



ISSN: 0975-766X
CODEN: IJPTFI
Research Article

Available Online through
www.ijptonline.com

**ANALYZE AND PRIORITIZE THE EDUCATIONAL NEEDS OF NURSES IN KERMANSHAH
AYATOLLAH TALEGHANI HOSPITAL IN THE CASE OF PREVENTING OCCUPATIONAL RISKS
RELATED TO BIOLOGICAL AGENTS**

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Received on 04-03-2016

Accepted on 25-03-2016

Abstract:

Background: The most significant occupational injuries among nurses are associated with biological agents which include multiple underlying cases. Therefore, the design and implementation of educational programs with operational objectives and based on needs assessment on prevention of occupational risks can be increasingly effective on maintain and improvement of nursing staff health. **Methods:** Statistical population of this cross-sectional study includes Kermanshah Ayatollah Taleghani Hospital nurses and a sample of 70 nurses participated in study. Data collection tools included demographic information questionnaires and 10 items related to prevent nursing occupational hazards biological agents. When responses were evaluated, the collected data were analyzed using SPSS18 software, independent t, Spearman and Pearson tests and results were presented in terms of statistical indicators. **Results:** 30% of participants in study were nurse's aide and 70% were nurses. Two items are introduced as the first priority of educational needs including familiarity with transmissible diseases in wards or hospital and care oneself during disease, injury or skin lesions of hands until complete recovery. In most cases, there was statistically significant relationship between variables and items. **Conclusion:** Nurses' knowledge on safety rules is more important in prevention of occupational hazards and as a result, application of these principles. In this regard, considering biological agents has been focused and needs assessment of educational planning will be effective on increased participation of nurses in teaching and learning process and will promote their knowledge and skills.

Key words: nurses, nurse's aide, occupational hazards, biological agents

Introduction: Work is the most fascinating issue that can be taught or discussed because it fills most of day for humans. The importance of organizational study is that well organized organs are efficient and take effective steps in

order to reach aims through satisfying staff. Management experts introduce director success key as guiding human forces under his supervision and define management as work with others in order to achieve organizational aims. Therefore, the staff involvement in planning process has increased their commitment to aims and objectives; employee involvement in decision-making, delegating authority to them and follow the effective suggestions are the most important measures that increase job satisfaction and help effectively organization in achieving its aims.

Study the literature of human resources development in organizations suggests that educational program has been always one of the key solutions in order to solve the problems of organization from managers' point of view. As long as educational needs are not properly detected and are not examined in detail, any action or proposal in the field of education will be useless and costly. Determining the educational needs is the first step of staff training plan and the first reason of effective education and development creation and assurance; if it is done correctly, there will be more objective basis for planning as effective map and the possibility of adapting it to organization needs, work and staff scope and ultimately, its effectiveness will be increased.

One the one hand, one of the best opportunities is increased opportunity of education in order to improve the performance of human resources in twenty-first century. Education is a long-term learning process that must be done daily and in systematic manner. Learning process occurs continuously during human conscious activity. Since each person has unique characteristics, his abilities and skill learning style will be different. So, the first step of education is to examine educational needs. Systematic determination of educational needs is considered as a basis for preparation of specific educational content. Educational need concept includes identification of needs that is helpful for planning, identifying individual issues, assessment of learning, improving individual and staff job performance and educational interventions (9). Therefore, an educational needs analysis that is properly prepared helps to organizational effectiveness and performance and competition in an environment full of change and development and is considered as a solid basis in order to prepare staff development plans at all levels.

Nurses as powerful muscle of health care system play a significant role in evolution, development and improvement of medical care. In this profession, nurses are caregivers and administers of patient physical and mental condition. The profession has dedicated itself the most health care professionals and is a stressful profession. Because long work shifts, fatigue and physical, psychological and social stimuli create stress and depression. Therefore, this group is always prone to health risk and nurses who do not have proper physical and mental health will not be able to conduct proper care such as physical and mental support of patients. Therefore, physical and mental health of nurses is of

utmost importance. Since the personnel performance in the prevention of occupational risks related to biological agents is the most important elements of hospitals as well as is effective on protecting them and ultimately leads to patients' satisfaction. Therefore, in this study the educational needs of Kermanshah Ayatollah Taleghani Hospital nurses are studied in the case of preventing occupational risks related to biological agents with the aim of identifying and ranking the educational needs of research community in order to provide training appropriate for needs and to benefit from teaching-learning process.

