specialty (89.5%) and occupational hazards (89.5%). Initial disinterest in doing an internship in an SPRL decreased from 39.5% to 25.8%, although the difference was not significant. After receiving information, 10.5% of those who would do the specialty went to 48.4% ($p<0.001$).
Conclusions: The data reveal a lack of knowledge about specialties. Many would consider doing internships in an SPRL with additional information. This deficit needs to be addressed in undergraduate training so that students can make an equal choice of specialty, which will result in quality nursing care.

Keywords: nursing students; Occupational health nursing; Specialties, Nursing

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Introduction

Nursing, as a discipline of care in the field of health care, has undergone significant development in terms of specialization and professional roles as the complexity of health care has increased, as have the specific demands of various specialties within nursing. In particular, this expansion has intensified in recent decades and specifically in Spain since the publication of the Royal Decree on nursing specialties in 2005 (1).

Despite this evolution, there is still a perceptible gap in the understanding and awareness of the different specialties in society, in the organization of the current healthcare system, and also among undergraduate nursing students (2). Today's nursing students are immersed in a dynamic and changing environment, where making decisions about specialty choice becomes a crucial factor in their career development. Despite this, it is clear that many students may lack a comprehensive understanding of the various specialties available and thus face difficulties in making informed decisions about their future careers (2,3).

Consequently, addressing the existing barriers that contribute to this lack of awareness, such as poor undergraduate orientation and lack of systematized information about specialization opportunities becomes necessary. In addition to examining the implications of this lack of awareness in terms of missed opportunities for students' personal and professional growth, as well as for the improvement of the overall quality of healthcare (4).

Through this research we seek to provide a comprehensive view of the importance of awareness of nursing specialties during undergraduate education with a focus on occupational nursing, with the intention of fostering more informed and strategic decision making by students, which will ultimately contribute to the strengthening and enrichment of the nursing landscape today.

Therefore, this study aims to explore the degree of knowledge about nursing specialties in undergraduate nursing students and specifically about the specialty of occupational nursing, as well as about some occupational health concepts.

Methods

A cross-sectional study was conducted in October 2023 on third-year students of the nursing faculty of Algeciras (Cadiz) during an introductory seminar on occupational nursing to analyze the degree of knowledge about the specialty after authorization from the center and following the requirements of the Declaration of Helsinki.

The data collected were treated according to the provisions of the General Data Protection Regulation of the European Union (GDPR) and the Organic Law 3/2018, of December 5, on the Protection of Personal Data and guarantee of digital rights (LOPDGDD).

An *ad hoc* questionnaire was administered and completed online by the students before and at the end of the seminar.

Before starting the seminar, the sociodemographic variables age, sex and origin were collected, as well as the variables related to knowledge of the specialty through the questions:

1. Do you know how many nursing specialties exist? (Categories 1 to 10 and don't know)
2. Do you know how many years the specialty lasts? (Categories 1 to 4 and I don't know)
3. Do you have an idea, even approximate, of the number of positions that are offered in any specialty? (Open answer)
4. Do you know if the residency is paid? (Categories Yes/No)
5. Do you know of any risk, other than getting pricked by a sharp, that affects nursing? (Categories Yes/No)
6. Can you tell a nurse who has had an accident at work what to do? (Categories Yes/No)
7. Can you mention any preventive specialty other than occupational medicine/nursing? (Open answer)
8. Can you say if it is compulsory for companies to have their own occupational health service? (Categories Yes/No)

Finally, they were asked before and after the seminar if they would consider doing a residency in occupational nursing (Categories Yes, No, I don't know) and if they

considered it interesting to do an internship in an occupational risk prevention service (Categories Yes/No).

Statistical analysis

For quantitative variables, median and minimum and maximum values were calculated due to sample non-normality. For qualitative variables, frequencies and percentages were calculated.

In the comparison of the pre-test and post-test variables, the Chi^2 test and Fisher's exact test were used, considering a statistical significance level of $p<0.05$. SPSS software version 26 (IBM Corp, 2019) was used.

Results

In the sociodemographic variables, female sex (92.1%) and origin from Cadiz (28.9%) and Malaga (23.7%) stand out.

