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The Impact of Educational Program on Nurse's Knowledge Regarding Nosocomial Infection

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Abstract **Original Research Article**

Aims: 1) To investigate nurses' knowledge about nosocomial infections. 2) To evaluate the effectiveness of the educational program regarding nosocomial infections on nurses. ***Methodology:*** An educational program was carried out on a simple random sample of (50) nurses (from different educational levels) who work in different wards at Al-Basra Teaching Hospital. The project's instrument was a questionnaire including information about both demographic characteristics and nosocomial infection. The sample was involved in pre-and post-test on the program which lasted eight days. ***Results:*** The results show that the highest percentage (36%) of sample were aging nurses group (20-29) years, the lowest percentage (10%) of the sample were aged less than (20) years old. The highest percentage (54%) female, the lowest percentage (46%) was male. According to educational level the highest percentage (36%) were secondary school graduate, while the lowest percentage (8%) were college education. The highest percentage (30%) was grouped (1-5) years, while the lowest percentage (10%) of the sample was of the group more than (16) number years' work. The majority of nurses have deficit knowledge about etiology modes of transmission, spread nosocomial infections and symptoms. There was a high difference regarding knowledge between pre-test and post-test. ***Conclusions:*** The present findings show the effectiveness of the program through the highest percent of excellent for nurses' responses concerning nosocomial infection knowledge between pre- and post- program for the case group, and the majority of nurses' responses to the case group at post program had good knowledge concerning nosocomial infection than program. The majority of nurses have deficit knowledge about etiology modes of transmission, spread nosocomial infections and symptoms. There was a high difference regarding knowledge between pre-test and post-test. ***Recommendations****:* Majority nurses have deficit knowledge about nosocomial infection indicate the need to establish a national educational program to all health workers in Iraqi hospitals.

Keywords: Educational Program, Assessment, Knowledge, Nosocomial Infection, Questionnaire, Nurses, Basra, Iraq.

INTRODUCTION

Nurses knowledge and awareness about nosocomial infection consider as corner stone in controlling such infection.

Nosocomial infections occur worldwide and affect both developed and resource-poor countries. Infections acquired in health care settings are the major causes of death and increased morbidity among hospitalized patients [1].

Nosocomial infections (hospital-associated infections) are those infections acquired during the patient's stay in hospital [2]. It is a major problem for patient wellbeing [3].

Millions of patients are affected by health care-associated infections worldwide each year [4].

At any time, over 1.4 million people worldwide suffer from infectious complications acquired in hospital [5].

Nurses are responsible for providing medications, dressing, sterilization, and disinfection. They are involved in more contact with patients than other health care workers. Therefore, they are more exposed to various nosocomial infections [6].

For this, knowledge of nursing staff regarding hospital-associated infections become more important in protecting hospitalized patient's life.

Standard precautions are designed to reduce the risk of acquiring occupational infection from both known and unexpected sources in the healthcare setting. Standard precautions have two objectives, namely to protect health care workers from percutaneous injuries and to prevent transmission of nosocomial infection [7].

The study aims to determine the awareness of nosocomial infection among nurses, to assess the existing knowledge of nursing regarding nosocomial infection, to evaluate the effectiveness of planned teaching programmed on nosocomial infection among nursing and to find out the association between the levels of knowledge and demographic variables.

METHODOLOGY

Ethics statement: The written informed consent was obtained from each participant and the study was approved by the head of the hospital.

Setting of the project: The program was carried out at Al-Basra Teaching Hospital in the medical department.

Sample of the study: Simple random sample of (50) nurses from different wards in Basra General Hospital that was distributed at the following: 1-Inrermediate nursing school (18), 2-Diploma (nurse or medical assistant)(15), 3-College (4), 4-Others (13).

Project Instrument

Questionnaire with two parts; part one consists of the demographic characteristics; age, gender, educational level, and years of experience, part two consists 20 items regarding the awareness and skills related to nosocomial infection was used to assess the level of awareness to nosocomial infection and its practical knowledge, the aspects were focused about the abbreviation of nosocomial infection sequential steps in nosocomial infection [1]. The questionnaire and the planned teaching was checked by six experts to test its validity and reliability.

Permission was taken from hospital administration. Time duration of the program lasted one week. Before involving the staff in the program, they were examined to evaluate their knowledge and practice about nosocomial infection (pre test). The questionnaire was presented to them in the classroom setting. The time taken to respond to the questionnaire was 45 minutes. Data was collected by administering a knowledge questionnaire on nosocomial infection and planned teaching program was introduced to them. On 8th day post-test was done by administering the same questionnaire.

