



REVISIONES

Risk perception in nursing students

Percepción de riesgo en alumnos de Enfermería

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ABSTRACT

The objective of this study is to analyze the scientific production that exists about the relationship between the risk perception and the accidents during the clinical practice in nursing students. A systematic search was carried out in the data bases MEDLINE and CUIDEN, and also in the documentary heritage of the National Institute of Safety and Hygiene at Work, gathering publications from 1992 to 2010. A total of 89 articles were analyzed. Among the resulting thematic fields are: work setting, step measurements, psychosocial factors. As a conclusion, a lack of studies which prove in an explicit way the role that the real risk perception that the nursing students are exposed to exists. So, the necessity to go on in this line is set out, in order to improve the safety of nursing students.

RESUMEN

El objetivo de este estudio, es analizar la producción científica que existe sobre la relación entre la percepción de riesgo y los accidentes en la práctica clínica en alumnos/as de Enfermería. Se realizó una búsqueda sistemática en las bases de datos MEDLINE y CUIDEN, así como en el fondo documental del Instituto Nacional de Seguridad e Higiene en el Trabajo, recopilando publicaciones comprendidas entre 1992 y 2010. Se analizaron un total de 89 artículos. Entre los campos temáticos emergentes se encuentran: entorno laboral, medidas preventivas, factores psicosociales. Se llega a la conclusión de que existe una carencia de estudios que demuestren de forma explícita el papel que la percepción de riesgo juega en el riesgo real al que los alumnos de enfermería se ven expuestos, por lo que se plantea la necesidad de investigar en esta línea, para así poder mejorar la seguridad de los alumnos de enfermería.

INTRODUCTION

The situation of the nursing students during their practices has been studied from a merely academic point of view ⁽¹⁻⁵⁾, assessing the quality of teaching, and valuing the different learning methods.

After having analyzed information about this group of people, in relation to their clinical practices in health-care centers, it is observed that they are exposed to the same risks as any other professionals ⁽⁶⁾, with the difference that the students are immersed in a learning period and as a result they don't have all the necessary knowledge to deal with all the different situations in the same way as the professionals. Likewise, the data of some studies ⁽⁶⁾ show that there are some shortages in the safety during the practices because more accidents than the desired are produced.

In the process of looking for the cause of the excess of accidents within the nursing students during their clinical practices, it is appropriate to investigate the reasons of accidents in the same nursing professionals, and in a first approach to the topic it seems that both match up ⁽⁷⁾; among the already mentioned causes the following stand out: recapping needles, distractions due to stress; etc. So, in some studies about nursing professionals and other groups, as far as safety at work concerns, it has been come up with the conclusion that the risk perception influences on the attitude at work ⁽⁸⁾.

Because of the apparent influence of the risk perception in the attitude towards them, it seems necessary and interesting to study the state in which the knowledge about this fact in the nursing group is found, because not only students are exposed to this type of risks, but also professionals are. This is the reason why a bibliographical review was set out with the aim of analysing the scientific production that exists about the relationship between the risk perception and the accidents during the clinical practice in nursing students.

METHODOLOGY

This bibliographical revision was carried out during the period from November 2009 to July 2010. It was not limited to the search by language, neither by the year but by the data bases which were: Medline ⁽⁹⁾, Cuiden Pluis ⁽¹⁰⁾ and the documentary heritage from the National Institute of Safety and Hygiene at work ⁽¹¹⁾. A search with the following terms was done: *risk & nurses, occupational accident & risk perception, risk perception & nurse, nursing students' practices, risk perception & nursing students*, corresponding to the MeSH in PubMed terms ⁽⁹⁾ and to its translations in Cuidenplus ⁽¹⁰⁾. 2437 articles were obtained, of which, after being examined, 89 were selected.

The result of this integrative revision covered different areas which altogether let to know the conditions of this matter. So then, several articles about risks at work; the influence of the risk perception in the work field; the risk perception in nursing; the nursing students' clinical practices and the risk perception in nursing students were compiled.

For the *risk & nurses* descriptors, the inclusive criteria were the following: to have as a population of study nurses or nursing students. Descriptive and experimental studies were included, being their goals of study the biological, physic and psychosocial risks.

