



Evaluation of the Infection Control Training in The Sulaimani City Governmental and Nongovernmental Hospitals

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ABSTRACT

Background: The healthcare staff, to apply prevention and control health associated infection guidelines need basic knowledge on standard precaution and the medical staff to gain this knowledge they need education through effective training. For that reason, training is a fundamental part of every infection control programs.

Objectives: Aim of the study is to evaluate the Sulaimani governmental and non-governmental hospitals training process on the infection control.

Methodology: A descriptive cross-sectional study was carried at inside Sulaimani city (11 governmental and 7 non-governmental) hospitals in the Kurdistan Region of Iraq and the data collected by constructed questionnaire form both hospital administrations and also from 200 healthcare workers who working in those hospitals from 2nd October 2022 to 25th February 2023.

Results: The result show that most of the Sulaimani hospitals their infection control responsible of staff training 11 (61.1%), provide continuous training on the infection control 16 (88.9%) and 9 (56.25%) provide training when the workers need it. For healthcare staff, majority of the healthcare staff 111 (55.5%) did not attended any training on the infection control and 142 (71%) did not attended any training in the current hospitals they working in it now.

Conclusion: the study reveals that most of the Sulaimani hospitals claim that they having a continuous training based on the evaluated data on the healthcare staff knowledge. Contrast majority of the healthcare staff reported that they did not attend any infection control training in the previous or the current hospital.

Keywords: Infection Control, Training, Sulaimani City, Hospital Infection.

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INTRODUCTION

Health Associated Infection (HAI) consider a major problem for both developed and developing countries. The World Health Organization (WHO) (Storr et al., 2017) estimated that globally among every 10 patients who receive medical care in healthcare settings one patients acquire infection but the issue in the developing countries bigger compare to the developed countries because of limited resources.(Danasekaran et al., 2014) HAI name given to the infections that acquired during medical care when the infection not present at the time of admission or appear short period after been discharged. The HAI have very serious consequences on the patients or their families such as short- and long-term disability, increase cost, increase hospital stay period, increase antimicrobial resistance, ...etc. even may lead to death. (Khan et al., 2017) Healthcare staff play a significant role in transmission as well as control and prevention of HAI in the health care facilities by follow standard precaution procedures. Control and prevention of the HAI require a basic knowledge on the infection transmission, risk factors, etc. healthcare staff need to participate in this process during their daily medical care.

Safety of the patients inside healthcare facilities consider top priority and for that reason every hospital must follow guideline to control and prevent HAI.(Moralejo et al., 2018) Those guidelines include numerous activates for all medical and non-medical staff inside hospitals such as hand hygiene, appropriately use of Personal Protective Equipment (PPE)s, equipment cleaning and disinfection, safe dealing with sharp objects and it is disposal, medical waste management..etc. The healthcare staff, to apply these guidelines need basic knowledge on standard precaution. For the medical staff to gain this knowledge they need cumulative education by effective training. For that reason, training is a fundamental part of every infection control programs.

Furthermore, there evidences show that training to improve staff knowledge on infection control guidelines has effect on the HAI in the healthcare settings. (Akande, 2020; Yousef et al., 2019).

Build a knowledge on HAI need good structured and day to day updated information curriculums for different health professional studies and this knowledge should be promoted by special trainings in the medical care settings to overcome the challenges that today face prevention and control of HAI.(Akinwaare et al., 2020) Medical staff lack of knowledge about appropriate use, effectiveness and infection control measures is a main obstacle to compliance the infection control guidelines. (Aloush et al., 2018) Also, lack of knowledge increase risk of the microorganism's transmission during daily medical care. (Assefa et al., 2020; Hien et al., 2013).

Lack of healthcare staff knowledge appear after participation in education and training programs. (Smiddy et al., 2015; Yousef et al., 2019) There are many studies around the world assessed the staff knowledge, attitude and practice related to standard precaution show that medical staff have inadequate competency on standard precaution especially hand hygiene and appropriately using PPE. (Al Ra'awji et al., 2018).