Table 1. Demographics characteristics (n=38)

		Mean ± SD, n (%)
Age (years)		21.5 (19-48)
Sex	Man	3 (7.9%)
	Woman	35 (92.1%)
From	Cadiz	11 (28.9%)
	Cordoba	6 (15.8%)
	Granada	2 (5.3%)
	Huelva	1 (2.6%)
	Huesca	1 (2.6%)
	Jaén	1 (2.6%)
	Madrid	1 (2.6%)
	Malaga	9 (23.7%)
	Seville	6 (15.8%)

Table 2. Knowledge of the specialty (n=38)

		Mean ± SD, n (%)
Number of specialties	Five	7 (18.4%)
	Six	12 (31.6%)
	Seven	13 (34.2%)
	Ten	2 (5.3%)
	Do not know	4 (10.5%)
Years of specialization	One	2 (5.3%)
	Two	34 (89.5%)
	Four	2 (5.3%)
Number of places offered		98 (1-1000)
Remuneration of the residence	Yes	24 (63.2%)
	No	14 (36.8%)
Risk other than punctures	Yed	34 (89.5%)
	No	4 (10.5%)
Accident recommendation	Yes	24 (63.2%)
	No	14 (36.8%)
Preventive Specialty	Nursing Family and community	5 (13.2%)
	Case Manager	1 (2.6%)
	Research	1 (2.6%)
	Midwife	1 (2.6%)
	Do not know	30 (78.9%)
Own SP Mandatory	Yes	31 (81.6%)
	No	7 (18.4%)

Table 2 shows the results of the questions on knowledge of the specialty. Of note are the values of 89.5% on the duration of the specialty, 89.5% on whether they know of any risk other than needlestick injuries and 81.6% who said yes to the question on whether it was obligatory for companies to have their own prevention service.

In the pre- and post-test comparison to analyze whether, after the information received, they would do the specialty, there was an increase in the number of students who changed their opinion (10.5% to 48.4%, p<0.001). In the question on whether they thought it would be interesting to do an internship in an SPRL, no significance was reached, although the percentage of those who did not think it would be interesting a priori went from 39.5% to 25.8%.

Table 3. Comparative pre-test post-test on interest in SPRL internships and occupational nursing residency. (n=69)

		Pre-test (n=38)	Post-test (n=31)	p Value
Work in a nursing residency	No	14 (36.8%)	10 (32.3%)	<0.001
	Do not know	20 (52.6%)	6 (19.4%)	
	Yes	4 (10.5%)	15 (48.4%)	
Interesting to do an internship in SPRL	No	15 (39.5%)	8 (25.8%)	0.23
	Yes	23 (60.5%)	23 (74.2%)	

Discussion

The aim of this study was to explore the degree of knowledge about nursing specialties and especially about the specialty of occupational nursing among undergraduate nursing students.

The results showed a lack of knowledge about the specialties and an increased interest in pursuing the occupational nursing specialty after receiving information about it.

Lack of knowledge about nursing specialties is a significant concern that affects both students and the overall quality of health care (5). Student and faculty perceptions of the lack of adequate guidance regarding various nursing specialties hinders informed future career decisions (6). This lack of expertise can negatively impact students' professional development and the quality of care they provide to individuals, families and communities (7).

If a lack of knowledge about nursing specialties is evident, the lack of knowledge about preventive specialties is absolute. A total of 78.9% of those surveyed answered that they did not know any specialty other than occupational medicine/nursing and the rest could not identify any specialty. Although the preventive specialties are more related to the business world, it is important to value the fact that students should also receive training in occupational risk prevention as future workers, an importance recognized by the students themselves (8,9).

The fact that the percentage of those considering a residency in occupational nursing increased from 10.5% to 48.4% ($p<0.001$) after the presentation of the specialty highlights the need to increase undergraduate training in this area. In addition, this fact may increase motivation and positively influence academic results (10) and in the recognition of the research carried out by specialists, facilitating its application by the nursing community in the daily care of people (11).

The fact that the 39.5% of students who did not consider it interesting to do an internship in a prevention service dropped to 25.8% is in line with the increase in interest in doing a residency (although this did not reach statistical significance). These internships could be decisive in deciding whether the student finally decides to opt for a position for which undergraduate training is necessary.

Limitations of the study

This study has several limitations. In addition to the lack of causality typical of cross-sectional descriptive studies, there is the low sample size, the use of an unvalidated questionnaire and a possible informant bias that could have influenced the students' responses. As advantages, the questionnaire is very quick and easy to apply and allows us to obtain an overview of the degree of knowledge on the subject.

Conclusions

In conclusion, there is a lack of knowledge about the specialties and an increased interest in pursuing the occupational nursing specialty after receiving information about it. These findings underscore the importance of addressing the lack of knowledge about nursing specialties in the undergraduate education curriculum. Inclusion of related education about the various nursing specialties in faculties may help students make more informed decisions about their future careers, which in turn could contribute to improving the overall quality of health care.

