# Impact of Nurses' Knowledge Upon The Infection Control in Primary Health Care Centers at AL-Amara City.

# اثر معارف الممرضين ازاء السيطرة على العدوى في مراكز الرعاية الصحية الاولية في مدينة العمارة

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**الخلاصة:**
**هدف الدراسة** تقييم اثر معارف الممرضين إزاء السيطرة على العدوى في المراكز الرعاية الصحية الأولية في مدينة العمارة .
**المنهجية :** أجريت دراسة وصفية في مراكز الرعاية الصحية الأولية في مدينة العمارة للفترة من17 تشرين الأول 2013 ولغاية آب 2014 وتم بناء اداة الدراسة من قبل الباحث لغرض انجاز اهداف الدراسة الحالية تم اختيار عينة عشوائية تكونت من (70) ممرض وممرضة العاملين في وحدة التحصين والضماد في المراكز الصحية في مدينة العمارة كانت الاستبانة عبارة عن قسمين احدهما تحتوي المعلومات الديموغرافية والأخرى الاستمارة الاستبيانية وقد تم بناء الاستبانة وطورت لغرض الدراسة. وتم تحديد ثبات اداة القياس من خلال الاختبار وإعادة الاختبار و حددت مصداقية الأداة من خلال عرضها على مجموعة من الخبراء، و تم استخدام (الإحصاء الوصفي) التكرارات والنسب المئوية، والوسط الحسابي والانحراف المعياري (والإحصاء الاستدلالي ) اختبار مربع كاي.
**النتائج :** كشفت نتائج الدراسة أن معظم افراد العينة (52.9٪) تقع ضمن الفئات العمرية (40) سنة فما فوق ، وأن (52.9٪) هم ذكور. و(47.2٪) من حملة شهادة الدبلوم و (74.3٪) لديهم خبرة في العمل من (1-5). و(58.6٪) من العينة مشاركين في دورات تدريبه.
**الاستنتاج:** استنتجت الدراسة بوجود فروقات ذات دلالة معنوية عالية لمجموعة الدراسة في الجوانب الرئيسية التي لها علاقة بفقرات معارف الممرضين بخصوص السيطرة على العدوى وأظهرت الدراسة أن هناك ارتباط كبير بين معارف الملاك التمريضي والخصائص الديموغرافية
**التوصيات** تشجيع الممرضين وتحفيزهم للمشاركة في البرامج التدريبية والمؤتمرات التي تقام من قبل المختصين في برنامج السيطرة على العدوى لتحديث معارفهم نحو السيطرة على العدوى.

**Abstract:**
**Objective:** To evaluate the impact of the nurses' knowledge staff concerning the infection control at primary health care centers in AL-Amara city.
**Methodology:** A descriptive study design was carried out in primary health care centers from 17th October, 2014 to August, 2014. The instruments was constructed by the researcher to reach the aims of the study using a non-probability sampling: purposive sample consist of (70) nurses, who worked in immunization unit and dressing unit at primary health care centers in AL-Amara city was selected, and Two study instruments were utilized for proper data collection [questionnaire and demographic information]; the study Reliability of instrument was determined through the use of test and retest and the instrument validity was determined through a panel of experts. The analysis of the data was used descriptive statistics (frequencies, percentages, the arithmetic mean and standard deviation) and statistical inferential ( chi square)
**Results**: The results of the study revealed that (52.9%) at age groups (40) years and more years,. The findings of the present study indicated that (65.7%) of the sample were males and (47.2%) are Nursing institute graduate, (74.3%) have (1-5) years of experience, and (58.6%) have Training courses
**Conclusion:** The study findings indicated that there were highly significant between nurses' knowledge in all domains related to infection control
**Recommendation:** Encourage nurses and motivate them to participate in training programs and conferences held by specialists in infection control to update their knowledge about infection control.
**Keywords:** nurse; knowledge; infection control.