During the search of the terms *occupational accident and risk perception*, the studies in which the risk perception at the work setting was studied were included, being the subjects of the study the workers from different sectors, both health and non-health workers, as it was highly considered to analyse the state of the study of the risk perception in general, in order to be able to compare it with the state of itself in the sanitary field.

The inclusive criteria of the articles in the search with the terms *risk perception and nurse* were to set as a goal the study of the risk perception in the nursing profession or in students.

At the same time, the studies which were included about the clinical practices of the nursing students were those that took into account within their goals the analysis of the situation of the students during their clinical practices.

RESULTS

The bibliographical search was carried out between November 2009 and July 2010. It ended with a total of 2437 articles, of which 89 ensured the inclusion criteria and finally, in a later depth analysis, 54 articles remained. The period that the published articles cover in the selected articles was from 1992 to 2010.

In the table 1, a summary of the executed search in the different data bases is shown, as well as the accepted and excluded articles by the already explained criteria.

Table 1. Results of the search

Search terms in the bases	Total of found articles in the search	Non-related articles to the topic ^a	Excluded for other reasons ^b	Included
<i>riks & nurses</i>	2341	1602	663	76
<i>occupational accident & risk perception</i>	12	4	1	5
<i>risk perception & nurse</i>	87	82	1	4
<i>nursing students</i>	65	54	7	4
<i>practices</i>				
<i>risk perception & nursing students</i>	0	0	0	0

a. Excluded articles for not being related to the case of study.

b. Excluded articles for not obeying with the inclusive criteria.

The studies related to the case of study are about different topics, such as: the work setting, medication errors, step measurements, risk perception, percutaneous accidents, psychosocial risks and studies about risk in nursing students. In the next section a relational analysis of the analysed works is done.

DISCUSSION

A demonstrated relationship between the risk perception in professionals and the attitude at work of these exists ⁽¹²⁻¹³⁾. Likewise, the fact that during the nursing students' clinical practices, accidents happen ⁽⁶⁾, lead us to think that it can emerge an underestimation of the risk in the clinical stays, which can provoke a major vulnerability in the students to suffer these accidents.

There's no doubt that the reduction in risk is a common goal of all the actors that interact in the work field. However, it is problematic to think that it could be unlikely reduced when the concept of "risk" is not understood in the same way, that is, when the concept of "what do we want to reduce" is not understood equally ⁽¹⁴⁾. The same danger or risk means different things depending on different people, social groups, contexts and situations ⁽¹⁵⁾. It seems acceptable that our risk perception at work, to a certain extent, determines our behaviour and as a result, our exposition towards these risks ⁽⁸⁾.

The risks in the sanitary field are generally associated to biologic risks ⁽¹⁶⁻¹⁷⁾. For health professionals, the risk of being exposed at blood and other human corporal fluids highly contaminated by pathogenic germs is still the most frequent and the highest risk at work. The puncture by a hollow needle is the most frequent accident, and the nursing personnel, because of the direct attention to the patient and the techniques that are employed, is the most exposed professional group ⁽¹⁶⁾. In a study carried out in the Infant Hospital from Mexico "Federico Gómez" ⁽¹⁸⁾, it was concluded that from the accidents at work suffered by the sanitary personnel, the suffered in nurse were about the 40.6%. The health and safety data at work of the young workers are very irregular, but they show a clear tendency: the young workers are above the average in the risk of damages at work ⁽¹⁹⁾ this leads us to think what can be the state of the nursing students, as they are exposed to the same risks as professionals.

Workers can also feel another type of risk, which is the risk in the sanitary field about "not solving problems". It can be identified as a determining factor and a factor of risk by itself ⁽²⁰⁾. The psychosocial risk is less studied in the health field. However, in the few amount of studies that have been found, the result has been that the risk perception is low, especially if the risk perception is compared to the hygienic or safety risks ⁽²¹⁾.

