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Nurses' attitude about the Sterilization and Reuse of Medical Equipment in Primary Health Care Centers

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Abstract

Objective(s)

This study aimed to evaluate nurses' knowledge about the sterilization and reuse of medical equipments in primary health care centers in samawah city.

Methodology:

A descriptive study was conducted on (122) nurses in Primary Health Care Centers in Samawa city. Data were collected using demographic information and the questionnaire included items related to knowledge on sterilization and reuse of medical equipment.

Results:

The results of this study showed that mean of nurses have 34.9±9.6 years old was female of nursing staff. The level of nurses knowledge on sterilization and reuse 21.3±2.7 good. The result of this table shows the no significant relationship between nurses' knowledge about the sterilization and reuse of medical equipment and demographic characteristic.

Conclusion:

Research indicated that reuse was present it is widely used and reused in health centers in Samawah, most responses tend to accept reuses if the integrity is good .

Recommendations:

The staff nurses have to be involved in seriously designed, planned and implemented training sessions on infection control programs with an emphasis on the Sterilization and Reuse of Medical Equipment.

Keywords:

Nurses, Knowledge, Sterilization , Reuse of Medical Equipment , Primary HealthCare Centers

Healthcare Associated Infection is a major public health concern across world, contributing to increased morbidity and mortality(1).

It is a major safety issue affecting the quality of care for hundreds of millions of patients each year in both developers and developing countries(2).

According to a review by the World Health Organization (WHO), the prevalence of healthcare-associated infection at the health facility level ranges from 5.7% to 19.1%, with a combined prevalence of 10.1% in low-income countries. Recent Studies suggest that the burden of HCAIs may be disproportionately high in resource-limited settings. With HCAI rates estimated at between 2 and 20 times that of developed countries [3].

Sterilization is prevention and major goal of health facilities aiming to provide safety Patient care. The use of disposable equipment is the best way to ensure the patient's presence, comfort and safety. However, the health system in low-income countries cannot get disposable format for certain devices due to cost,therefor must be some machines Sterile for reuse [4].

Proper sterilization and medical cleaning Equipment and other objects that come into contact with the patient's body or body fluids are The main and decisive method in preventing and reducing transmission, its types and effects in health facilities during medical procedures and patient care [5].

Knowledge, Attitude, and Practice of Infection Control by Dental Students at Pedodontic Clinic, College of Dentistry, University of Baghdad, Iraq

This study examined the knowledge, attitudes, and practices of infection control by dental students at College of Dentistry/ University of Baghdad, Iraq.

Three hundred dental students participated in this study. A self-administrated questionnaire with 21. Dental students were given closed-ended questions about the usage of PPE, infection control awareness, vaccination status, percutaneous exposures, and attitudes toward treating patients with hepatitis B (HBV) or human immunodeficiency virus (HIV). Version 21 of the Statistical Package for Social Sciences (SPSS) was used to analyze the data The significance level for the Fisher exact and Chi-square tests was set at 0.05[6].

Evaluation of Nurses' Infection Control Knowledge, Attitude, and Practice in Kirkuk City, Iraq's Hospital Intensive Care Units. Due to their significance in lowering patient mortality and morbidity, safeguarding healthcare workers, lowering the financial burden on patients and healthcare facilities, and shortening the length of a patient's hospital stay, infection control is the cornerstone of infection prevention and control programs, especially those that target healthcare-associated infections (HCAI). Examining nurses' knowledge, attitudes, and use of infection control practices in intensive care units is the goal of the study.

In the current study, a quantitative (descriptive and observational) design was adopted. 68 nurses from the intensive care units at the Azadi Teaching, Kirkuk General, and Maternity, Pediatric, and Gynecology Hospitals in Kirkuk City participated in a nonprobability (convenient) sample. The present study demonstrates that most of the participants were 25–29 years old, male, single, with a bachelor's degree in science of nursing and 1-2 years of experience in an intensive care unit but had not taken any training regarding infection control. The nurses exhibited high levels of practice (66.67%), attitude (78.57%), and knowledge (95%), all related to infection control. Nursing practice and exposure to infection while working ($p = 0.027$), and the mean of nurses' knowledge about infection control and years of experience ($p = 0.013$) also differed significantly from each other. However, there were no discernible variations between the attitude of the nurses and any other sociodemographic factors. Ongoing education, training and offering scientific booklet and publication about the infection control in intensive care unit are also encouraged [7].

