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RESEARCH ARTICLE

ASSESSMENT OF THE LEVEL OF COMPLIANCE OF BIOSECURITY MEASURES FOR THE MANAGEMENT OF BODY FLUIDS IN THE PATIENT DURING THE PERIOPERATIVE PERIOD BY THE NURSING STAFF OF THE OPERATING ROOM SERVICE AT THE NAVAL MEDICAL CENTER

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ABSTRACT

Background: Biosafety conditions in the surgical field are a current and constantly evolving problem. The risks and accidents that occur in hospitals in the presence of protection measures reveal an inadequate application of biosafety regulations by the nursing personnel. Based on this observation, the following research question was formulated: What is the level of application of biosecurity measures for the management of body fluids of patients during the perioperative period by the nursing staff of the operating room service at the Naval Medical Center?. **Objective:** To evaluate the level of compliance of biosafety measures for the management of body fluids of patients during the perioperative period by the nursing staff of the operating room service at the Naval Medical Center, through the collection and analysis of information that contributes to the improvement of medical practice and the avoidance of complications that endanger the life and integrity of surgical personnel. **Method:** A prospective study was conducted on a population composed by nurses of the operating room service at the Naval Medical Center. Given the health emergency caused by COVID-19, this evaluation was carried out remotely by electronic media. Through these channels, a link was sent in order to capture the questionnaire online on the Google Forms platform. Attempts were made to always preserve the confidentiality of the participant and to attend to ethical considerations. **Results:** The population under study consisted of 43 (74.1%) women and 15 (25.9%) men. The age group with the greatest presence was the one ranging from 30 to 39 years old, with 30 participants included (51.7%), followed by the range from 40 to 49 years old, with 19 cases (32.8%), and the one from 40 to 59 years, with only three cases (5.2%). General nurses represented 37.9% of the sample (n = 22); in contrast to the 36 specialists (62.1%). Compliancewithbiosecuritymeasureswas 88.7%. **Conclusions:** The hypothesis was confirmed by observing that the occurrence of the application of biosafety measures for the management of body fluids carried out by the nursing staff was greater than 73%. Some measures in which almost 100% compliance was achieved were hand washing (99.2%) and use of gloves (99.7%). In contrast, the measures with the lowest application frequency were handling of sharp material and / or waste (78.4%) and use of aprons (71.2%). The latter was the only item that did not exceed the percentage expected in the hypothesis.

INTRODUCTION

The term "biosecurity" refers to a set of regulations whose main objective is to prevent and control various factors that can produce occupational hazards through biological, physical, chemical, psychological or mechanical agents.With these, it is sought to prevent the harmful impacts of the risks inherent in daily activities.Control of hospital risks is a task of vital importance and requires special attention, since mishandling of waste can cause work-related accidents that affect nursing, medical and cleaning staff, and even the patient himself. Body fluids include those that have the potential to be infective, such as blood, semen, vaginal secretions and breast milk, as well as cerebrospinal, peritoneal, plural, synovial, pericardial or amniotic fluids.Most of the occupational accidents caused by contact with body fluids are originated by the non-compliance with biosafety guidelines. The nursing staff have constant direct contact with the material classified as a source of contagion. Therefore, the slightest carelessness or improper handling of it can cause damage to their health.In surgical activity there is also direct contact with blood or other body fluids. For this reason, staff must have the knowledge and skills necessary to implement the established control protocols. Given the above, the main purpose of the present study was to evaluate the degree of application of biosafety standards by the nursing staff of the operating room service, especially those aimed at regulating the management of body fluids of patients

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during surgeryperioperative period (before, during and after surgery).This, in order to know if additional measures are necessary to improve and promote health protection.