Regarding the nursing students, the literature shows that there are important deficiencies in the safety of the clinical practices ⁽⁶⁾. Because of that, we tend to consider that the right fulfilment of the step measures should be fostered, as much as the necessity of declaring all the accidents that happen, as it is highlighted that there is an important cut of declarations, only the 34,5% of the students declared it in an appropriate way ⁽⁶⁾. There is a relationship between the amount of invasive techniques that are carried out and the perceived risk by the students ⁽⁷⁾. It is also known that the students from the highest levels execute risk practices more frequently ⁽⁶⁾.

As it has been already mentioned, the psychosocial factors are a source that has not been deeply studied in the risk at work ⁽²¹⁾. In this same vein, it can be stated that the nursing students are in a situation where these factors are quite present, as they do not only challenge similar academic situations as other groups of students, but they also have an added stress because they are immersed in situations that involve working with people, what implies many risks and responsibilities ⁽²²⁾. The highest

stress rate is presented in the degrees from the health area, according to some studies carried out in the Austral University from Chile in 2004; the results point out that the nursing degree shows the highest stress levels ⁽²³⁻²⁴⁾.

The whole set of circumstances that the nursing students face and have been mentioned ^(6,7, 22-24) : to be exposed to the same risks at work than professionals, to suffer more stress due to the studies; incite us to study with more detail their view towards the risks they are exposed to.

In order to complete the analysis of the scientific production with the case of study, a thematic division has been done, studying each area in an individual way.

Risks & Nursing

The results of the following thematic groups will be analysed:

Work setting

Within the articles related to the work setting in sanitary and non-sanitary groups, two bibliographical reviews and an original article were analysed ⁽²⁵⁻²⁷⁾.

There are not many studies that relate the work setting with the accidents at work ⁽²⁵⁾. The previous studies are merely descriptive, and they give little information about the mechanism by which the organization factor is linked to the behaviour of security. The study carried out in the USA, states that the safety at work not only depends on the fulfilment of the rules, but it is also important for the final result the individual attitude, the voluntary participation in practices of a safe work, that is to say, the safety at work ⁽²⁵⁾. This argument supports the idea of that the risk perception influences on the safety at work, because the perception, takes part in the behaviour at work ⁽⁸⁾.

It is shown in another review article already analysed that there are demonstrated associations between negative aspects of the organizational environment and the adverse repercussions in the nurse's health, although it highlights the lack of analytic studies, and the weakness in some of the associations in the reviewed studies.

From the study about the relationship of the number of nursing staff with the mortality at hospitals, it was concluded that a low quantity of staff, as much as other factors such as the increase of overtime, were related to a higher mortality ⁽²⁷⁾. This reasserts the importance of decreasing the stressful factors in the nurse group in order to achieve a better health-care.

After the analysis of these studies, the importance of the setting work in relation to the accidents is extrapolated, being this a factor to study in the construct of the risk perception.

Medication errors

In relation to the medication errors, the analysed studies have in common the search for the cause of these mistakes. In the descriptive studies, it is mentioned the pathophysiology of the medication errors, being common in the conclusions that the psychosocial factors are cause of these ⁽²⁸⁻²⁹⁾: the lack of attention, the years of

experience, the excess of overtime, and in short the mental health of the professionals.

In a study carried out in 2008 ⁽³⁰⁾, these types of accidents are associated to an overtime at work, and to the bad environment among the workmates or to the safety perception.

Step measurements

According to the previous studies in different countries, the performance rating of the step measurements such as the hands washing, is worrying; being lower than the expected ⁽³¹⁻³⁴⁾. These observational studies confirm that even knowing the step measurements, they are not always taken into account. Encapsulating previous used needles is another practice of risk that is described in several studies ⁽³⁵⁾.

The formation in step measurements increases the risk perceived on the half of the nursing staff, and it has been associated to a higher fulfilment of the rules of safety, however this fulfilment is still low ⁽³⁶⁾. The study carried out in Seoul ⁽³⁷⁾ shows the effectiveness of a training program in the sanitary staff. This study also relates the increase of the risk perception to a higher level of accidents.

In conclusion, the fulfilment of the step measurements is still insufficient, and the previous studies about the topic confirm that the knowledge of the rules increases the perception of threats, and at the same time it decreases the exposition at risks. However, studies that are based on the risk perception as a determinant factor in the fulfilment of the step measurements haven't been found yet.