## INTRODUCTION

The term infection was limited as a condition state that ensues from the presence of a pathogen in/on the body. A pathogen is a disease producing microorganism. [(1)]

Infectious diseases can caused by pathogenic microorganisms, such as, bacteria, viruses, parasites and fungi. The diseases can be spread from one individual to another, directly or indirectly, through fluid exchange or exposure to vectors, or from the environment. [(2,3)]

Health care-associated infections lead to death, disability and excess medical costs. Initiation of new technologies, in the absence of infrastructure to practice them safely, may lead to adverse effects. Consequently, you should An overall approach to an infection prevention and control policy at the primary health maintenance facility. [4]

All health care workers (HCWs) included nurses have an awareness that clients could be a source of HAIs. Yet, awareness of health institution staffs, equipment and the environment as sources of transmission of HAIs among primary HCWs. [5]

These infections occur in low-income countries more than 90% [6]

Health associated infections (HAIs) report for (99,000) deaths in American hospitals and healthcare setting according to the Centers for Disease Control & Prevention (CDC) estimates, and (37,000) deaths in Europe.[7,8]

Health workers at primary institutions are the first point of contact of clients with the health system, for that reason, they must be knowledgeable in the diagnosis and management of clients Also, they should be well trained, supervised, and provided with adequate supplies otherwise, there will be a loss of credibility of the health care system, and clients will not seek medical care for the health care services.[9]

In some region of the world, up to 96% of people seeking primary health care receive injections, of which over 70% are unnecessary or could be replaced by an oral formulation.[10]

The (CDC) has developed specific guidelines intended at preventing the transmission of pathogens within all health settings. [11]

## OBJECTIVE:

To evaluate the impact of the nurses' knowledge staff concerning the infection control at primary health care centers in AL-Amara city

## METHODOLOGY

A descriptive evaluation design study was carried out to evaluate nurses' knowledge concerning infection control at Primary Health Care (PHC) centers. The study was conducted for the period of conducted on centers from 17th October, 2013 to August, 2014.. The present study was conducted at (14) primary health care centers, which were distributed in AL-Amara City.

A Sample of 70 male and female nurses who worked in immunization unit and dressing unit at 14 primary health care (PHC) Centers. A purposive "non-probability" sample of nurses have been selected from PHC centers distribution in AL-Amara city. After extensive review of relevant literature and the National Guideline for infection control in health institutions of the Iraqi which editor by ministry of health in Iraq cooperation with WHO, 2009.[12] also reviews of Guideline for isolation precaution: preventing transmission of infectious agents in healthcare settings 2007.[13]. Which editor by CDC. The questionnaire was made for the purpose of the study The questionnaire consisted (36) items which include two sections that include demographic data: The beginning section of the questionnaire includes (4) items second part interview of the questionnaire included (32) item. The overall number of the items included in the nurses' knowledge had been (36) items.

The items concerning nurses' knowledge were rated on three levels Likert scale; I know, uncertain, I don't know and scored as 3, 2, and 1 respectively.

The data of the present study were analyzed through the application of two statistical approaches. A descriptive statistical approach that includes frequency, percentage, $\bar{x} \mp S.D.$= Arithmetic Mean and Stander Deviation. (S.D.), and an Inferential statistical approach that includes Chi-Square test. Mean: A mean of score equal to (1.68-2.33) was considered

moderate MS, greater than (2.34) was considered high MS, less than (1.68) was considered low MS.

-Mean score equate to (2) and more regarded as enough knowledge.

-Mean score below (2) considered as inadequate knowledge deviation, Relative Sufficiency (R.S): Relative Sufficiency was assessed for nurse's knowledge by three grades (low, moderate, high) The data of knowledge were ordinal according to the three level scale which were scored as (1, 2, 3) for each level respectively so the cutoff point was (2) and the lowest value for acceptance was (66.67%)

Theoretical relative sufficiency based on early state facts; there were three levels of evaluation, so the interval ranged between (33.33- 100%). (22.22) was the interval between first and last degree at the same level. The suggestion was made for classifying the early stated interval for knowledge into main categories as follows: (Low level (33.33-55.55), Moderate level (55.56-77.78), High level (77.79-100).

- Relative sufficiency equal to (66.67) and more, considered as adequate knowledge.