MATERIALS AND METHODS

An observational, descriptive, cross-sectional, prospective and qualitative study was conducted. The population comprised 58 nursing professionals from the Naval Medical Center's operating room service, who make up the total staff in this area, so it was a group census. Only nursing staff from the operating room service who agreed to participate in the research study were considered.Nursing personnel who were working in administrative positions, such as supervision, were excluded. Nursing personnel who were on medical disability and / or vacations, or who were undergoing evaluation with prior authorization and decided not to continue participating, were eliminated. Additionally, there were some profile variables to determine associations with the study variable, such as academic degree and professional experience of the subjects. These variables were determined based on the Observation Guide on the Application of Biosafety Measures instruments, by Ventocilla-Rojas (1); and Questionnaire for the Evaluation of Compliance with Biosafety Standards in the Operations Room of the Hospital of Specialties of the Armed Forces No. 1, by Buñay-Cuyo, Lema-Morocho and Guezada-González (2). It should be clarified that, given the health emergency due to COVID-19 in which the hospital is at the time of carrying out this study, and since some of the participants were transferred to the COVID area, a way was sought to carry out said evaluation to distance.For this reason, electronic means were used, such as personal mail and the WhatsApp application. Through these channels, a link was sent to capture the questionnaire online in Google Forms, always preserving the confidentiality of the participant and taking into account certain ethical considerations. The Google Forms platform offered the possibility of making a dynamic collection of the responses of the interviewees, speeding up time by doing it simultaneously.It also made it possible to ensure that there were no unfinished fields and avoid errors in the answers, such as duplicate answers or illegible handwriting. Since it was an exploratory study, the data analysis was carried out through descriptive statistics. Furthermore, since it was a study on the entire population (census), it was not necessary to resort to inferential statistics. The analysis plan contemplated obtaining measures of frequency (frequency and simple percentages), as well as measures of central tendency (mean, mode and median) and dispersion (variance, standard deviation, range, skewness and kurtosis) for scalar variables, and proportions, rates and ratios for ordinal and nominal variables.The data obtained were tabulated through the Microsoft Excel spreadsheet and transferred to a database using the specialized software Statistics Package for the Social Sciences (SPSS) version 21.0 for statistical analysis.

RESULTS

The studied population consisted of 43 (74.1%) women and 15 (25.9%) men. The age group with the greatest presence was the one ranging from 30 to 39 years old, with 30 participants included (51.7%), followed by the range from 40 to 49 years old, with 19 cases (32.8%), and the one from 40 to 59 years, with only three cases (5.2%).General nurses represented 37.9% of the sample (n = 22); in contrast to the 36 specialists (62.1%). The group with more than ten years was the largest, with 35 cases (60.3%).23 participants (39.7%) belonged to the morning shift; 19 (32.8%), to the evening shift and 8 (13.8%), to the night shift A and B, respectively. The responses on preventive measures were grouped according to the domains in which they were found within the instrument used:

- **Management of body fluids:** 45 people (77.6%) reported that they are always exposed to blood in the surgical center. No participant mentioned never having been exposed to blood. Regarding equipment, 60.3% of the sample indicated that they always use an apron, mask and gloves for handling samples. One person (1.7%) answered that he/she never uses equipment of this type; and 22 indicated that they sometimes use it (37.9%). Finally, the sample was divided in a similar way when it was questioned about the use of complete personal protective equipment: slightly more than half (n = 32, 55.2%) indicated that they always use it, compared to 44.8% who use it alone sometimes.

- **Sharps handling:** almost all of the participants (93.1%) indicated that there were always labeled containers in their surgical center for the disposal of biological materials. Only one person (1.7%) indicated that these were not frequently available. Regarding location, it was observed again that the vast majority of the sample (91.4%) considered that the deposits were always located in a close and safe place; again, one nurse (1.7%) pointed out that it was not uncommon for them to meet in a close and safe place. Likewise, 52 participants (89.7%) mentioned that they always complied with biosafety regulations for the transfer and handling of surgical material, in contrast to the 6 (10.3%) who indicated that they only complied sometimes. Finally, almost all of the participants indicated that they always discarded the material according to the type of waste (n = 57, 98.3%) and only one person indicated that he/she sometimes did so (1.7%).

- **Observance of biosafety regulations:** 69% (n = 40) of the participants considered that there was always supervision and monitoring of biosafety regulations in the surgical center; in contrast, 17 indicated that this occurred only sometimes, while one person (1.7%) mentioned that there was never supervision or monitoring. As ananswerto the following question, 48 nurses (82.8%) indicated that there is always a protocol to follow in the event of accidents in the surgical area; however, 5 (8.6%) people mentioned that this was true only sometimes and another 5 (8.6%) that it had never been established.