Materials and Methods

This research is descriptive- analytic and cross- sectional study with practical value. The statistical population consisted of all nurses and nurses' aide working in Kermanshah Ayatollah Taleghani hospital in 2015 and 70 persons were selected as statistical sample by proportional stratified sampling in terms of wards and number of nurses and nurses' aide. The wards of this center includes orthopedic (women and men), general surgery (men and women), neurosurgery, oncology, emergency and ICU sectors.

The data collection tools include questionnaires consisting of two parts: Part I: demographic data including: the therapeutic sector of nurse activity, position, work shift, sex, education, age and work experience and the second part consists of 10 items related to prevention of nurses' occupational risks in terms of biological agents. These items include: 1. Proper hand washing, 2. Proper sanitation in the case of environmental, skin or mucosa contamination, by blood or other fluids, 3. Proper techniques for wound dressing and infection control, 4. Accurate segregation of pharmaceuticals infectious waste, sharp instruments and medical devices that are used for patients 5. Immediate accident reporting system to infection control supervisor and follow-up method (required tests), 6. Nosocomial infections, the prevention way and remove them, if necessary, 7. Proper techniques in order to avoid needle stick injuries and the follow-up of needle stick injuries, 8. Transmissible diseases in wards or hospital, 9. Using gloves and other safety equipment at necessary time in wards and 10. Take care of oneself in the case of disease, injury and skin lesions in hands until complete recovery.

Educational need to learn any of items was 5 with value of minimum 1 to maximum 5. The validity of tools was determined by content validity method and based on sources, reference books and other approved questionnaires and then it was examined by two faculty members and then necessary corrections were done. Tools reliability was identified through determining internal consistency of tools and calculating Cronbach's alpha of 0.82. The questionnaires were distributed among sample nurses and were completed by them; data were entered into SPSS18

software. The descriptive statistical methods were used in order to determine and compare the mean total score and items scores and independent t-test, Pearson and Spearman tests were used in order to examine the relationship between demographic characteristics with related items and biological agents and the results were presented in two-dimensional tables.

Results

The frequency distribution of nurses' characteristics participating in study in Table 1 shows that 45.7% of nurses participating in this study were males and 54.3% were female. 30% of them had nurse aide education, 11.4% had Associate Degree in nursing and 58.6% had BA in nursing as well as 30% were nurse aide, 70% were ward nurses, 54.7% worked at morning and 38% worked at cycling shift. 50% of participants were between 23 and 38 years old and 50% were between 39 and 54 years old. 48.6% of participants had less than 10 years experience, 20% had more than 20 years experience and 31.4% had between 10 and 20 years experience.

Since the maximum score of each item was 5, the results of Table 2 showed that two items had highest score (15.7%) compared to other items including familiarity with transmissible diseases in wards or hospital and care oneself during disease, injury or skin lesions of hands until complete recovery. Proper sanitation in the case of environmental, skin or mucosa contamination, by blood or other fluids had the lowest score (9.2%) in nurses and nurses' aide evaluation.

Table 3 shows the priority of items related to educational needs in the case of preventing occupational hazards associated with biological agents based on Table 2 results.

In fact, educational needs were prioritized in 5 levels based on valuation conducted by participants in study. Some items were at the same level. Table 4 results show that there is statistically significant and positive relationship between sex and age variables and item 10, work location and items 6 and 9, shift and item 8, education and all items except items 5, 8 and 10 and position variable, all items except 5, 6 and 10 and there is statistically significant and negative relationship between work experience and item 7. There is no statistical relationship between item 5 and any of variables.

Table 5 shows the response valuation based on Likert scale and comparisons between items, mean and standard deviation based on scale of 1 to 5. Comparing the results of educational needs items related to prevention of occupational hazards associated with biological agents showed that care oneself during disease, injury or skin lesions of hands until complete recovery had the highest score (11.65%) compared to other items. Proper sanitation for environmental, skin or mucosa contamination with blood and other fluids had the lowest score (8.80%).

Table 1: Frequency distribution of nurses' personal characteristics participating in study.

Personal characteristics		Frequency distribution	Percent
Sex	Male	32	45/7
	Female	38	54/3
Education	Nurse's aide	21	30
	Associate Degree	8	11/4
	BA	41	58/6
work experience	1-10	34	48/6
	10-20	22	31/4
	20-30	14	20
Position	Nurse's aide	21	30
	Nurse	49	70
Shift	Fixedmorning	32	45/7
	Circulating	38	54/3
Age	23-38	35	50
	39-54	35	50

Table2: Frequency distribution of responses to educational needs items in preventing occupational risks related to biological agents.