Infection control training should be specific and based on the staff knowledge assessments but still there are general obstacles such as poor hand hygiene, appropriate use of personal protective equipment (PPE), medical staff immunization coverage, infections modes of transmissions, patients' assessment for infection, decontamination of medical instruments, medical waste management, and needle prick and sharp safety policy. (Moyle et al., 2010; Zimlichman et al., 2013).

Also, there are many challenges that face effective training in the medical settings for training factors such as of training time, staff participate time, subject relevance, accessibility and sustainability of

the training program and for the medical staff such as diverse staff with different knowledge, education and experience background. Personal and behavior factors also play a significant role in the application of the HIA prevention which is could be change it to positive through increase knowledge by educational trainings. (Mohamad et al., 2022).

AIMS OF THE STUDY

Aim of the study is to evaluate the Sulaimani governmental and non-governmental hospitals training process on the infection control.

METHODOLOGY

A descriptive cross-sectional study was carried at inside Sulaimani city governmental and non-governmental hospitals in the Kurdistan Region of Iraq. To evaluate infection control training, the data collected from both hospital administrations and also from healthcare workers who working in those hospitals. The study included 11 governmental and 7 non-governmental hospitals while those hospitals refuse to participate in the study excluded which was 3 non-governmental hospitals inside Sulaimani city. For the data collection on the healthcare workers, the non-probability convenience sampling method used to select 200 participants for the study from 2nd October 2022 to 25th February 2023.

To assess the Sulaimani hospitals infection control process, the current study used two separate questionnaire form to collect data. The first questionnaire form used to evaluate the hospital guideline or program training on the infection control which it is questions orientated to the hospitals administrative staff or infection control unit if available in those hospitals and the second questionnaire form used to collect data on the healthcare staff about infection control training existence and it is duration in the same hospitals which included questions about demographical and workplace information (age, sex, hospital...etc). The questionnaire form filled by interviewing method. Moreover, the ethical approval obtained from Sulaimani directory of health, hospitals

administrations and healthcare staff that participated in the study. The collected data analyzed by SPSS (Statistical Package for the Social Sciences) to obtain the mean, standard deviation, frequency and percentage.

RESULTS

The table 1 show the response of the hospital administration or infection control units in the 11 governmental and 7 non-governmental hospitals about the training of the staff on the infection control. For the responsibility of the staff training is on the infection control or they have separate training team, 11 (61.1%) of the responses that infection control is responsible for the training staff while 3 (16.7%) of the hospitals said they are not.

About the training guidelines in the hospitals, they response as follow; for the pre-employment training for the new staff 14 (77.8%) hospitals train new workers while 3 (16.7%) they not. Vast majority 16 (88.9%) of the hospitals have continuous training on infection control while only 2 (11.1%) hospitals do not. Furthermore, for the duration of those training; more than half 9 (56.25%) of the hospitals provide the training when the workers need it and in occasionally and in irregular time 3 (18.27%) for each while one hospital refuse to answer this question.

Finally, to know if the hospital provide training based on the workers knowledge or not. The hospital administration asked if they evaluate healthcare workers knowledge on the infection control, majority of the hospitals 15 (83.3%) evaluate workers knowledge and only 1 (5.6%) not while 2 (11.1%) not answered this question. (Table 1).

For evaluating health infection control training in the Sulaimani city hospitals, 200 healthcare workers who work in the Sulaimani city hospitals participated in the current study. The age of the healthcare workers ranged from 20 to 56 years old with mean \pm Standard deviation (33.9 \pm 10.6) and most of them 93 (46.5%) were between 20-30 years

old followed by more than 42 years old 54 (27%) and 31-41 years old 50 (25%) respectively.

About healthcare workers sex majority of the workers were female 143 (71.5%) comparing to the male 57 (28.5%) and for the workers certificate, most of the workers hold Institute diploma 103 (51.5%) compare to other certificates holders Bachelors 67 (33.5%), High school diploma 27 (13.5%) and Master 3 (1.5%) respectively.

Vast majority of the current study participances were nurses 155 (77.5%) and followed by laboratory workers 33 (16.5%) while the minimum specialties were Physician 7 (3.5%) with 5 (2.5%) their specialty missing. Finally, most of the study participances were from governmental hospitals 117 (58.5%) compare to the non-governmental hospitals were 49 (24.5%) and only 33 (16.5%) were working for both governmental and non-governmental at the same time with 1 (0.5%) missing. (Table 2).