- **Preventive measures for occupational hazards:** 56 people (96.6%) mentioned that they do use hermetic containers for the waste of blood, compared to 2 who do not use them (3.4%). Also, 56 (94.8%) reported that they do not present or have presented some type of disease due to working in the surgical center; compared to 3 (5.2%) who have suffered some kind of illness. Also, the participants were asked if they had immunological protection against hepatitis, to which 45 (77.6%) people answered that they did, while 13 (22.4%) mentioned that they did not have protection of this type. Gloves were the most frequently mentioned type of protective equipment: 57 people (98.3%) indicated that the operating room had them. In contrast, masks were the equipment with the least availability in the operating room: 51 interviewees indicated that they were available.

Table 1. Results on the application of preventive measures

Domain	Preventivemeasure		n	%
Body fluid management	Frequency of exposure to blood in the surgical center	Always	45	77.6%
		Sometimes	13	22.4%
		Never	0	0.0%
	Use of apron, mask and cap to handle samples	Always	35	60.3%
		Sometimes	22	37.9%
		Never	1	1.7%
	Use of full personal protective equipment	Always	32	55.2%
		Sometimes	26	44.8%
		Never	0	0.0%
Sharpshandling	Presence of labeled containers for the disposal of biological materials	Always	54	93.1%
		Sometimes	3	5.2%
		Never	1	1.7%
	Frequency in which the sharps disposal containers are located in a close and safe place	Always	53	91.4%
		Sometimes	4	6.9%
		Never	1	1.7%
	Compliance with biosafety regulations for the transfer and handling of surgical material	Always	52	89.7%
		Sometimes	6	10.3%
		Never	0	0.0%
	Before leaving the operating room, discard the material according to the type of contamination	Always	57	98.3%
		Sometimes	1	1.7%
		Never	0	0.0%
Biosafetystandards	Supervision and monitoring of biosafety standards in the surgical center area	Always	40	69.0%
		Sometimes	17	29.3%
		Never	1	1.7%
	Establishment of a protocol to follow in the event of accidents in the surgical center area	Always	48	82.8%
		Sometimes	5	8.6%
		Never	5	8.6%
Preventive measures for occupational hazards	Using airtight containers for blood disposal	Yes	56	96.6%
		No	2	3.4%
	Presents some type of illness due to working in the surgical center area	Yes	3	5.2%
		No	55	94.8%
	Vaccinated against hepatitis	Yes	45	77.6%
		No	13	22.4%
	Protective equipment available in the operating room	Coat	52	89.7%
		Goggles	52	89.7%
		Gloves	57	98.3%
		Mask	51	87.9%
Training	He has received training in occupational risks in the operating room area	Yes	48	82.8%
		No	10	17.2%
	Has received training in handling blood, body fluids and sharps at the hospital	Yes	57	98.3%
		No	1	1.7%
	Has received training in waste management at the hospital	Yes	56	96.6%
		No	2	3.4%
	Time elapsed since receiving training	1 month	3	5.2%
		3 months	1	1.7%
		6 months	14	24.1%
		1 year	15	25.9%
		More tha 1 year	24	41.4%
		Never	1	1.7%
Knowledgeofbiosecuritymeasures	Knows how hazardous waste should be disposed of	Yes	58	100.0%
		No	0	0.0%
	Knows measures to take in case of accidents due to puncture/cut or contact with blood	Yes	54 4	93.1% 6.9%
Occupationalhazards	He/she has had needle sticks and/or contact with blood or body fluids since started working at the health center	No	33	56.9%
		Yes	25	43.1%
	Injury site of the last puncture or cut	Fingers	17	29.3%
		Back	1	1.7%
		Hand	10	17.2%
		Arm	0	0.0%
		None	30	51.7%
	Contact site of the last splash case	Mouth	1	1.7%
		Nose	3	5.2%
		Eyes	10	17.2%
		Otherparts	13	22.4%
		None	31	53.4%
	He/she reports needle sticks or exposures to blood or body fluids	Always	37	63.8%
		Sometimes	11	19.0%
		Never	10	17.2%
	Activity he/she was doing when suffered the puncture	Trackchanneling	2	3.4%
		Disposeoffluids	3	5.2%
		Discardsharps	4	6.9%
		Duringthesurgicalact	23	39.7%
		None	19	32.8%
		Pass needlesorequipment	3	5.2%
		Suture	4	6.9%

Note: based on the categories of the Questionnaire for the Evaluation of Compliance with Biosafety Standards in the Operations Room of the Hospital of Specialties of the Armed Forces No. 1, Buñay Cuyo, AM. (2). Data obtained with SPSS v. 21.0.