STATISTICAL DATA ANALYSIS

Data of the present study were analyzed by using (SPSS) program for descriptive statistical procedure through the determination of frequency (f) and percentage (%). Mean score also was determined.

RESULTS

The impact of the program was measured by questionnaires administered before and after the intervention.

Table-1: The association between nurse's knowledge and their ages

Age	F (%)	Pre-test		Post-test	
		I know	I don't know	I know	I don't know
Less than 20	5(10%)	38	62	81	19
20-29	18(36%)	164	196	301	59
30-39	14(28%)	103	177	233	47
40-49	7(14%)	68	72	124	16
More than 50	6(12%)	53	67	108	12
Total	50(100%)	426	574	847	153

Table-1 shows that the highest percentage (36%) of the sample were aged (20-29) years, although the lowest percentage (10%) of the sample were aged less than (20) years old.

Table-2: The association between nurse's knowledge and their gender

Gender	F	Pre-test		Post-test	
		I know	I don't know	I know	I don't know
Male	23(46%)	220	240	444	16
Female	27(54%)	249	291	494	46
Total	50(100%)	469	531	938	62

Regarding to sex, Table-2 shows that the highest percentage (54%) females, while the lowest percentage (46%) males.

Table-3: The association between the nurse's knowledge and their educational level

Level of Education	F (%)	Pre-test		Post-test	
		I know	I don't know	I know	I don't know
Secondary nursing school	18(36%)	138	222	295	65
Institute	15(30%)	104	196	261	39
College	4(8%)	26	54	78	02
Other	13(26%)	83	177	247	13
Total	50 (100%)	351	649	881	119

Regarding to the educational level, Table-3 shows that the highest percentage (36%) were secondary school graduate, while the lowest percentage (8%) were college education.

Table-4: The association between nurse's knowledge and their years of employment

Years of employment	F (%)	Pre-test		Post-test	
		I know	I don't know	I know	I don't know
1<	10 (20%)	67	133	193	7
1-5	15 (30%)	57	243	265	35
6-10	6 (12%)	19	101	101	19
11-15	6 (12%)	22	98	109	11
16-20	5 (10%)	32	68	94	6
>20	8 (16%)	22	138	145	15
Total	50 (100%)	219	781	907	93

Regarding for a number of work years Table-4, the highest percentage (30%) with a group (1-5) years, while the lowest percentage (10%) of the sample were number years more than (16) number years' work.

Table-5: Nurses response (pre and post knowledge) concerning nosocomial infection

No.	Term	Answer	Pre-test		Post-test	
			F	%	F	%
1	A nosocomial, or hospital-acquired infection is a new infection that develops in a patient during hospitalization.	I know	9	18	48	96
		I don't know	41		2	
2	A nosocomial is identified at least forty–eight to seventy-two hours following admission.	I know	8	16	49	98
		I don't know	42		1	
3	Hospital infections are infections that are not present in the patient at the time of admission to hospital.	I know	11	22	47	94
		I don't know	39		3	
4	There are two forms of nosocomial: Endogenous infection and Exogenous cross-contamination.	I know	12	24	48	96
		I don't know	38		2	
5	Endogenous infection, self-infection, or auto-infection. The causative agent of the infection is present in the patient.	I know	9	18	44	88
		I don't know	41		6	
6	Development of nosocomial during hospitalization from physical, psychological and social changes of patient.	I know	15	30	47	94
		I don't know	35		3	
7	Exogenous cross-contamination followed by cross-infection during the stay in hospital the patient comes into contact with new infectious agents.	I know	8	16	46	92
		I don't know	42		2	
8	The infection may come in contact with instruments, containers, linen etc.	I know	9	18	50	100
		I don't know	41		0	
9	The hands of health-care workers are the most frequent ways transmitted of nosocomial infection	I know	11	22	45	90
		I don't know	39		5	
10	The elders or very young age increases the risk of nosocomial infection	I know	9	18	47	94
		I don't know	41		3	
11	Invasive procedures increase the risk of nosocomial infection	I know	7	14	45	90
		I don't know	43		5	
12	Nosocomial infections are responsible for approximately 44% death per year in the world from hospital admission.	I know	8	16	41	82
		I don't know	42		9	
13	The area that more affected to the nosocomial infection that are :urinary system, the lower part of the respiratory system, location of surgery, venous catheter, skin and soft tissue.	I know	2	4	41	82
		I don't know	48		9	