Evaluation	1		2		3		4		5	
	Num ber	Per cent	Num ber	Per cent	Num ber	Per cent	Num ber	Per cent	Num ber	Per cent
1	31	44/3	11	15/7	7	10	14	20	7	10
2	22	31/4	17	24/3	20	28/6	9	12/9	2	2/9
3	25	35/7	13	18/6	14	20	12	17/1	6	8/6
4	19	27/1	16	22/9	16	22/9	13	18/6	6	8/6
5	17	24/3	11	15/7	17	24/3	18	25/7	7	10
6	13	18/6	10	14/3	25	35/7	16	22/9	6	8/6
7	26	37/1	11	15/7	16	22/9	14	20	3	4/3
8	13	18/6	11	15/7	17	24/3	18	25/7	11	15/7
9	25	35/7	14	20	15	21/4	10	14/3	6	8/6
10	13	18/6	11	15/7	16	22/9	19	27/1	11	15/7

Table3: Prioritize the educational needs items in terms of preventing occupational risks related to biological agents.

Priority	No.	Item
1	1	Familiarity with transmissible diseases in wards or hospital
	2	Take care of oneself in time of illness, injuries and skin lesions of hands until complete recovery
2	3	Teaching proper hand washing
	4	Full education of immediate accident reporting system to infection control supervisor and following way
3	5	Educate proper techniques of wound dressing and infection control
	6	Educate the correct segregation of pharmaceutical infectious waste, sharp instruments and medical equipments used for patient
	7	Educate full familiarity with nosocomial infections, how to prevent and remove them
	8	Familiarity with necessary times of using gloves and other safety equipments in wards
4	9	Learn the proper techniques of avoiding needle stick injuries and follow-up of needle stick injuries
5	10	Learn how to disinfect contaminated environment correctly by blood and other fluids of patient

Table 4: The relationship between demographic characteristics of nurses and educational needs of preventing occupational risks related to biological agents.

Sig	Shift	Position	Wards	Work experience	Age	Education	Sex
1	0/097	0/432*	0/113	-0/125	-0/112	0/398*	0/126
2	-0/089	0/468*	0/069	-0/032	-0/016	0/390*	0/188
3	-0/076	0/261*	-0/055	-0/061	0/009	0/199*	0/018
4	0/026	0/254*	0/036	-0/117	-0/116	0/206*	0/151
5	-0/160	0/002	-0/004	-0/069	0/014	0/037	0
6	0/044	0/193	0/221*	-0/169	-0/147	0/203*	0/097
7	0/004	0/334*	0/133	-0/215*	-0/145	0/351*	0/144
8	0/248*	0/208*	0/048	0/030	0/155	0/191	0/118
9	-0/089	0/509*	0/299*	-0/038	0/017	0/469*	0/003
10	-0/081	0/154	0/167	0/025	0/211*	0/058	0/277*

Table5: Score percentage of educational needs in prevention of occupational risks related to biological agents based on items.

Items	Mean and SD of scale (1-5)	Percent
1	2/36±1/46	8/99
2	2/31±1/14	8/80
3	2/44±1/36	9/29
4	2/58±1/30	9/82
5	2/81±1/33	10/70
6	2/88±1/21	10/97
7	2/38±1/29	9/06
8	3/04±1/34	11/58
9	2/40±1/33	9/14
10	3/06±1/35	11/65
Final total	26/26±13/11	100

The results of this study are shown in Tables 2 and 3. 10 items related to prevention of occupational risks associated with biological agents are prioritized at 5 levels. According to these results, nursing staffs need all factors as well as different items educationally. Two items had highest score compared to other items including familiarity with transmissible diseases in wards or hospital and care oneself during disease, injury or skin lesions of hands until complete recovery.

This study is compatible with Mohammadi study; accordingly, there are harmful factors in all jobs that which affect people. Medical group practitioners deal with patients who carry transmissible disease. Patient items have been focused in educational needs as harmful factors based on working conditions of profession.

The results of Table 4 showed that there is statistically significant relationship between care oneself during disease, injury or skin lesions of hands until complete recovery in both sexes. The relationship between wards variable and items of familiarity with nosocomial infections, prevention and removing them and familiarity with using gloves and other safety equipment in wards indicate the importance and sensitivity of nursing staff in order to become familiar with specific conditions of hospital different wards in the prevention of occupational risks related to biological agents. The subject shows continuous education of occupational health for nurses with an emphasis on specific education for different wards of hospital. Considering this important agent in educational planning can enhance effectively the safety of nursing profession and reduce occupational hazards.

There is statistically significant relationship between results of shift variable and familiarity with transmissible diseases in wards and hospital and the results show educational need for personnel working in different shifts in order to prevent the transmissible diseases.