Psychosocial factors

The majority of the already found works describe in a transversal way the situation of the staff in a determinate place, relating the excess of work and the work setting to the probability of suffering a slight psychological disorder, such as stress, depression ⁽³⁸⁻⁴²⁾. There is another type of studies that relate the psychosocial factors directly to injuries at work ⁽⁴⁰⁻⁴¹⁾. Thus, it is concluded that the differences according to the personnel coalification influence on the risk of accident ⁽⁴⁹⁾, as much as the setting work and the psychological state of the staff ⁽⁴³⁾.

Percutaneous accidents

The common factor in all the studies that analyse the risks of the nursing group is to consider the percutaneous accidents as the highest risk and at the same time the one that most affect to the nurses, and also to the nursing students.

The majority of the studies are transversal, and they come to the conclusion of several aspects:

- The rate of accidents is higher than the desired.
- The years of experience imply a protective factor against the accidents ⁽⁴⁵⁾, the workers with an experience lower than one year supposed the 47.7% of the accidents.
- The communication of the accidents in an official way is less than the expected, being lower in doctors than in nurses.

In these descriptive studies, the risk perception as a variable to study is not taken into account, what tell us that this is a factor to study in the area of percutaneous accidents.

Risk perception

The risk perception is a construct in which the knowledge, values and personal beliefs that provoke a subjective expression interact ⁽⁵⁰⁾.

The few studies that have been found about the risk perception in the health personnel limit to describe the perceived risks by the professionals as the most important; however, this perception is not related to the industrial accidents.

The risks that are perceived as the most important are the percutaneous accidents, medication errors and psychosocial factors ^(20,50-51)

Occupational accident & risk perception

The used descriptors in the bibliographical review, have offered information about the situation, the case of study, in other professions that don't belong to the sanitary field. In contrast, it is worth mentioning that the study of the risk perception at work has improved a lot in occupational accidents prevention matters in the different professions ^(12-13,52), which don't always belong to the sanitary field.

The study carried out in Brazil ⁽⁵²⁾, demonstrates the relationship between the risk perception and the probability of suffering an occupational accident

In this study about cases and controls, the cases were those that had suffered an accident and vice versa. The level of risk perception was measured by a survey, having as a result that the cases perceive less risk than the controls.

Other studies prove that the risk perception is a factor that is involved in the attitude towards the mentioned risks and the behaviour at work ⁽¹²⁻¹³⁾. These data set out the necessity of following in a line of investigation about this topic in the sanitary field.

Nursing students

The studies that have been found about nursing students are mainly assessment of the teaching methods ⁽¹⁻⁵⁾. Other studies are focused on the issue of the valuation of the actual students' clinical practices ⁽⁵³⁾ and the risks that they entail ⁽⁶⁻⁷⁾, ^(22, 23). Studies that were centred in the muscle-skeletal risks ⁽⁵⁴⁾, biological risks ⁽⁶⁾ and attitudes towards the use of residues ⁽⁷⁾ were analysed, and in some of them they talk about the perception that the students have about these aspects, however, it isn't the principal goal of any of these studies, what reasserts us in the belief that studies which associate the risk perception to the accidents that the students suffer during their practices are needed.

CONCLUSIONS

After the compilation and study of scientific articles related to the perception that the nursing students have regarding the possibility of suffering an accident, we conclude that the published articles make reference to the relationship between the level of risk

perception and the risk itself, although it hasn't been found analytic studies that corroborate it, there were only obtained descriptive studies about the risks they are exposed to.

As studies that relate the risk perception to the probability of suffering an accident were not found in the group of the nursing students, a possibility of going on a line of research in this field is set out.

The National Institute of Safety and Hygiene at work suggests a method by which the risk perception can be measured taking into account all the factors that influence it, being this a possible tool for studying the risk perception of the nursing students, just like in the group of nursing professionals itself, as studies that analyse the risk perception in all its fields and that relate it to the industrial accidents have not been found yet.