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Original Article

Sleep characteristics and self-perceived health in resident professionals of Specialized Health Training

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ABSTRACT

Objective: There is a positive correlation between the sleep quality index, self-perceived health status and adequate sleep hygiene habits. It was proposed to know the characteristics of sleep and the self-perceived health of the residents of Osakidetza Specialized Health Training.
Method: Multicenter cross-sectional observational study where 501 volunteer residents constituted the sample.
A sociodemographic questionnaire, the Pittsburgh Sleep Quality Index, the SF 12 Health Questionnaire and the Sleep Hygiene Scale were used.
Results: 81.06% (n=351) have poor sleep quality; Those who have anxiety, those who perform 24-hour shifts, those who live with dependent people and those who perform specialties of longer duration are more affected. The better the sleep hygiene habits, the better the quality of sleep ($p<0.001$) as well as self-perceived mental health ($p<0.001$). Being a woman and not having anxiety is related to better sleep hygiene habits. Conversely, as an individual's perceived mental health improves, their perceived physical health worsens, and vice versa ($p<0.001$).
Conclusions: There is a relationship between the quality of sleep and the self-perceived health of the residents of Specialized Health Training in Euskadi in addition to their sleep hygiene habits. It is important that occupational health execute educational programs according to the needs detected.

Keywords: Internship and Residency; Quality of Life; Sleep Hygiene; Sleep Wake Disorders.

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Introduction

Sleep is a very influential factor in a person's well-being and a clear indicator of health status (1)(2). Defined as the physiological-rhythmic state belonging to the circadian wake-sleep cycle, there is a loss of consciousness with a decrease in perception and response capacity (3).

Sleep quality is understood as good nighttime sleep associated with good daytime functioning and is affected by factors such as the total and actual amount of time asleep, latency, and sleep efficiency. Inappropriate times for going to bed and waking up cause an irregular sleep rhythm, resulting in ineffectiveness (3)(4). Circadian rhythms regulate several physiological systems of the body (body temperature, blood pressure, sleep-wake pattern, metabolic and hormonal processes, etc.). They have an oscillation period between 20-28 hours. They facilitate the development of greater activity during the day and less at night (5). It is an indicator of good quality of life (6).

Poor sleep quality is sleep deprivation that can cause excessive daytime sleepiness, fatigue, decreased concentration, and cognitive impairment. Sustained over time, it will have an impact on the behavior, mood, memory, attention span and cognition of the individual (3)(7).

Self-rated health is a widely used indicator in mental health research. It is associated with the probability of suffering from chronic diseases, the use of health services and could even behave as a powerful predictor of mortality (8). Different patterns of self-perceived health are observed depending on gender, socioeconomic situation or exposure to occupational risk factors (9)(10).

Sleep hygiene is a set of habits and behaviors that facilitate sleep and control external factors that can negatively interfere with it, such as environmental factors (light, noise, temperature, etc.) and health-related factors (nutrition, exercise). and substance use) (2)(11).

Poor sleep hygiene is defined by the International Classification of Sleep Disorders as a disorder secondary to carrying out activities of daily living (12) and can contribute to insomnia (13).

Regarding the relationship between sleep quality and hygiene and self-perceived health,

some articles show that there is a moderate correlation between the sleep quality index and self-perceived health status (14)(15)(16). The higher the quality of sleep, the healthier university students perceive themselves to be. Other research also suggests that the relationships between sleep quantity and health are weaker than those between sleep quality and health (17).

Sleep disorders are underdiagnosed. Epidemiological studies support its prevalence in many people (18). The identification of these disorders will provide new diagnostic and therapeutic strategies that could improve quality of life (19).

Several studies quantify the negative impact of sleep deprivation in shift work and that it can sometimes lead to situations of chronodisruption that can affect the health of these workers by increasing cardiovascular risk, affecting mood, causing accelerated aging, etc.. (20). Night workers have altered circadian rhythms because they sleep when melatonin is low and cortisol is high (21).

Regarding occupations, doctors and medical students are groups that register higher levels of insomnia, however, there are other populations that present sleep disorders such as night workers or shift workers (22).

There is literature that states that Medicine and Nursing students have worse quality of sleep and a greater impact of the lack of it on quality of life (3). There is literature that reports that sleep problems in students impair learning, reduce academic performance and increase the presence of chronic health conditions (7). Studies show that medical students sleep little, study for long hours at night and consequently some suffer from excessive daytime sleepiness, leading to a decrease in attention that affects their quality of life and academic performance (23).

According to a study carried out in the USA, limiting the shifts of first-year residents to 16 hours significantly reduced preventable adverse events and the probability of committing medical errors, including those associated with patient death (24).