-Relative sufficiency less than (66.67), considered as inadequate knowledge

# RESULTS:

**Table (1): Distribution of the Study Samples According to Demographic Data**

| No. | Variables | (n=70) | F | % |
|---|---|---|---|---|
| 1- | Age (year) | 20-24 | 8 | 11.4 |
| | | 25-29 | 12 | 17.1 |
| | | 30-34 | 1 | 1.4 |
| | | 35-39 | 12 | 17.1 |
| | | >40 | 37 | 52.9 |
| | | Total | 70 | 100.0 |
| 2- | Gender | Male | 46 | 65.7 |
| | | Female | 24 | 34.3 |
| | | Total | 70 | 100.0 |
| 3- | Level of education | Nursing institute graduate | 33 | 47.2 |
| | | Secondary school of nursing graduates | 29 | 42.4 |
| | | School of nursing graduates | 8 | 11.4 |
| | | Total | 70 | 100.0 |
| 4- | Years of employment | 1-5 | 37 | 52.9 |
| | | 6-10 | 19 | 27.1 |
| | | 11-15 | 4 | 5.7 |
| | | 16-20 | 4 | 5.7 |
| | | 21-25 | 6 | 8.6 |
| | | Total | 70 | 100.0 |
| 5- | Training courses | 6-10 | 18 | 25.7 |
| | | Total | 70 | 100.0 |
| | | None | 14 | 20.0 |
| | | 1-3 | 41 | 58.6 |
| | | 4-6 | 14 | 20.0 |
| | | >7 | 1 | 1.4 |
| | | Total | 70 | 100.0 |

Freq. =Frequencies, %=Percentages NO= number, n=total of the sample

Findings of table 1 revealed that the majority (52.9%) of the sample were (40) years and more while (65.7%) of the sample are male, (47.2%) are nursing institute graduate, (52.9%) has (1-5) years of employment, and ( 58.6% ) have (1-3) sharing in training courses in nursing.

**Table (2): Knowledge of nurses about infection control**

| Overall Main Domains | Main Domains of Knowledge | No. | M.S. | S.D | R.S.% | Level. | Ass. |
|---|---|---|---|---|---|---|---|
| Domains Related To Nurses Knowledge | General information about infection | 70 | 2.65 | .512 | 88.33 | 3 | H |
| | Causes of infection | 70 | 2.35 | .735 | 78.33 | 3 | H |
| | Preventive procedures of infection | 70 | 2.64 | .579 | 88.00 | 3 | H |
| | Disinfection and sterilization | 70 | 2.64 | .579 | 88.00 | 3 | H |
| | Waste Management | 70 | 2.64 | .579 | 88.00 | 3 | H |
| Overall Domains | Overall Questions Related To Nurses Knowledge: | 70 | 2.58 | .608 | 86.00 | 3 | H |

**Cut-off-point: (33.33-55.55) : Low- 1 ;( 55.56-77.78) : Moderate-2; (77.79-100) : High-3**
**Cut-off-point (MS): 1-1.67 = Low; 1.68-2.33 = Moderate; 2.34-3.00 = High**
**N= Number; SD= Stander deviation; RS. = Relative sufficiency; MS. = Mean of the score; Ass= Assessment**

Table (2) presents that there is a high mean of score (2.58), and R.S (86.00)

**Table (3): Level of the nurses' knowledge**

| No. | Level of Knowledge | Frequency | Percent |
|---|---|---|---|
| 1 | Low | 8 | 11.4 |
| 2 | Moderate | 18 | 25.7 |
| 3 | High | 44 | 62.9 |
| Total | | 70 | 100.0 |

**Cut-off-point: 1-1.67 = Low; 1.68-2.33 = Moderate; 2.34-3.00 = Hig**

Table 3 reveals that the majority of participant has a high knowledge (n=44;62.9), in contrast to less than two fifth who have a moderate knowledge (n=18;25.7%).

**Table (4): Association between the nurses' knowledge and their ages**

| Age (year) | | I know | uncertain | I don't know | Total |
|---|---|---|---|---|---|
| 20-24 | F | 135 | 96 | 25 | 256 |
| 25-29 | F | 262 | 105 | 17 | 384 |
| 30-34 | F | 27 | 5 | 0 | 32 |
| 35-39 | F | 274 | 97 | 13 | 384 |
| > 40 | F | 739 | 359 | 86 | 1184 |
| Total | F | 1437 | 662 | 141 | 2240 |
| | | $\chi^2$obs.= 38.705 | $\chi^2$crit. =15.51 | df=8 | P< 0.05 |

Table (4) reveals that there is a significant Association between the nurses' knowledge and their ages of less than ( 0.05).

**Table (5): Association between the nurses' knowledge and their gender**

| Gender | | I know | Uncertain | I don't know | Total |
|---|---|---|---|---|---|
| Male | F | 994 | 397 | 81 | 1472 |
| Female | F | 443 | 265 | 60 | 768 |
| Total | F | 1437 | 662 | 141 | 2240 |
| | | $\chi^2$obs= 21.598 | $\chi^2$crit. =5.99 | df=2 | P< 0.05 |

Table (5) reveals that there is a significant association between nurses' knowledge and gender at less than (0.05)