Since the safety at work is an important issue, it is essential to devote researches to improving it. The detailed analysis of the attitude at work would provide us valuable information about the weak aspects to improve regarding the safety of the nurse, and the nursing students. This attitude at work is influenced by psychosocial factors, by years of experience and even by individual experiences; but all of them converge on the risk perception that exists towards adverse situations that the nursing professional are daily exposed to.

REFERENCES

1. - Bernick L, Clarky S. Live: A Tool to Support Student/Teacher Enactment of Community Health Nursing. *Int J Nurs Educ Scholarship*. 2008;5(20):1-18
2. - Myrick F, Phelan A, Barlow C, Sawa R, Rogers G, Hurlock D. Conflict in the Preceptorship or Field Experience: A Rippling Tide of Silence. *Int J Nurs Educ Scholarship*. 2006;3(6):1-14.
3. - Kyrkjebo JM, Hanssen TA, Haugland BO. Introducing quality improvement to pre-qualification nursing students: evaluation of an experiential programme. *Quality Health Care*. 2001;10:204-10.
- 4.- Granados G, González C, Gutiérrez MI, Márquez J, Latorre I, Ruiz T. Diagnósticos identificados por alumnos de Enfermería en prácticas. Su relación con otros problemas de salud. *Index Enferm*. 1999;26:9-12. España.
5. - Rapely PA, Nathan P, Davison L. EN to RN: the transition experience pre- and post-graduation. *Rural and Remote Health*. 2006;6:363.
- 6.- Ortiz S. Riesgos biológicos de los estudiantes de enfermería. *Enferm Clín*. 2003;13(5): 285-9. España.
- 7.- López C. Actitudes y creencias en los estudiantes del Campus de Bellvitge sobre las medidas higiénicas y las precauciones estándar. *Cultura Cuidados*. 2009;25:81-7.
8. - Stewart-Taylor AJ, Cherries JW. Does Risk Perception Affect Behaviour and Exposure? A Pilot Study Amongst Asbestos Workers. *Anals Occup Hygiene*. 1998;42(8): 565-9.
- 9.- PubMed. Bethesda: National Library of Medicine; [base de datos en internet] [acceso dic 2009 a junio 2010]. Disponible en: <http://www.ncbi.nlm.nih.gov/PubMed/>
- 10.- Cuiden. Granada: Fundación Index [base de datos en Internet] [acceso dic 2009 a junio 2010]. Disponible en: <http://www.doc6.es/index/>
- 11.- Instituto Nacional de Seguridad e Higiene en el Trabajo. [internet] [acceso abril 2010]. Disponible en: <http://www.insht.es/portal/site/Insht/>