Evaluation of Infection Control Measures of Iraqi Dentists in Dental Practices

This study's goal was to look into the attitudes, behaviors, and knowledge of Iraqi dentists in Al-Najaf City regarding infection control procedures.

To learn more about the methods employed in dental offices to minimize cross-infection, a questionnaire was created. All 500 dentists in Al-Najaf City, Iraq, who completed the surveys in September 2019 made up the study population. The questionnaire was made to gather information on sociodemographic traits, familiarity with and use of infection control practices, such as hand hygiene, cleaning, disinfecting, and sterilizing, as well as the use of personal protective equipment, immunization, and the prevention and management of occupational hazards and sepsis[8].

HIV/AIDS Awareness of People Who Work at Barbershops and Beauty Salons at Al-Nasiriya City in Iraq

Employees at barbershops and beauty salons use reusable sharp tools to execute skin piercing treatments, which presents risks for the transmission of HIV and other blood-borne infections. Examine a person's knowledge of HIV/AIDS and its risk factors, attitude toward the disease, and ability to recognize high-risk behaviors among those who frequent barbershops and beauty parlors in Nasiriya City, Iraq. In Nasiriya city, Iraq, barbers and beauty parlors were the subjects of a cross-sectional study to evaluate knowledge, attitude, and practice with regard to the transmission and prevention of HIV/AIDS. A total of 107 barbershops and beauty parlors participated in the study. The age groups for barbershops were 16% for those under 20 years old, 42% for those between 21 and 30, 27% for those between 31 and 40, 13% for those between 41 and 50, and 2% for those over 50. There were 82% men and 18% women among the participants[9].

An Investigation of Dentists Knowledge, Attitude and Practices towards HIV+ and Patients with other Blood Borne Viruses in Mosul City to look at the knowledge of HIV infection and other blood-borne infections among a group of Iraqi dentists. attitudes toward treating HIV/AIDS patients and behavioral patterns, techniques for sterilizing dental tools, and the hepatitis B vaccine. Materials and Procedures In the study, 210 dentists participated. Using a self-administered questionnaire, the survey was conducted. Results: There was a significant difference between gender and speciality on general and knowledge of the oral and other problems connected to AIDS patients, with a mean ranging from 4.21 to 7.33. There were few dentists who would treat an HIV patient, regardless of their gender or area of expertise, with 40–70% refusing to do so. Compared to dentists with more experience, younger dentists with five years of service were more eager to serve HIV patients. The majority of the sample (89.57%) sterilized dental equipment using dry heat, and 92.86% of the sample believed that an HIV infection may result from a needle stick injury. Only 2.38% of the sample's authors applied the three appropriate barrier techniques. When compared to men, female dentists (specialists and dental practitioners) were significantly more likely to receive the hepatitis B vaccine. The majority of the sample (97.14%) thought they needed more information on HIV and other blood borne viruses and infections[10].

The character of nurses in preventing sickness and promoting health is outstanding(11).

The most frequent complications affecting hospitalized patients are thought to be infections acquired in the hospital. Results from research carried out in Tehran, Iran's Children Medical Center Hospital, a teaching children's hospital and tertiary care referral facility, suggest that our hospital's infection control procedures need to be improved. The purpose of this study was to evaluate potential hospital hazards and develop risk management strategies that could endanger patient safety, welfare, and health at an Iranian referral hospital. The lack of a risk management framework, impractical guidelines and policies, failure to apply behavioral-change theory, obstacles to compliance, subpar facility design, as well as insufficient commitment and enforcement by infection control personnel highlight the need for management systems in infection control[12].

Disease prevention is regarded as more successful than cure because it lessens the financial burden that diseases place on society[13].

Methodology

Design

A descriptive study, using the evaluation approach, was carried out to evaluate nurses'' knowledge and attitudes about the sterilization and reuse of medical equipment's in primary health care centers in Al-Muthanna City. Administrative Arrangements: After granting agreement of the College of Nursing Council related to the study, official letters are submitted, with the research proposal.