Table 2. Results on the application of biosecurity measures

Generalmeasure	Specificmeasure		n	%
Handwashing	Hand washing at the beginning of the work day	Yes	58	100.0%
		No	0	0.0%
	Hand washingbeforeeachprocedure	Yes	58	100.0%
		No	0	0.0%
	Hand washing after eachprocedure	Yes	58	100.0%
		No	0	0.0%
	Hand washing at the end of the work day	Yes	57	98.3%
		No	1	1.7%
	Hand washing before handling sterile material	Yes	56	96.6%
		No	2	3.4%
	Hand washingbeforeinstrumenting	Yes	58	100.0%
		No	0	0.0%
	Hand washing after removinggloves	Yes	58	100.0%
		No	0	0.0%
Wearinggloves	Wearing gloves to handle body fluids	Yes	58	100.0%
		No	0	0.0%
	Wearing gloves when handling contaminated material	Yes	58	100.0%
		No	0	0.0%
	Wearinggloveswhencountinggauze	Yes	58	100.0%
		No	0	0.0%
	Changing gloves every time it is needed	Yes	57	98.3%
		No	1	1.7%
	Wearing gloves when performing invasive procedures	Yes	58	100.0%
		No	0	0.0%
	Wearing f gloves when handling waste material	Yes	58	100.0%
		No	0	0.0%
Wearingmask	Wearing a mask when handling irritants	Yes	57	98.3%
		No	1	1.7%
	Wearing a mask when instrumenting	Yes	50	86.2%
		No	8	13.8%
	Wearing a mask when washing contaminated material	Yes	57	98.3%
		No	1	1.7%
	Wearing a mask in procedures that generate splashes of blood, fluids, among others	Yes	54	93.1%
		No	4	6.9%
	Mask covers nose and mouth	Yes	58	100.0%
		No	0	0.0%
	Wearing a mask when handling sterile material	Yes	56	96.6%
		No	2	3.4%
Wearingglasses	Wearingglasseswhenhandlingirritants	Yes	53	91.4%
		No	5	8.6%
	Wearingglasseswheninstrumenting	Yes	46	79.3%
		No	12	20.7%
	Wearing glasses when washing contaminated material	Yes	52	89.7%
		No	6	10.3%
	Wearing glasses in procedures that generate splashes of blood, fluids, among others	Yes	54	93.1%
		No	4	6.9%
Wearingaprons	Wearing aprons to wash contaminated instruments	Yes	46	79.3%
		No	12	20.7%
	Usingapronstocountlaundry	Yes	35	60.3%
		No	23	39.7%
	Wearing aprons in procedures that generate splashes of blood, fluids, among others	Yes	43	74.1%
		No	15	25.9%
Material wastemanagement	Disposing of sharps material in rigid, labeled, non-pierceable containers	Yes	55	94.8%
		No	3	5.2%
	Putting on the protective needle cap before removing	Yes	28	48.3%
		No	30	51.7%
	Transporting dirty clothes she uses rolling cars	Yes	44	75.9%
		No	14	24.1%
	All bio-polluting material goes in a red bag	Yes	55	94.8%
		No	3	5.2%

Note: based on the categories of the Observation Guide on the Application of Biosafety Measures, by Ventocilla Rojas E. Madeby Salas Bivero L. (1). Data obtained with SPSS v. 21.0.

- **Training:** 48 nurses (82.2%) indicated that they have received training on occupational risks in the operating room area, compared to 10 (17.2%) who mentioned not having had it. Likewise, almost the entire sample (98.3%, n = 57) indicated that they had had training in the hospital for the handling of blood, body fluids and sharp material. A similar percentage (96.6%, n = 56) responded that they have hospital training for waste management.