Specialized Health Training (SHT) is teaching with the residency system as a procedure to train specialists in health sciences (medicine, nursing, biology, pharmacy, psychology, chemistry...) (25). It is regulated by Law 44/2003, on the regulation of health professions (26) and Royal Decree 1146/2006, which regulates the special employment relationship of

residence for the training of these specialists, which is incompatible with any other professional and training activity (27).

Likewise, this study has been carried out in Osakidetza-Basque Health Service and has considered the legal obligations and imperatives derived from its operation. Article 3 of the Osakidetza statutes aims to "promote the training and updating of the specialized knowledge required by its health and non-health personnel, both in the specific field of health and in those of health management and administration" (28).

With this study, the aim is to know the quality and hygiene of sleep and the self-perceived health of SHT residents since these are workers who reduce the time dedicated to sleep and work long hours to satisfy their academic-work demands. In the bibliography consulted there were no updated publications about this relationship in SHT residents in Spain, which justifies carrying out the study.

Hypothesis: The true hypothesis was that there was a relationship between sleep quality, sleep hygiene and self-perceived health in the residents of the Osakidetza SHT and the null hypothesis was that there was no such relationship.

Main objective: To know the sleep characteristics and self-perceived health of Osakidetza SHT residents**.**

Specific objectives:

● Study the relationship between sociodemographic factors and sleep quality, sleep hygiene and self-perceived health.

● To know if there is a relationship between sleep quality and sleep hygiene in SHT residents of Osakidetza.

● Study the relationship between sleep quality and self-perceived health in residents of the Osakidetza SHT.

● Determine if there is a relationship between sleep hygiene and self-perceived health in residents of the Osakidetza SHT.

● To know the relationship between the mental health component and the physical health component in SHT residents of Osakidetza.

● Study the relationship between sleep quality, sleep hygiene and self-perceived health in

SHT residents of Osakidetza.

The aim is to study the quality and sleep hygiene habits, and the self-perception of health in these professionals with the aim of detecting health problems and alterations in the sleep pattern that may be related to some aspect derived from their residence.

Material and Methdos

Study design. Population. Sample.

Multicenter and cross-sectional observational study developed between February-March 2023. 1,465 residents in healthcare training of Euskadi who carry out their work day within 14 teaching units of Osakidetza. 541 people accessed the survey.

Eleqibility Criteria

Inclusion Criteria: Perform their workday in centers of the Basque Health Service Osakidetza

Exclusion Criteria:

- Being part of the research team
- Not being actively employed during the study period

Excluded cases (n=40):

- 11 people who were not actively employed
- 29 blank questionnaires

Final sample: 501 residents

Convenience sampling was used through voluntary self-selection. The population was expected to be homogeneous in terms of age, according to data on the age range of the people to whom the places were awarded, according to data extracted from the Ministry of Health and Consumer Affairs and Social Welfare (MSCBS) (29), and also at an academic level, since everyone had to have university studies in Health Sciences or Sciences (25).

The study obtained a favorable report from the Clinical Research Ethics Committee of Euskadi.

Access to the participant information sheet and the cover letter were sent to the personal corporate email by the study heads to all residents.

Data collection was carried out and managed using the REDCap (Research Electronic Data Capture) platform of the Carlos III Health Institute (30)(31), creating a data collection notebook that contained the "ad-hoc" sociodemographic questionnaire., the Pittsburgh Sleep Quality Index (PSQI) questionnaire (32,33,34,35), the SF 12 Health questionnaire (36) and the Sleep Hygiene Scale. (2)

Analysis of data

The normality of continuous variables was checked using the Shapiro-Wilks test. Variables that follow a normal distribution are presented with mean and standard deviation; Otherwise, it is presented with median and interquartile range. To compare scores between variables with 2 categories, the Student T or Mann-Whitney U test was used, depending on the distribution of the variable, and to compare more than 2 categories, the ANOVA or Kruskal-Wallis test was used.

Linear regression models were carried out to see the variables that are associated with the scores and the variables that were significant in the univariate analysis were included.

All analyzes were performed with the statistical program R (version 4.2.2): A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria (37).

Results

The sample studied was 501 participants (34.46% of 1454 who met inclusion criteria), of which 76% (n=381) considered themselves women, 23.6% (n=118) men, and 2 people did not define its gender. Median age was 27 years [26.0;29.0]

94.41% do not live with dependent people, 1.99% do so with dependent elderly people, 3.19% with dependent minors and 0.2% live with elderly and minor dependent people.