**Table (6): Association between the nurses' knowledge and their educational level**

| Level of educational | | I know | Uncertain | I don't know | Total |
|---|---|---|---|---|---|
| Nursing institute graduate | F | 75 | 261 | 58 | 1072 |
| Secondary nursing school | F | 559 | 306 | 51 | 916 |
| Nursing school graduate | F | 125 | 95 | 32 | 252 |
| Total | F | 1437 | 662 | 141 | 2240 |
| $\chi^2$obs.= 54.516 | | $\chi^2$crit. =9.49 | df=4 | P< 0.05 | |

Table (6) presents that there is a significant association between the nurses' knowledge and their educational level at less than ( 0.05)

**Table (7): Association between the nurses' knowledge and their years of employment**

| Years of employment | | I know | Uncertain | I don't know | Total |
|---|---|---|---|---|---|
| 1-5 | F | 733 | 361 | 90 | 1184 |
| 6-10 | F | 388 | 175 | 45 | 608 |
| 11-15 | F | 94 | 32 | 2 | 128 |
| 16-20 | F | 97 | 31 | 0 | 128 |
| 21-25 | F | 125 | 63 | 4 | 192 |
| Total | F | 1437 | 662 | 141 | 2240 |
| $\chi^2$obs.= 31.094 | | $\chi^2$crit. =15.51 | df=8 | P< 0.05 | |

Table (7) presents that there is a significant association between the nurses' knowledge and their year of employment at less than (0.05) .

**Table (8): Association between the nurses' knowledge and their training courses**

| Number of training courses | | I know | Uncertain | I don't know | Total |
|---|---|---|---|---|---|
| None | F | 236 | 155 | 57 | 448 |
| 1-3 | F | 851 | 388 | 73 | 1312 |
| 4-6 | F | 330 | 110 | 8 | 448 |
| 7 and more | F | 20 | 9 | 3 | 32 |
| Total | F | 1437 | 662 | 141 | 2240 |
| $\chi^2$obs.= 68.771 | $\chi^2$crit. =12.59 | df=6 | P< 0.05 | | |

Table (8) reveals that there is a significant association between the nurses' knowledge and their number of training courses at less than ( 0.05).

## DISCUSSION:

Table (1) the finding of the present study revealed that age, (52.9%) of nurses was (40) years old and more. This result agrees with [14] that the proportion of subjects aged years was a study reported that most of their study sample are (≥55) (24.7%) of nurses .Also This result agrees with a study conducted by [15] study which indicates that age of nurses less than half (45.5%). More than half of the study sample (65.7%) are males. This result agrees with [16] study reported that most of their study sample is male (69 %). The findings of the present study have revealed that the highest percentage of participants were nursing institute graduates (47.2%). These findings have been supported by [17] who have mentioned that more of the participants were diploma (46.33%). Also agree with a study conducted by [15] who has mentioned that the majority (93.2%) of nurse diploma. Furthermore, the table (1) shows that

more than half (52.9%) of samples have (1-5) year of employment. These findings have been supported by [18] who have mentioned that more than half (30%) of participants have (1-5) year of employment. Our study showed that more than half (80%) attended training courses. Present study findings are similar to those of other studies conducted by [17] who has mentioned that the Sixty percent of them had experienced less than five years and 60% attended a training course about infection control.

Finding agree with the literature on nursing science which centered on the enrollment of the nurses in training courses to improve their knowledge. [19]. Based on the researchers point of view, all staff in immunization unit and dressing unit should be enrolled in a training session to improve their knowledge, practices and skills concerning infection control

Table (2) regarding the general information about infection Show that there was a high mean of score (2.65) for all items, The result has indicated that there are significant effects related to the items.This finding agrees with [18] which have high mean score for all participants regarding nurses' knowledge concerning a general information infection.[19] which has reported for infection control personnel should have knowledge of causative microorganisms, including their modes of transmission, life cycles, and methods of control, which are the basis of preventing infection the center for disease control and prevention (CDC) has issued guidelines for preventing of transmission of infection can result in a wide variety of infections such as, for example, urinary tract, wound, respiratory, blood, bone and skin infections.

Table (2) Regarding nurses' knowledge concerning causes infection in this table presents that there are high mean scores in all items with average mean of score (2.35). This study agrees with [18] which have a higher mean score for all participant regarding knowledge concerning the Causes of infection with average mean of score (2.81).