- **Knowledge of biosecurity measures:** the entire sample indicated that they do know how hazardous waste should be disposed of, while 54 people (93.1%) stated that they knew the measures to be implemented in cases of accidents due to punctures, cuts or contact with blood. Nevertheless, trainings are not very frequent at the hospital: 24 nurses (41.1%) indicated that it had been more than a year since they received this type of training, while 15 (25.9%) mentioned that a year had passed.

- **Occupational risks:** more than half of the participants (56.9%, n = 33) have suffered needle sticks or have had some type of contact with blood or body fluids since their arrival to the hospital. In contrast, 25 people (43.1%) answered that they have not. Regarding the types of accidents, 5 people indicated having suffered cuts, 18 mentioned that they have not had any, 25 that have experienced punctures and another 25 that have had splashes. Fingers were the area that most suffered this type of accidents, with 17 mentions (29.3%); on the contrary, the back was the least mentioned, with only one response (1.7%). Regarding the splashing sites, the mouth was pointed out by one person (1.7%), the nose by three (5.2%) and the eyes by 10 participants (17.2%).

When asked about the activity they carried out when the accident occurred, 23 people (39.7%) were performing some type of surgical act, 4 people (6.9%) were discarding sharp material, another 4 were performing sutures, and 3 (5.2%) were discarding some type of fluid or passing needles or equipment. Channeling was the activity that represented the least risk, with only 2 mentions (3.4%). When asked if they used to report to their superiors the occurrence of punctures or exposures to fluids, 37 (63.8%) nurses answered that they always did; 11 indicated, only sometimes (19%), and 10, never do it (17.2%).

Regarding the application of biosafety measures by the nursing staff, the following items were evaluated:

- **Hand washing:** 100% of the participants (n = 58) indicated that they wash their hands at the beginning of their work day, before each procedure, after each procedure, before instrumenting and after removing gloves. On the other hand, 1 person (1.7%) mentioned that he/she do not wash his/her hands at the end of the day and 2 (3.4%) indicated that they do not do it before handling sterile material. Averaging the percentages, a compliance with the hand washing measures of 99.27% and a non-compliance of 0.73% is obtained.

- **Use of gloves:** 100% of the sample mentions that they use gloves to handle body fluids, to handle contaminated material, to perform gauze counts, when practicing invasive procedures and when handling waste material. Only one person (1.7%) mentioned that he/she do not change gloves every time it is needed. Thus, the average compliance with the use of gloves rises to 99.7%, while the default remains at 0.3%.

- **Use of a mask:** 98.3% of the participants indicated that they use a mask when handling irritants, compared to 1.7% who do not. This same proportion is presented for use when washing contaminated material. Also, 50 nurses (86.2%) mentioned that they use it for instrumentation, in contrast to the 8 (13.8%) who do not use it. Regarding the use during procedures that generate splashes, 54 nurses (93.1%) mentioned that they use the mask and 4 (6.9%) answered that they did not use it. 100% of the participants cover their nose and mouth at the time of use and 56 (96.6%) use masks when handling sterile material.Thus, a compliance percentage of 95.4% of this measure and non-compliance of 4.6% were observed.

- **Use of protective glasses:** 53 (91.4%) participants indicated that they do use glasses when handling irritants, compared to 5 (8.6%) who do not. A lower level of compliance was observed for the use of protective glasses when instrumenting: 46 nurses (79.3%) indicated they did use them, while 12 (20.7%) answered they did not. The use of glasses when washing contaminated material was complied with by 52 of the interviewees (89.7%), while the remaining 6 (10.3%) did not comply with this measure. The use of lenses for procedures that generate splashes reached a compliance of 93.1% of the total sample, compared to 6.9% who do not use them. Therefore, the average compliance with this measure reached 88.3%, which is why non-compliance was placed at 11.7%.

- **Use of aprons:** 46 nurses (79.3%) do use the apron to wash contaminated instruments, compared to 12 (20.7%) who do not. A lower level of compliance is obtained in the use of aprons for counting dirty clothes, since 35 nurses (60.3%) answered that they do use them and 23 (39.7%) that they do not. Finally, 43 participants (74.1%) indicated that they do use aprons in procedures that generate splashes, in contrast to the 15 (25.9%) who do not. Derivedfromthis, itwasfoundthatthelevelofcompliancewiththismeasurereached 71.2%, comparedto 28.8% of non-compliance.