74.1% (n=371) of the participants are MIR, 21.8% (n=109) EIR, 2.79% (n=14) FIR, 0.8% (n=4) PIR and 0.6 % (n=3) are BIR. No sample was obtained from the QIR.

21.8% (n=109) of those surveyed take a 2-year specialty, 62.7% (n=314) take a 4-year one and 15.6% (n=78) take a 5-year one. years. 29.3% (n=147) attend 1st grade, 32.9% (n= 165) 2nd grade, 17.4% (n=87) 3rd grade, 17% (n=85) 4th grade and 3.39% (n=17) 5th grade.

42.91% (n= 215) of the participants work in teaching units in Vizcaya, 17.76% (n=89) in

Álava, 33.73% (n=169) in Guipúzcoa, and 5. 58% (n=28) work in teaching units with presence in the three territories.

Regarding self-reported illnesses related to mental and behavioral disorders, 17.5% (n= 486) reported anxiety problems and 1.86% (n= 485) reported depression problems.

99.4% (n= 498) are on duty. 68.7% (n= 344) perform 24-hour shifts and 45.3% (n=156) perform 5 shifts per month. 20.9% (n=101) responded that their work day does not allow them to rest after shifts.

Regarding sleep quality, the results show that the median Pittsburgh score was 6 [5.00;8.00]. Considering poor sleep quality PSQI>5 and good quality PSQI≤5, 81.06% (n= 351) reported having poor sleep quality.

There are significant differences in sleep quality between residents who report having anxiety and those who do not ($p<0.001$) and between people who live with dependent people and those who do not ($p=0.01$). There are also differences between the duration of residency ($p=0.015$), with those who study specialties lasting 4-5 years having a worse quality of sleep, and those who work on duty ($p= 0.05$), with those who work on duty for 24 years. hours those with the worst scores. On the other hand, in relation to sleep quality, there are no significant differences based on gender.

Each component of the Pittsburgh Index was analyzed in Figure 1.

● Subjective sleep quality: 10.2% (n=47) of the sample reported having very good subjective sleep quality, 54.6% (n=253) good, 33% (n=153) poor and 2.16% (n=10) very bad.

● Sleep latency: (sum of the time the subject believes it takes to fall asleep, ≤15 minutes, between 16-30, 31-60, or >60 minutes, and the number of times the subject has not been able to fall asleep. sleep in the first half hour in the last month): 19.2% (n=89) of the population presented 0 points, 43.4% (n=201) 1 point, 26.8% (n= 124) 2 points and 10.6% (n=49) 3 points.

● Duration of sleep (number of hours the subject believes they have slept): 6.48% (n=30) reported sleeping more than 7 hours, 79.7% (n=369) between 6-7 hours, 11.4%(n=53) between 5-6 hours and 2.38%(n=11) less than 5 hours.