There is statistically significant and negative relationship between work experience and learning proper techniques in order to avoid needle stick injuries and follow-up of needle stick injuries; Given the continuous education in this regard and repeated proper techniques in order to avoid needle stick injuries in wards, educational needs to learn this technique has been reduced due to increased work experience.

There was significant relationship between education and position variables with six items (1, 2, 3, 4, 7, 9) such as training proper hand washing, proper sanitation in the case of environmental, skin or mucosa contamination, by blood or other fluids, proper techniques for wound dressing and infection control, accurate segregation of pharmaceuticals infectious waste, sharp instruments and medical devices, proper techniques in order to avoid needle stick injuries and follow-up of needle stick injuries, using gloves and other safety equipment at necessary time in wards. Since people with higher education are active at higher positions, therefore, similar results are predictable with respect to these two variables. Immediate accident reporting system to infection control supervisor and follow-up method has no significant relationship with any variables (required tests). This may be due to suitable information and necessary knowledge of nursing staff. Since there has not been a similar study in this area, therefore, it is not possible to compare with other studies.

According to the results of Table5, percentages of educational needs are very close to 10 items (minimum of 8.80% to maximum of 11.65%), which demonstrate the importance of continuing education in this field. According to the importance of preserving and improving the health of nurses, the subject is recommended in study by Mohammadi in order to hold retraining courses and offer training pamphlets.

Shiroyehzadee *et al* studied various factors affecting productivity and education effectiveness and investigated the relationship between education and organizational level and the effectiveness of education; their study findings showed that If managers focus their attention to personnel with less education and lower levels of organization, education effectiveness will be increased. In this study, these two factors are studied as the main variables. Yarmohammadian *et al* mentioned educational needs as the first and most important step in planning of health, treatment and medical education system in the needs assessment from managers and health professional point of view. They mentioned that needs assessment based on precise patterns and techniques lead to increased effectiveness

and efficiency of system planning. The subject is considered in this study; on the other hand, the study results showed needs assessment affection on planning and providing training.

Studying educational needs of Kashan midwives was conducted by Atriyane *et al* where the needs assessment was examined in the form of midwifery main tasks and training educational needs was emphasized. According to Table 5, the results of this study are consistent with educational needs. Because educational needs related to all items were determined in this study. The difference is that needs assessment was in the form of sub-tasks and occupational safety of nursing staff in this study. In study conducted by Seyyed Abbas zade *et al* that investigated educational needs of public hospitals nursing directors, they focused on using study results in preparing the training courses of nursing directors in medical sciences hospitals. The conclusion is consistent with this study objectives and it is suggested to develop educational programs in order to prevent occupational risks related to biological agents at hospital based on needs assessment. In a study by Aghajanloo entitled “evaluate the rate and variety of occupational risks among nursing students in nursing and midwifery faculties of Tehran” most of mentioned occupational risks are consistent with this study items; according to the high rates of some events, the need for proper planning and training in the field of occupational risks and the prevention procedures and report in a timely manner are suggested in this study in order to prevent long-term complications. The results of this study on educational needs of preventing occupational risks related to biological agents reflect this fact.

Conclusion

Traditionally, educational needs include the development of knowledge and skills related to sub-tasks but the current trend of education is based on competency which refers to the scope of abilities and capabilities that enable people to do the jobs at optimum levels and lead to the realization of returns on different levels. Competency-based education defines competencies related to each of specified jobs and knowledge, skills, behaviors, personal characteristics of each competency. In recent years, human resource factor has been central to organizations. Today, human resources are the most strategic organizational factor and this phenomenon can be considered as the most fundamental change. Recent decades have been created in management approaches and will be continued in future. In health care, human resources play key role compared to other factors and hospital plays a crucial role as one of the major institutions providing health care services with special facilities in return of physical and mental health of patients and health promotion. Therefore, the optimal use of existing resources and providing satisfactory services needs experts, informed, experienced and responsible human resources. Nurses' role is important in health sectors and promoting

professional development. Therefore, considering in-service training of nurses has always been emphasized and providing the necessary training related to health and safety professionals affects the process and satisfies them. On the other hand, the success of training activities depends on audience needs meet that increases the participation of students in design of educational programs and improvement of programs quality. Therefore, educational needs assessment in the case of preventing occupational risks associated with biological agents can fit educational planning with needs and working conditions of hospitals or specialized wards and provide educational and organizational aims.

Acknowledgments

This paper is the result of a research project approved by Number 94477 Kermanshah University of Medical Science Whereby the Deputy of Research and Technology with the project agreed as well as all staff who participated and gave their time to this project is gratitude.

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