Understanding what causes infection and disease is the first step in being able to prevent and control it. An infection occurs when a disease-causing organism enters the body and starts to multiply, often causing signs and symptoms of infection. [21]

Gotoff reported that bacteria, fungi, virus, and parasites often travel on hands from one individual to another causing an infection. They are made by Candida, Escherichia coli, hepatitis viruses, herpes zoster virus, Pseudomonas and staphylococcus. [22]

Table (2) shows the nurses' knowledge concerning Preventive measures in this table demonstrates that there are high mean scores in all points with average mean of score (2.64) except item (3) "If a staff member of the health center got a respiratory disease, skin infections, diarrhea, or infectious diseases must prevent from working in the health center until his recovery" moderate. The present study was supported by [18] who has reported high mean scores in all items with average mean of score (2.94) regarding nurses' knowledge concerning Preventive measures.

The finding table (2) concerning disinfection and sterilization indicates that all items show a high mean of scores with an average mean score equal to (2.64). The results of the present showed that, highest mean score of the nurses gave a correct and complete answer regarding method of sterilization. This supported by [15] who reported that all staff of nurses were aware of the guideline of sterilization and type disinfection solutions. This study similar to the present study, which reports that a majority of nurses gave correct and complete about sterilization and type disinfection. Also agree with a study conducted by [18] who have mentioned all participants about nurses' knowledge and their sterilization and disinfection shows a high mean of scores with an average mean score equal to (2.85) A good level of knowledge with respect to information about their own sterilization and disinfection.

Table (2) reveals high mean scores in all items regarding nurses' knowledge concerning waste management with average mean of score (2.57) .The table shows that highest mean score, with average mean of score (2.96) of the respondents said that item" Put

waste in plastic bags and difference in the colors of bags depending on the type of waste, such as general waste bags placed black " and item, "Sharps waste must be disposed of by placing them in plastic containers resistant materials and sharps are then placed in a special bag and carried outside the center and burned?. This study agrees with [23] who has reported Sharps must be placed in a rigid, puncture resistant, closable, and leak proof container that is labeled with the word Sharps and the Biohazard symbol. Sharps must be handled with extreme caution. The clipping, breaking and recapping of needles is highly discouraged and dangerous. Sharps containers should not be filled more than 2/3 full. Filled sharps containers must be closed securely, and must be destroyed medical waste by incineration.

Table (3) Illustrated the levels of knowledge and practice among the studied subjects about infection control. According to the tables (8,14), only (62%) of the subjects had an adequate level of knowledge about infection control measures, while (67.1%) of them had adequate practice. This finding agrees with [24] which reported concerning knowledge, only (60%) had adequate.

In tables (4) was a significant association between nurses' knowledge and their age,. This means that nurses' ages have great impact on their knowledge regarding infection control. Unfortunately, there was no evidence to support these results. Based on the researcher's point of view Increase knowledge come up years of age at work. This result agrees with [18] who has reported a significant association between nurses' knowledge and their age.

The study findings had depicted highly significant Associated between nurses' knowledge and their gender in table (5). Furthermore the gender factor has an impact on nurses' knowledge towards infection control. This result supported by [25] who has reported a significant association between nurses' knowledge staff and gender.

Regarding the educational level, the findings in tables (6) show that there are significant association between nurses' knowledge and their education level. It is considered that the highest level of educational preparation is the best acquired knowledge. The level of education has a positive effect on the quality and quantity of knowledge and skills acquired by recipient of education. When the nurses increase their level of education, their knowledge increase too. [26] reported that there is a highly associated between nurses' knowledge the nurse education level and their knowledge.

Concerning their years of employment, the finding in tables (7) indicates that there are significant association between nurses' knowledge and their years of employment, the nurses have affected their compliances to standard precautions, thus more years of employment lead to more experiences which finally influences on nurses' knowledge. This result agrees with [26]; [27] who find that there is a significant association between the nurses' knowledge and the years of employment.

Table (8) the result shows that whenever there is an increase in the number training sessions there was an increase in nurses' knowledge and practice. Furthermore, education and training of healthcare personnel are a prerequisite for ensuring that policies and procedures for Standard Precautions are understood and practiced. [28] who reported that conventional training is indispensable for all health care workers to secure a sound knowledge of body expression of infection control this was line with the finding of the study, which denoted that good practice scores was associated with participants received infection control training than who did not. Furthermore, instruction and training of healthcare worker are a requirement for assuring that policies and procedures for Standard Precautions are understood and used

## CONCLUSION:

Most of nurses working in immunization unit and dressing unit had adequate knowledge regarding infection control.

## RECOMMENDATION:

Further studies can be conducted on a large sample of nurses who are working in immunization unit and dressing unit of with respect to the prevention of primary health centers associated infection

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