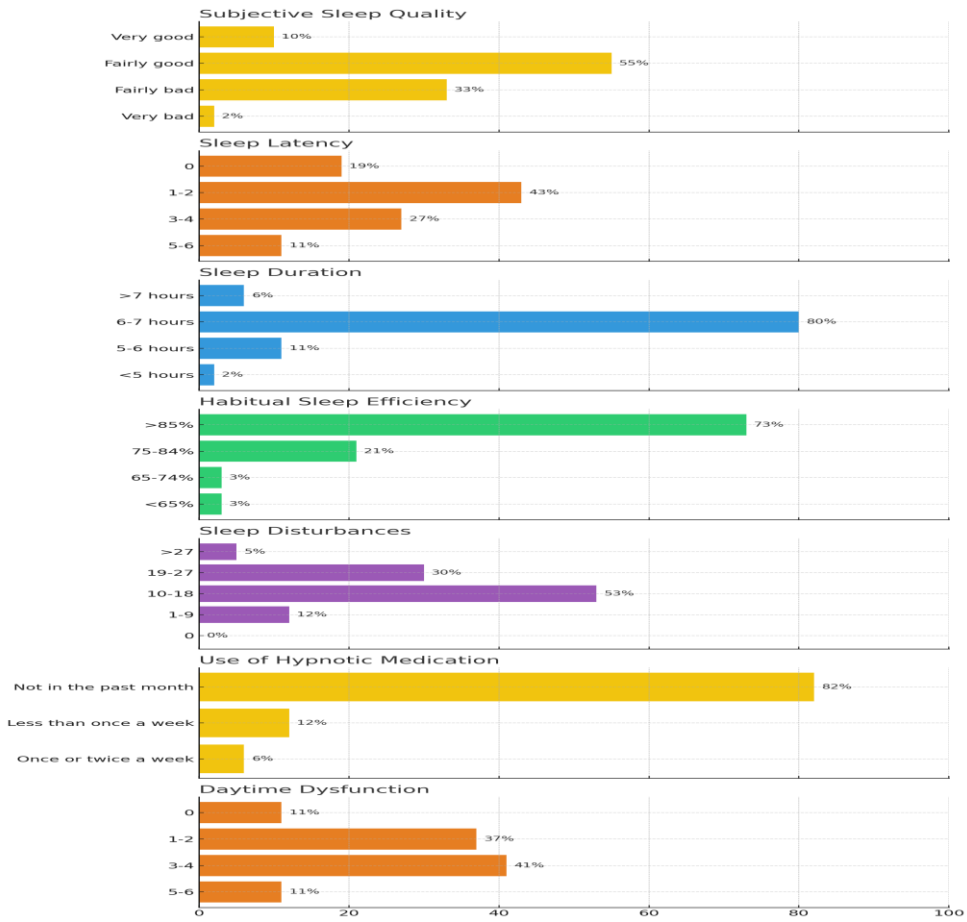

Figure 1. Sleep Quality Component Scores

● Habitual sleep efficiency (quotient between the time the subject believes he is sleeping and the time he declares he remains lying down): 72.7%(n=327) of residents have a habitual sleep efficiency >85%, 20. 9%(n=94) have an efficiency between 75-84%, 3.33%(n=15) between 65-74% and 3.11%(n=14) <65% efficiency.

● Extrinsic sleep disturbances (include nocturnal awakenings, urination disturbances, coughing episodes, breathing problems, snoring, dysthermic sensation, nightmares and pain): 4.97% (n=23) stated no. having suffered any disturbance, 82.5% (n=382) reported mild disturbances, 12.3% (n=57) reported moderate disturbances, and 0.22% (n=1) reported severe disturbances.

● Use of hypnotic medication in the last month: 81.8% (n=365) did not consume any medication, 12.3% (n=55) less than one a week, 5.86% (n= 26) 1 to 2 per week and no more

than 3 per week.

● Daytime dysfunction (sum of the presence or absence of daytime sleepiness and the existence or not of reluctance in daytime activities): 11.4% (n=53) of the population did not present daytime dysfunction (0 points), 37 .1%(n=172) mild (1 point), 40.8%(n=189) moderate (2 points) and 10.6%(n=49) severe (3 points).

Regarding sleep hygiene habits, participants who obtained a score ≥ the 75th percentile (38 points) were categorized as having poor sleep hygiene; resulting in 30.51% (n=137). There is a statistically significant difference (p=0.022) between men and women regarding sleep hygiene habits. In the same way as between those who report having anxiety and those who do not (p=0.031). See Table 1.

Table 1. Descriptive summary by groups "categorized hygiene score"

	[ALL]	Good sleep hygiene	Bad sleep hygiene	p.overall	N
	N=449	***N=312***	***N=137***		
Age median, (Q1:Q3)	27.0(26.0;29.0)	27.0(26.0;29.0)	28.0(26.0;29.0)	0.059	449
Gender, N (%):				0.022	449
Female	342 (76.2%)	245 (78.5%)	97 (70.8%)		
Male	105 (23.4%)	67 (21.5%)	38 (27.7%)		
Other	2 (0.45%)	0 (0.00%)	2 (1.46%)		
¿Do you do guards? N (%):				0.570	449
No	2 (0.45%)	2 (0.64%)	0 (0.00%)		
Yes	447 (99.6%)	310 (99.4%)	137 (100%)		
Anxiety, N (%):				0.031	449
No	348 (77.5%)	247 (79.2%)	101 (73.7%)		
NK/NA	24 (5.35%)	20 (6.41%)	4 (2.92%)		
Yes	77 (17.1%)	45 (14.4%)	32 (23.4%)		

In the linear regression analysis it was seen that as the Pittsburgh score increases, the sleep hygiene score also increases and is statistically significant (p<0.001). Regarding the mental health sum (MCS12) of the SF12 questionnaire, there is a negative association; The lower the score in Pittsburgh, the higher the score in MCS12 (p<0.001). There is a negative association between sleep hygiene and MCS12 (p<0.001). Between the summation variables mental health and summation physical health, there is a negative association (p<0.01). See Table 2.