- **Handling of sharp material and waste:** 55 (94.8%) nurses responded that they always dispose this type of material in rigid, labeled and non-pierceable containers. Only 3 (5.2%) indicated that they did not. This same proportion occurred when placing all bio-polluting material in the red bags. Placing the protective needle cap before removing it was the only measure in which those who do not comply with it are more than those who do: 30 (51.7%) indicated that they did not put the cap on, compared to 28 (48.3%) who did. Also, 44 nurses (75.9%) mentioned that they use to transport dirty clothes in rolling cars, in contrast to the 14 (24.1%) who do not use to do it this way. Overall, compliance with the sharps material handling measures was 78.4%, so non-compliance was 21.6%.

Final result: taking into account all preventive measures, from hand washing to handling sharp objects, compliance with biosafety measures of 88.7% was obtained, while non-compliance was 11.3%.

DISCUSSION

The results obtained show coincidences and differences with someprevious studies that build the State of the Art for this topic. In contrast to the research carried out by Chóez and Mendoza (3), the results obtained here showed that more than 75% of health personnel comply with biosafety measures (88.7%). The only domain that did not exceed 75% compliance was the use of aprons (71.2%). There are also coincidences with the study carried out by Ramos Oviedo (4), which indicated that more than half of the nursing staff had received training in the last three years. At the Naval Medical Center, a quarter of the participants mentioned having received training in the past year, and nearly half indicated that more than a year had passed. It is, therefore, a similar proportion to that of the study in question. On the other hand, the research by Rivera Flores (5) was not only consistent with the present study in terms of the number of participants in the present study, but also in the fact that the results showed that most professionals know the biological risks to that are exposed.

According to the domain "Knowledge about biosafety measures", the people involved in this research have a knowledge of the means and risks to which they are exposed from between 93.1% to 100% (depending on the selected item). Important differences were also observed between this study and the one conducted by Díaz Cabezas (6), in which it was determined that the staff does not use the hospital uniform properly, does not know hand washing techniques and does not use the necessary personal protection elements to carry out their duties. In contrast, the present investigation found that hand washing is one of the biosafety techniques most applied by the professionals involved in the study, with 99.27% of use. Likewise, it was observed that most of the population uses adequate means of protection to carry out their work. The only area in which it was observed that the majority of professionals do not follow measures correctly is the placement of the protective needle cap before removing it. In all the others, it is observed that the staff has sufficient knowledge and correctly applies the biosafety measures.

In the research carried out by Hernández and Jiménez (7) it is concluded that the majority of the health population studied knows the protocol to follow in the event of an occupational accident. The results of this research allow a similar statement to be made: more than 80% of the professionals indicated that there is an established protocol to follow in the event of accidents that occur in the surgical area. More than 60% of nurses always report situations such as pricks, cuts or exposures to body fluids. The authors indicate that knowing the protocols has helped to maintain a low percentage of biological occupational accidents.In this case, the proportion of nurses who have not had accidents of any kind is not high: it only remains at 31%. The results of this research present both coincidences and differences with that of Alvarado and Rimac (8). Both studies observed that most of the participating health personnel have a high knowledge of biosafety measures. Nevertheless, the study of the aforementioned authors indicates a low level of application and compliance with said measures, while high levels of compliance were observed in the present investigation. These same coincidences and differences are found in the study by Espinoza Aliaga (9), although both in that and in this research a very high level of compliance with hand washing measures is observed. Finally, this study has wide differences with that of TulpaGuanotuña (10), where it was concluded that the studied personnel do not have adequate knowledge for the management of biosafety. In ours, high levels of knowledge and monitoring of biosecurity measures are shown.