Ethical Considerations

Ethical approval for the study is obtained from scientific research ethical committee at the college of the nursing university of Baghdad before the initial conduct of the original study , also permission has been

obtained from Al-Muthanna health directorate and to conduct the research is decided by the health districts to ensure their agreement and cooperation for collecting data about nursing care provided to nurses work in primary operation room at PHCCS. All participants in the study have signed consent forms for their agreement of participation in data collection process

Settings of the Study

The present study was conducted at primary health care centers in Al-Muthanna City. These primary health care centers are considered the most appropriate setting for data collection related to the subject of the study

Sample of the Study

A purposive "non- probability" sample, of (120) staff nurse, is selected for the present study.

Inclusion Criteria

Staff nurse who work at dressing room, Staff nurse work in primary health care centers, Nurses who are aged.

Instrument of the Study

The first part (**Part I**) the questionnaire was designed to collect demographic characteristic about the healthcare worker participating in the survey. The demographic characteristic included characteristic related to gender, age, education, experience in healthcare, and employment status.

The second part (part II) the questionnaire contained items related to the attitudes of healthcare workers towards sterilization and reuse of equipment. The section contained categorical response items (I agree, sometime, I disagree). Such selection is employed of pool of subjects[24-32].

Pilot Study

A pilot study is carried out from period of December 4th, 2022 to 10st December, 2022 at (2) primary health care centers in the Al-Muthanna City for the purpose determine the validity and reliability of the study instruments. The pilot sample is excluded from the original study sample. The pilot study also aims at evaluating the questionnaire content clarity, relevancy and adequacy, examine the cooperation of the study sample and identifying barriers that may be encountered through the study process, considering the estimated time for data gathering and showing about how much time is required to fill out the questionnaire and determine the reliability and validity of the study instrument.

The validity of the instrument

Validity of the instrument refers to the degree to which instrument measure what it is supposed to be measuring, it is becoming increasingly common to use a panel of experts in the content area to evaluate and document the validity of the instrument ,content validity of the questionnaire was determined throughout the use of panel of experts to examine the purport of the questionnaire for the current study. A preparatory questionnaire is designed and presented of (10) expert for the determination of its validity who have more than five years' experience in their field.

Reliability of the Study

Instrument Reliability is considered the major criterion for assessing the instrument quality and adequacy, also it is the degree of consistency with which the instrument measures the attributes that are supposed to be measuring , Internal consistency reliability is employed for the study instrument. The results has indicated that Cronbach alpha correlation coefficient is (0.63) for the knowledge.

Data Collection

Data are collected throughout the use of the study self-report questionnaire and structure interview technique, as means of data collection from the period December 19th 2022 to 10st February 2023. The data in primary health care centers are gathered through self-report. Time for each interview varies with respect to duty of each participant approximately (15 to 20 minutes).

Statistical Data Analysis

Data are analyzed through the application of the following approaches: Descriptive Statistical : Data Analysis Approach The approach is implemented through the determination of frequency, percent, mean, standard deviation. Inferential Statistical :Data Analysis Approach It includes the following:

T-test Analysis, ANOVA test, Correlation, scale correlation

Limitations of the study

The current study is limited to the following: There is lack of studies and research articles in Iraq to present supportive evidence to the study findings relative the assessment module, role of staff nurses in the treatment module and the communication module study results. Due to the type of sampling technique, the study findings can be specific on to the present sample

Results

Table . 1. The Relationship between Nurses' Attitudes toward The Sterilization and Reuse of Medical Equipment and Demographic Characteristic (n= 122).

Demographic Data	Valid	N	Attitudes Mean	Std. Deviation	F	p-value
Gender	Male	54	24.18	3.44	1.761	.664*
	Female	68	24.4559	3.03		
Age	Less than 20 years	1	21.00	0.00	.443	.722
	20 to 30 years	57	24.47	2.92		
	31 to 40 years	18	24.50	3.55		
	More than 40 years	46	24.17	3.45		
Education Level	High school	98	24.35	3.13	3.364	**.029**
	Diploma	22	23.72	3.23		
	Bachelor's	2	30.00	0.00		
years of service	Lower than 5 years	34	24.61	3.10	.837	.504
	5 to 10 years	32	24.71	2.98		
	11 to 15 years	11	23.09	2.87		
	16 to 20 years	13	23.46	2.87		
	More than 20 years	32	24.43	3.74		
Years of Experience	Less than 3 years	50	24.38	3.09	1.132	.345
	3 to 5 years	21	24.52	2.46		
	6 to 10	17	25.00	3.72		
	11 to 15 years	19	23.00	3.03		
	More than 15 years	15	24.86	3.97		
Type of Sterilization	Autoclave	50	23.94	3.04	1.082	.360
	Manual	41	24.26	2.86		
	Both	30	24.96	3.85		
	Non from there	1	28.00	0.00		
Training about Infection Control	Non	29	23.55	3.42	1.615	.203
	Less than 5 times	85	24.48	3.16		
	More than 5 times	8	25.62	2.55		
	Total	122	24.33	3.210		