Table 2. Linear regression model to see the association between scale scores

		Beta 95%IC	p-value
Pittsburgh Index	MCS12	-0.14 (-0.16, -0.12)	<0.001
	PCS12	-0.03 (-0.08, 0.02)	0.2
	Sleep hygiene	0.84 (0.67, 1.0)	<0.001
Sleep Hygiene			
	MCS12	-0.14 (-0.19, -0.09)	<0.001
	PCS12	-0.06 (-0.15, 0.04)	0.2
MCS12 (addition mental SF12)			
	PCS12	-0.16 (-0.20, -0.11)	<0.001

Those over 28 years old score on average 1.12 points higher than those under 28 on the Pittsburgh Index score. Compared to the participants who do evening shifts, those who do 24h shifts score on average 0.94 points higher. Also, those who suffer from anxiety or do not answer this question, score on average almost 2 points higher than those who do not suffer from anxiety (Table 3).

Table 3. Linear regression model with the (continuous) Pittsburgh score variables, including the variables that were found to be significant.

Variable	Beta	95%IC	p-value
Age	0.16	0.08, 0.25	<0.001
Guard type			
24h	0.97	0.30, 1.6	0.005
Nights	0.56	-0.43, 1.5	0.3
Other	1.1	-0.52, 2.8	0.2
Evenings	----	----	
Anxiety			
No	----	----	
NK/NA	1.8	0.70, 3.0	0.002
Yes	2.0	1.3, 2.7	<0.001

Those in third grade obtain on average 2.4 points more than those in first grade in the sleep hygiene questionnaire. The same thing happens with people who suffer from anxiety or do not answer this question, they obtain 1.8 and 0.96 points more on average respectively than those who do not have anxiety (Tabla 4).

Table 4. Linear regression model with the (continuous) sleep hygiene scoring variables, including the variables that were significant in the univariate analysis.

Variables	Beta	95%IC	p-value
What year of residency are you in?			
1	----	----	
2	0.54	-0.78, 1.9	0.4
3	2.4	-0.83, 4.1	0.003
4	1.1	-0.47, 2.8	0.2
5	1.4	-1.7, 4.5	0.4
Anxiety			
No	----	----	
NK/NA	0.96	-1.4, 3.3	0.4
Yes	1.8	0.36, 3.2	0.014

Discussion

It is observed that >80% of the study subjects have poor sleep quality, although 65% perceive it as good or very good, coinciding with other studies (38)(39).

The median Pittsburgh scale score is 6 (5.00;8:00), which is 2 points worse than the general population of another study (34).

The sleep duration of SHT residents is below the values of the general population. Moderate and severe daytime dysfunction of residents is greater compared to the dysfunction of the general population (34).

In relation to sleep quality, no significant differences by gender have been found. However, there is both literature that states that women report lower quality of sleep and have a greater risk of suffering from insomnia compared to men (40)(41), and literature that does not find a significant relationship with age and sex and related to possible multifactorial causes (5). It has been observed that those over 28 years of age have on average a worse quality of sleep.

The age of the participants, with a median of 27 years and an interquartile range between 26-29, is similar to what can be extracted from the data managed by the MSCBS, Figure 2 (29).

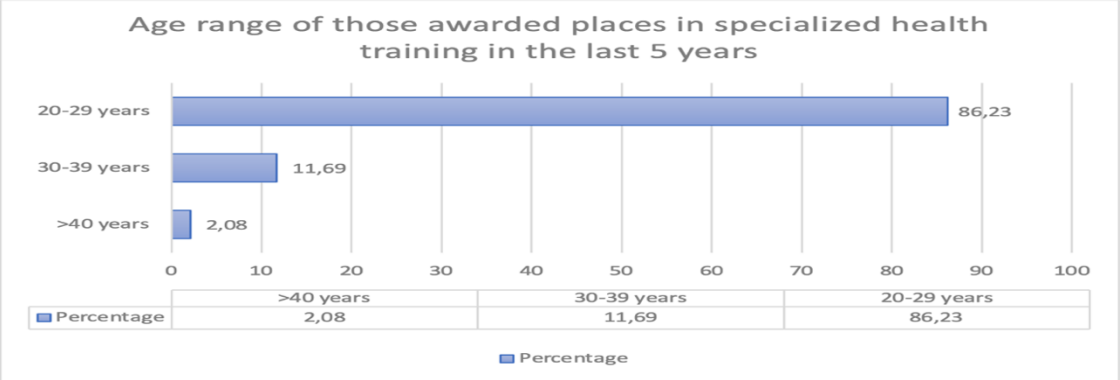

Figure 2. Age range of those awarded places in Specialized Health Training (SHT). Own elaboration, based on data on age and sex extracted from the Ministry of Health and Consumer Affairs and Social Welfare.

Regarding gender, the data extracted from the residents of the sample correspond to the trend observed in the data from the Ministry of Health and Consumer Affairs and Social Welfare. Figure 3 (29).