12. - Ghosh AK, Bhattacharjee A, Chau N. Relationships of working conditions and individual characteristics to occupational injuries: a case-control study in coal miners. *J Occup Health*. 2004;46:470-8.
- 13.- Garcia AM, Boix P, Canosa C. Why do workers behave unsafely at work? Determinants of safe work practices in industrial workers. *Occup Environ Med* 2004;61:239-46.
- 14.- Solé MD. Riesgo percibido: un procedimiento de evaluación. Barcelona: Universidad autónoma de Barcelona. Instituto Nacional de salud e Higiene en el Trabajo. Nota Técnica de Prevención 578.
- 15.- Díaz V, Sánchez J, Cano A, Juárez I, García ME, Álvaro EM. Abordaje cualitativo de la gestión del riesgo: vivencias del personal de enfermería. *Biblioteca Las casas*. 2009;5(1).
- 16.- Casanova S, Santolalia E, Forcada J.A., Esteban V. Prevención de riesgo biológico en profesionales sanitarios de la comunitat valenciana. Generalitat. Conselleria de sanitat, 2007.
- 17.-Rubio MO, Ávila GA, Gómez BA. Actitudes de estudiantes de enfermería al manejar residuos biológicos. *Rev Enferm*. 2008;12(3):479-84. España
- 18.- Morales AJ. Frecuencia y mecanismos de exposición accidental a productos biológicos potencialmente infecciosos en personal de salud. *Bol Med Hosp Infat Mex*. 2006;63:147-54.
- 19.- Vogel L. Trabajo y salud en la generación “precaria” *Rev Estudios Juventud*. 2007; 79. España.
20. - Cezar-Vaz MR, Soares JFS, Figueiredo PP, Azambuja EP, Sant’Anna CF, Costa VZ. Risk perception in family health work: study with workers in Southern Brazil. *Rev. Latino-Am. Enfermagem*. 2009;17(6):961-7.
- 21.- Gómez E. Evaluación de riesgos psicosociales y percepción del riesgo en un bloque quirúrgico. En: comunicaciones X jornadas Pasqal. Asociación de Calidad Asistencial del Principado de Asturias; 2009.
- 22.- Basso L, Ardilles B, Bernal M, Canovas del Canto MJ, González C, Kroff MF. Factores derivados de los laboratorios intrahospitalarios que provocan estrés en los estudiantes de enfermería. *Rev. Latino-Am. Enfermagem*. 2008;16(5):805-11.
- 23.- Burgos MF. Calidad de vida y estrés de los estudiantes de enfermería 2ª semestre académico. [Tesis de Licenciatura en Enfermería]. Valdivia, Chile: Universidad Austral de Chile; 2004.
- 24.- Fernández ME, Rodríguez MA, Vazquez AM, Liebana C, García D. Nivel de estrés de los estudiantes de enfermería. Un estudio comparativo con otras titulaciones. *Rev Presencia*. 2005;1(2).
- 25.- Mark B, Hughes L, Belyea M, Chang Y, Hofmann D, Jones C, et al. Does safety climate moderate the influence of staffing adequacy and work conditions on nurse injuries? *J Safety Res*. 2007;38(4):431-46.
- 26.- Gershon R, Stone P, Zeltser M, Faucett J, Macdavit K, Chou S. Organizational Climate and Nurse Health Outcomes in the United States: A Systematic Review. [Revisão]. *Industrial Health* 200; 45: 622–636.
- 27.- Kane RL, Shamliyan T, Mueller C, Duval S, Wilt T. Nursing Staffing and Quality of Patient Care. *AHRQ*. 2007;7:1-539.
28. - Armutlu M, Foley ML, Surette J, Belzile E, McCusker J. Survey of nursing perceptions of medication administration practices, perceived sources of errors and reporting behaviours. *Healthcare Quarterly*. 2008;11
29. - McDowell S, Ferner H, Ferner R. The pathophysiology of medication errors: how and where they arise. *Br J Clin Pharmacol*. 2009;67(6):605-13.
30. - Wilkins K, Shields M. Correlates of medication error in hospitals *Health Reports*. Statistics Canada, Catalogue. 2008;19(2):82-303.