N: number, F:distribution , p-value: probably, ANOVA test,* in depended t-test, significant at 0.05

Mean Attitude(Poor: 1-11, moderate: 11-22, good: 22-33)

The result shows that no-significant relationship between nurses' attitudes toward the sterilization and reuse of medical equipment and demographic characteristic in primary health care centers (p-value more than 0.05), except with them education level and them demographic characteristic (p-value .029 less than 0.05).

Table.2. Overall Evaluation of the Nurses' Attitudes toward the Sterilization and Reuse of Medical Equipment's in Primary Health Care Centers

Attitude		Frequency	Percentage
	Poor	0	0.0
	Fair	38	31.1
	Good	84	68.9
	Total	122	100.0

μ±SD=24.3±3.2 good

Poor: 1-11, moderate: 12-22, good: 23-33

This table reveal that the majority of nurses had good attitudes about the sterilization and reuse of medical equipment (good 68.9%).

Discussion

According to data analysis of these characteristics, the majority of nurses are female, 34.9 years old, have less than five years of expertise, have high school from education level , are sterilized using an autoclave, and have received training in disinfection.

In a descriptive study titled "Evaluation of Nurses Practices Concerning Sterile Techniques in Critical Care Units in Al-Najaf and Ashraff City Hospitals," the results showed that 50% of the study sample was between the ages of 20 and 29, and that 75% of them were men ,70% of the study sample were married, 35% had 1 to 5 years of nursing experience, and 42.55 percent of the study sample had graduated from nursing college. Moreover, the study found that 100% of the nurses were untrained[14].

A cross-sectional study to Understanding Sterilization and Reuse of Medical Devices , Nepal. The study had 218 participants, and the average age of the healthcare employees who participated in the survey was 32 years old, with a standard deviation of 9.5 years. The proportion of female healthcare workers who participated in the survey was higher than the proportion of male ,the qualifications of the healthcare workers participating in the survey were in nursing; they had a healthcare certificate in nursing. The study participants ranged in age from 2 months to 39 years, with a mean of 9.7 years and a standard deviation of 9.7 years among the healthcare workers employed in Nepal's primary and secondary care hospitals; 51.6% (95% CI: 42.0%–61.0%) reported having received prior training in infection control and prevention, and 42.3% reported having used autoclaves on their own at some point[15].

A cross-sectional study was conducted to assess knowledge, attitudes, and practices towards infection prevention among healthcare workers in Trinidad and Tobago. The study included 300 healthcare professionals, and the findings show that the majority of the 300 HCWs from the three hospitals took part in this study. Illustrates that the response rate was 100%. 118 respondents, or 39.3% of the total, were between the ages of 21 and 25, Four (1.3%) were younger than 20 years old, while 32 individuals (10.7%) were aged 26–30. 48 (16%) of the healthcare professionals were over 40 years old, followed by Fifty-seven (19%) were between 31 and 35 years old, and 231 (77%) of the HCWs who participated were female, compared to 69 (23%) of the participants. The majority of employees (108) were Black or African Trinidadians, with Indo Trinidadians coming in second (92). The third largest ethnic group is represented by the 70 employees of mixed background who worked in the three hospitals. 179% of the respondents had a college degree, 113 had a diploma, and 8 had a master's degree or higher as their highest level of education. Among these HCWs, 17% have been employed for less than a year, 43% for one to five years, 21% for six to ten years, 9.7% for eleven to fifteen years, and 9.3% for sixteen years or more. The majority of employees (72.7%) were aware that Trinidad and Tobago had a manual on infection prevention and control policies and standards [16].