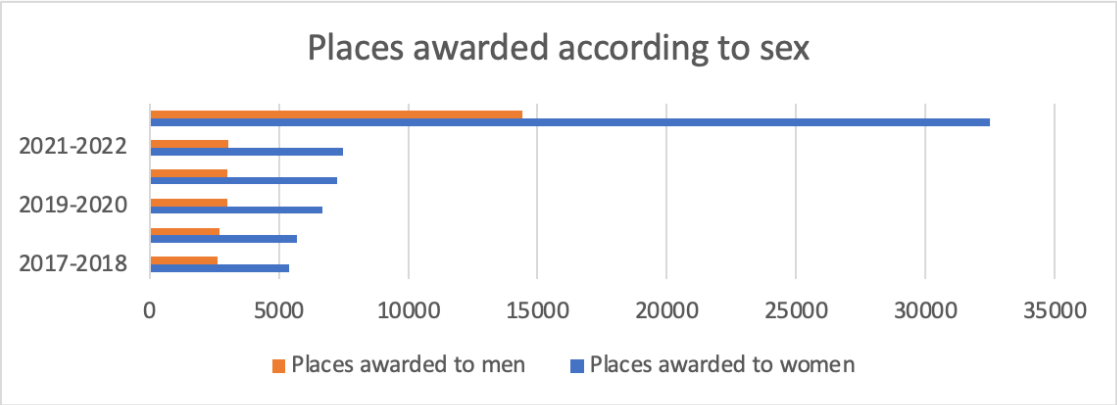

Figure 3. Distribution by sex of those awarded places in Specialized Health Training (SHT). Own elaboration, based on data on age and sex extracted from the Ministry of Health and Consumer Affairs and Social Welfare

Those who study 4-5 year specialties (p= 0.05), and those who work on duty (p= 0.05) have a worse quality of sleep, with those who work on 24-hour duty having the worst score. In a study of medical residents, it was observed that working 24 hours continuously was related to a greater risk of suffering from stress, sleep disorders, and depression (42).

The results analyzed show, in contrast to a study carried out with the staff of the Urgent Health Transport Network (RTSU) of the Basque Country, that only 24-hour shifts are associated with a worse quality of sleep, given that afternoon shifts, night and others do not become significant. When RTSU staff worked 12-hour night shifts, they had worse sleep quality compared to when they worked 12-hour daytime shifts, improving when they were in off periods compared to these 12-hour daytime shifts (5).

There is a positive relationship between sleep quality and sleep hygiene, suggesting that promoting healthy sleep habits, especially adequate schedule maintenance and a more comfortable bedroom environment, could improve sleep quality in children. residents (23).

17.5% (n= 486) of residents reported having anxiety and 1.86% (n= 485) reported

depression. In comparison with the data obtained from the report 'The situation of mental health in Spain' of March 2023, from the Spanish Mental Health Confederation and Mutua Madrileña Foundation, the study subjects report having more anxiety problems than the Spanish population in the same age group, 25 to 34 years old and less depression (43)(44).

As strengths, it is worth noting that a large sample has been used, which includes centers spread throughout the Basque Country, and with representation of different health training specialties. The dissemination of the surveys was carried out through the teaching units, and those responsible collaborated to guarantee the anonymity of the participants.

From the Basic Prevention Units, measures could be implemented to increase rest and sleep. The NIOSH “National Institute for Occupational Safety and Health” proposes a training course for nurses on shift work and long work hours that could serve as a guide (46).

Conclusions

It has been proven that there is a relationship between sleep quality, sleep hygiene and the mental component of self-perceived health in residents of the Osakidetza Specialized Health Training.

In compliance with the objectives of the study carried out, it is concluded that 81.06% of the sample has poor quality of sleep and it has been shown that there is an association with variables related to the work environment such as the fact of working 24-hour shifts and with duration of specialties.

One of the functions of the professionals of the Basic Prevention Units is to inform and train workers about their occupational risks, planning, executing and evaluating educational programs according to the needs detected. Making professionals aware of the importance of good sleep hygiene as a form of correct self-care of health should be an objective of occupational nursing specialists.

An exploratory study was intended because to date there is no research that analyzes in depth the relationship between psychological symptoms and sleep hygiene behaviors and their relationship with sleep quality in SHT residents. It is proposed to carry out a study with a longitudinal design that allows cross-sectional analysis, with probabilistic sampling that

guarantees that the results are inferable to all residents.

Conflict of intereset: We declare that there is no funding nor has it been received to carry out this study.

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