31. - Pittet D, Mourouga P, Perneger T; Infection Control Program group. Compliance with Handwashing in a Teaching Hospital. *Annals Intern Med* 1999 Jan; 130(2):126-34.
- 32.- Qushmaq I, Heels Ansdell D, Cook D, Loeb M, Meade M. Hand hygiene in the intensive care unit: prospective observations of clinical practice. *Polskie Archiwum Medycyny Wewnętrznej*. 2008;118(10)
33. - Asare A, Enweronu-Laryea C, Newman M. Hand hygiene practices in a neonatal intensive care unit in Ghana. *J Infect Dev Ctries* 2009;3(5):352-6.
34. - De Castro A, Cabrera S, Gee G, Fujishiro K, Tagalog E. Occupational Health and Safety Issues Among Nurses in the Philippines. *AAOHN J*. 2009;57(4):149-57.
- 35.- Sadoh W, Fawole A, Sadoh A, Oladimeji A, Sotiloye O. Practice of universal precautions among healthcare workers. *J Natl Med Assoc*. 2006;98(5):722-6.
36. - [Parmeggiani C](#), [Abbate R](#), [Marinelli P](#), [Angelillo J](#). Healthcare workers and health care-associated infections: knowledge, attitudes, and behavior in emergency departments in Italy. *BMC Infect Dis*. 2010;10:35.
37. - [Choi JS](#), [Kim KS](#). Application and evaluation of a web-based education program on blood-borne infection control for nurses. [J Korean Acad Nurs](#). 2009 Apr;39(2):298-309.
- 38.- Magela G, Moraes MF, Cunha VH. Sentimentos vivenciados pelos profissionais de enfermagem que atuam em unidade de emergencia. *Rev Bras Enferm*. 2009;62(6):856-62.
39. - Aiken LH, Clarke SP, Sloane DM, Sochalski J, Silber JH. Hospital Nurse Staffing and Patient Mortality, Nurse Burnout, and Job Dissatisfaction. *JAMA*.2002;288(16):1987-93.
- 40.- D'Errico A, Punnett L, Cifuentes M, Boyer J, Tessler J, Gore R, et al; Promoting Healthy and Safe Employment In Healthcare Research group. Hospital injury rates in relation to socioeconomic status and working conditions. *Occup Environ Med*. 2007;64:325-33.
- 41.-Smith1 D, Muto T, Sairenchi T, Ishikawa Y,Sayama S,Yoshida A, et al. Hospital Safety Climate, Psychosocial Risk Factors and Needlestick Injuries in Japan. *Industrial Health* 2010;48:85-95.
- 42.- Araújo T, Aquino BE, Menezes BG, Oliveira Santos BC, Aguiar L. Aspectos psicossociais do trabalho e distúrbios psíquicos entre trabalhadoras de enfermagem. *Rev Saúde Pública*. 2003;37(4):424-33.
- 43.- Elmiyeh B, Whitaker IS, James MJ, Chahal CA, Galea A, Alshafi K. Needle-stick injuries in the National Health Service: a culture of silence. *J R Soc Med* 2004;97:326-7.
44. - Falagas ME, Karydis I, Kostogiannou I. Percutaneous Exposure Incidents of the Health Care Personnel in a Newly Founded Tertiary Hospital: A Prospective Study. *PLoS ONE* 2(2).
45. - Jayanth ST, Kirupakaran H, Brahmadathan KN, Gnanaraj L, Kang G. Needle stick injuries in a tertiary care hospital. *Indian J Med Microbiol* 2009;27:44-7.
46. - Clarke S, Sloane DM, Aiken LH; Effects of Hospital Staffing and Organizational Climate on Needlestick Injuries to Nurses. *Am J Public Health*. 2002;92(7):1115-9.
47. - Moens G, Mylle G, Johannik K, Van Hoof R, Helsen G; Analysing and interpreting routinely collected data on sharps injuries in assessing preventative actions. *Occup Med*. 2004;54:245-9.
- 48.- Hadadi A, Afhami S, Karbakhsh M, Esmailpour N; Occupational exposure to body fluids among healthcare workers: a report from Iran. *Singapore Med J* 2008;49(6):492.
- 49.- Jovic-Vranes A, Jankovic S and Vranes B; Safety practice and professional exposure to blood and blood-containing materials in Serbian health care workers; *J Occup Health* 2006;48:377-82.

50. - Fiandra U, Raciti I, Mosso R, Calipari G, Rapellino M. The perception of health care risk: patients, health care staff and society. *Blood Transfus.* 2008 April;6(2):93-100.
51. - Olsen E, Ansattes oppfatninger av sykehusets sikkerhetskultur. *Tidsskr Nor Lægeforen* nr. 20, 2007;127:2656-60.
52. - Cordeiro R; Suggestion of an inverse relationship between perception of occupational risks and work-related injuries. *Cad Saúde Pública.* jan-fev. 2002;18(1):45-54.
- 53.- Lorente AM., García C, López MJ, Echevarria P, Morales I; Satisfacción de los alumnos de enfermería de la Universidad Católica San Antonio (UCAM) sobre su formación práctica. *Seminarios en salas de demostraciones y prácticas clínicas; Enfermería Global* 2009;17:1-11.
- 54.- Nelson AL, Waters TR, Menzel NN, Hughes N, Hagan PC, Powell-Cope G, et al. Effectiveness of an Evidence-Based Curriculum Module in Nursing Schools Targeting Safe Patient Handling and Movement; *International Journal of Nursing Education Scholarship.* 2007;4(26):1-19.

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