The cross-sectional study was titled Investigation of Nurses' Knowledge, Attitudes, and Practices Regarding Disinfection Procedures in Italy. According to a review of the study group's demographics, the majority was female (57.9%), the average age was 44 (range: 19–67), the average number of years in practice was 18, and the range for the mean age was 6 months–40 years [17].

A cross-sectional study was reprocessing and reuse of single-use medical devices in China: a pilot survey based on a national survey that was done on a professional online questionnaire, the basic information about the sample is that there were 1,544 respondents from 31 provinces and autonomous areas. According to the study's findings, the majority of respondents were medical equipment manufacturers (34.8%), hospital employees (32.2%), and the regulatory body for medical devices (13.2%). In the survey, there were somewhat more females (54.6%) than males (45.4%). The distribution of age groups is noticeably unequal. Almost 40% of the respondents were between the ages of 26 and 35, 53% were between the ages of 36 and 60, and only 7% were from other age groups. More than 90% of the respondents—492 out of 544—have bachelor's degrees or higher [18].

A quasi-experimental design study was Effectiveness of an Educational Program On Nurses 'Knowledge Concerning the Infection Control Guideline in Baghdad Teaching Hospital. Study sample was consisted of 43.3 percent of nurses aged 20 to 29.6 percent of them was female, 76.6 percent were married, 70 percent had high incomes, 33.3 percent had graduated from nursing schools, 53.3 percent had 1 to 9 years of experience, and 86.6 percent had training courses in Iraq that had nothing to do with infection control[19].

A quasi-experimental design study was Effectiveness of an Educational Program in Enhancing Nurses 'Knowledge about Occupational Health Hazards. The study results showed that the study sample consisted of (43.3%) nurses between the ages of 20 and 29 years, (56.6%) of whom were female, (76.6%) were married, (70%) had high levels of income, (and 33.3%) had graduated from nursing school, (53.3%) had one to nine years of experience, (86.6%) had received their training in Iraq, and (70%) had received training unrelated to infection control[20].

A descriptive study was Evaluation of Quality of Nursing Care Services Provided to Children under Five Years Based on Integrated Management of Child Health at Primary Health Care Centers in Baquba City. Findings from data analysis show that the majority of these nurses are women (60.7%), between the ages of 40 and 49 (37.3%), and have graduated from high school for nursing 60.7% [21].

According to data analysis of these features, the majority of nurses were proficient in the sterilization and reuse of medical equipment in primary healthcare facilities. This result includes a study to assess knowledge, attitude, and practice regarding sterilization among staff in the Central Sterile Supply Department of Brims Bidar, a hospital-based study. The study found that staff had adequate knowledge about sterilization[22].

This result in consist with study to assess the knowledge, attitudes, and practices towards infection prevention among healthcare workers The outcomes show a general lack of knowledge [16].

According to the study's findings show that the majority of the study sample has a positive attitude toward the immunization of children and that this attitude is highly correlated with where they live [23].

The majority of nurses in primary healthcare facilities have positive attitudes toward the sterilization and reuse of medical equipment, according to data analysis of these features. This result consist with study to assess Attitude Regarding Sterilization among Staff in Central Sterile Supply Department of Brims Bidar, A Hospital Based Study staff members are having a positive attitude and are properly sterilization techniques[21].

Also with study to assess the knowledge, attitudes, and practices towards infection prevention among healthcare workers The outcome was positive attitudes regarding the prevention of infections[16].

Also with study in China, reprocessing and reuse of single-use medical devices On the whole, participants had positive attitudes towards the reprocessing and reuse of SUDs [18].

Conclusions

The nurses' mean training about infection control in primary health care centers was1.7±2 times, Most of

nurses is having 7.2±6 years year of experience in primary health care centers, the most nurses who are working in primary health care centers , are low educated as being secondary schools of nursing graduates, and the majority of nurses are using autoclave for equipment sterilization in primary health care centers.

Recommendation

The staff nurses have to be involved in seriously designed, planned and

1. implemented training sessions on infection control programs with an emphasis on the Sterilization and Reuse of Medical Equipment.
2. Staff nurses, with low education, have to be encouraged to participate in the training programs to improve their competencies to deliver adequate and high-quality care.
3. Courses on infection control about Sterilization and Reuse of Medical Equipment.

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