Conclusion

According to the results obtained, it was possible to confirm the hypothesis of this research: the occurrence of the application of biosafety measures for the management of body fluids carried out by the nursing staff was greater than 73%; in fact, it stood at 88.7%. The measures in which almost 100% applicability was reached were hand washing, with 99.2%, and the use of gloves, with 99.7%. In contrast, the measures with the lowest application rate were the handling of sharp material and/or waste, with 78.4% compliance, and the use of aprons, with 71.2%. In the latter case, it was the only item that did not exceed the expected percentage. Through the application of some instruments it became possible to identify some risk factors to which the study population is exposed. In first place, it is observed that despite the use of various types of protection means for handling samples, there are occasions when they are not all used at the same time (mask, apron, cap, gloves and goggles). Therefore, the staff becomes unprotected in some of the aspects that each type of protective equipment take care of. It also seems that there is no adequate supervision and monitoring of biosafety standards in the surgical center area, since on multiple occasions the participants reported that the monitoring of these norms was not always carried out. A largeproportionofpeoplewho do notha veimmuneprotection against hepat it is was also noted. Likewise, it was observed that almost 20% of the nurses has not received training in occupational risks in the operating room area. Other types of training (such as that related to the management of blood, body fluids and waste management) take more than one year without being applied. It was also noted that less than a third of those interviewed have not suffered any type of work accident. This is a low percentage, which must be carefully reviewed. Also, little reporting of punctures or exposures to bodily fluids to supervisors wasobserved. Regarding risk factors, the percentage of personnel who apply security measures related to the use of aprons barely exceeds 70%.
Finally, no significant differences were observed in the compliance of measures in relation to aspects of the population profile, such as academic degree or professional experience. This is probably due to the excess number of participants with the same degree of experience and with similar academic levels. Therefore, the presence of significant differences is not ruled out. However, a larger and more diverse sample is required to observe them. Several recommendations can be made to increase the levels of knowledge and compliance of biosafety measures in the health center, as well as for the realization of future investigations onthe same research line. More constant training is required, addressing very specific issues of biosecurity measures. It is also necessary to have better supervision and monitoring controls on the security measures that are applied in the hospital. Finally, it is urgent to remedy the lack of notification to supervisors by staff about the punctures they suffer or the contact they have with bodily fluids.

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REFERENCES

Alvarado Aguilar, RK, Rimac Ríos, ME. Conocimiento y aplicación de las medidas de bioseguridad por el personal de Enfermería en Sala de Partos. Lima- Perú; 2016.

Buñay Cuyo, AM, Lema Morocho, SD, Quezada González, MS. Evaluación del cumplimiento de las normas de bioseguridad en la sala de operaciones del Hospital de Especialidades Fuerzas Armadas N°1, durante en period junio a diciembre del 2013, tesis de posgrado en Instrumentación Quirúrgica y Gestión de Centros

Quirúrgicos, Universidad Central del Ecuadro. Quito-Ecuador; 2014.

Chóez Peralta, EN, Mendoza Reyna,DX. Rol asistencial que aplica el profesional de enfermería en el manejo de fluidos corporales durante el post operatorio en el Hospital General Guasmo sur. Guayaquil-Ecuador; 2019.

Díaz Cabezas,JE. Evaluación del cumplimiento de las normas de bioseguridad en el área de quirófano del centro de atención ambulatorio del Instituto Ecuatoriano de Seguridad Social en santo Domingo de los Tsáchilas. Ambato-Ecuador; 2017.

Espinoza Aliaga, R. Bioseguridad del profesional de enfermería en el Centro Quirúrgico. Lima-Peru; 2015.

Hernández Santos, MM, Jiménez Y. Riesgos Biológicos del personal de Enfermería de la Sala de cirugía de la instalación de salud de Veraguas 2017. Panama; 2017.

Ramos Oviedo, AR. Nivel de conocimiento y manejo de residuos Sólidos hospitalarios en profesionales de Enfermería del hospital Quillabamba, la Convención, Cusco 2017. Cusco-Peru; 2019.

Rivera Flores,MD. Riesgo por exposición a fluidos corporales en Personal de Enfermería del Hospital Esmeraldas Sur, Esmeraldas 2017. Ibarra; 2018.

Salas Rivero,L. Medidas de bioseguridad que aplican los enfermeros/as en el manejo de fluidos corporales durante la atención de pacientes en la Sala de Operaciones del Hospital San Juan de Lurigancho Lima – 2014, trabajo de Investigación para optar por el título de Especialista en Enfermería en Centro Quirúrgico, Universidad Nacional Mayor de San Marcos. Lima-Peru; 2016.

Tulpa Guanotuña, GT. Estrategias en el manejo de la bioseguridad para disminuir riesgos laborales en el personal de Enfermería en el quirófano central del Hospital de Especialidades de Eugenio Espejo. Ambato; 2014.

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