14	The carrier mediator is one of the primary method to spread infection where transmitted microbes it to the person exhibition by a substance contamination infection.	**I know** **I don't know**	**6** **44**	**12**	**49** **1**	**98**
15	The main way the spread of infection is the contact ,direct contact, contact indirect, spray, air less than or equal to 5 microns ,carrier mediator and the mediator.	**I know** **I don't know**	**3** **47**	**6**	**45** **5**	**90**
16	To the spread of infection known as the interaction between these elements are all on behalf of a series of infection or cycle spread of the disease from one person to last infection but with the presence of elements of basic	**I know** **I don't know**	**5** **45**	**10**	**44** **6**	**88**
17	To reserve the transfer of infection by air immobilizer is the isolation of the patient in the room with negative pressure.	**I know** **I don't know**	**5** **45**	**10**	**47** **3**	**94**
18	Respiratory tract infection is the presence of symptoms of satisfactory in the respiratory system with a two sings at least of the signs pathological the following during the presence in the hospital (cough, sputum, purulent, the emergence of infiltrates a new in - Rays - chest compatible with the infection.	**I know** **I don't know**	**5** **45**	**10**	**38** **12**	**76**
19	Urinary tract infection is the emergence of a result of positive examined urine type or two types of pathogen at least 10 bacteria per ml in the case of the presence or the absence of symptoms of clinical.	**I know** **I don't know**	**4** **44**	**8**	**38** **12**	**76**
20	Infection threads started surgical is the presence of secretion or abscess or the spread if inflammation and cell in a place surgical cutting during the month of the procedure.	**I know** **I don't know**	**3** **47**	**6**	**44** **4**	**88**
Total percentage					**14.9**	**90.3**

High difference for level of knowledge between pre test (14.9) & post test (90.3)

Table-6: Statistical data analysis for pre and post test program

Statistical Data Analysis	Pre-program	Post- program
Mean	20.40	35.80
Std. Deviation	8.041	3.411
Std. Error Mean	1.137	.482

There is a difference between pre and post- test regarding educational level of sample (positive outcome).

Table-7: Statistical Data Analysis (T-Test) Pre and Post- Program

Paired Samples T- Test						
Variables	Mean	Std. Deviation	Std. Error Mean	T-value	Df	Sig. (2-tailed
score_1 - score_2	-15.400	6.010	.850	18.11	49	0.00

DISCUSSION

Our study found that the highest percentage (36%) of the sample were aging nurses group (20-29) years, the lowest percentage (10%) of the sample were aged less than (20) years old. The highest percentage (54%) female, the lowest percentage (46%) was male. The highest percentage (36%) were secondary school graduate, while the lowest percentage (8%) were college education. The highest percentage (30%) was grouped (1-5) years, while the lowest percentage (10%) of the sample was of the group more than (16) number years' work.

According to table (6). Arithmetic mean for pre-test score is (20.40), which mean that nurses don't have sufficient knowledge about nosocomial infection. This result agrees with previous studies [7; 8; 9; 10; 11] that showed poor knowledge towards nosocomial infection.

These results may be because most of participants from secondary nursing school and others, also most of participants with years of experience (less than 1 year) and (1-5 years).

Arithmetic mean for post-test score is (35.88) and according to the Table-7. T-test between pretest and posttest score is (18.11), which mean that there is a significant difference between pre-test and post-test score. On the other hand, majority nurse have deficit knowledge about paragraphs (13,14,15,16,17,18,19,20) which are regarded about etiology modes of transmission, spread nosocomial infections and symptoms, and this agrees with previous study [1].

There was a high difference between knowledge between pre-test and post-test.

Our results agree with Jissir and Hassan regarding impact of educational program, the results of them showed the effectiveness of the program through the high percent of excellent for the nurses' responses concerning the nosocomial infection knowledge between pre and post test for the case group, and the majority of nurses' responses at post test had good knowledge concerning nosocomial infection than pre test [1].

Our results give a good indicator that the program achieved its objective in raising the level of knowledge and awareness among nurses about nosocomial infection.

CONCLUSION

- Awareness of nosocomial among nursing staff in Al-Basra Teaching Hospital is poor and needs to be improved.
- In general, the program had improved the level of knowledge for most nurses about nosocomial infection.

RECOMMENDATIONS

The majority of nurses have deficit knowledge about nosocomial infection indicate and that indicates the need for establishng a national educational program for all nurses working at hospitals.

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