To compare the response of the healthcare workers and the hospital administrates, the healthcare workers in the Sulaimani city hospitals on the infection control asked the followed questions: for the rate of the participances in the training on the infection control the nearly half 111 (55.5%) of the healthcare workers did not attend any training on the infection control while 87 (43.5%) participated it and to know if their current working hospital provide any training majority 142 (71%) did not attend any training while 55 (27.5%) attend the training with 3 (1.5%) missing answers.

Finally, to know the effect of the lack of the training the healthcare workers information on the infection control they asked about their source of information on the infection control. Most of them 105 (30.7%) rely on their experience in the daily bases followed by certificate education 75 (21.93%), Training 62 (18.13%), learning from my co-workers 54 (15.79%) and reading book or articles 46 (13.45%) respectively. (Table 3).

DISCUSSION:

There is no hospital in the world without infection, and there are also no healthcare procedures without the risk of infection being acquired. Death from health care infection is ranked as the fourth most common cause among other causes.(Storr et al., 2017) For that reason, there are a tremendous amount of infection control programs and guidelines that are provided for the hospitals to follow to decrease the risk of infection in the hospitals or other healthcare facilities, such as the Infection Prevention and Control Program (IPC) or the International Infection Control Program (IICP), etc. Also, every country has its own guidelines. In each of those guidelines, training is considered the core of the process's success ("WHO Guidelines Approved by the Guidelines Review Committee," 2016). Hospitals and healthcare workers are obligated to follow those guidelines, for the hospitals have to facilitate the training in their hospitals while healthcare workers have to participate in the training and apply what they learned during the training. The current study included 11 hospitals and 200 workers inside Sulaimani city hospitals to evaluate the current situation of infection control training and how they perform it.

Implementation of infection control programs requires good knowledge about basic of microorganisms, infection process and infection transmission from one person to another. This knowledge must be transferred by professional staff who have enough experience in this subject, such as the infection control committee. Increasing staff knowledge requires a specific, targeted training program and ongoing training based on the staff's needs, which include knowledge about the level of knowledge obtained by previous staff assessments. There is evidence supporting the idea that educating staff increases adherence to good infection practices among healthcare staff (Ward, 2011). Summarily, staff training in hospitals is a long process that starts with basic knowledge about staff's current situation and takes action based on their needs by special staff

inside the hospital or by bringing experts outside of the hospital.

The majority of the hospitals in the current study responded that they care about staff training on infection control and that they have ongoing staff training based on staff needs, while most of the healthcare staff in those hospitals responded that they did not have any training about infection control. This difference might be related to the fact that most of the hospitals wanted to show a good image of their hospital to the community or to the researchers even when they did not care as much as they responded about training, and another reason could be related to the healthcare staff in those hospitals continuous change or rotation that affected the participation of all staff in those trainings. In addition, the hospital data for the current study was obtained from the hospital administrations. Their response might be based on the overall data that they had on the training, not all the hospital departments.

However, among all the challenges facing healthcare infection prevention and control programs in low-income countries, such as resource shortages, inadequate hospital infrastructure, overcrowding, and many other documented factors (Vilar-Compte et al., 2017). The lack of adequate training in healthcare facilities is the primary obstacle to the good implementation of infection control programs (Ogunsola & Mehtar, 2020). In the Sumon study on infection control training in Bangladesh, one of the low income countries, the 1562 healthcare staff in the three tertiary hospitals showed that 85% of the study participants did not attend any training on infection control (Sumon et al., 2020) and in another study on the assessment of the implementation of the IPC program in Pakistan, the education and training part showed the lowest score (Tahir et al., 2023).

Lack of adequate training in the hospitals made healthcare staff depend on other sources that might misguide them, or they obtained non-scientific knowledge on healthcare infections, which subsequently made them do wrong practices. In the

multiple response question in the current study about the healthcare staff's source of infection control knowledge, the most frequently chosen answers of the staff were their experience and training, which were among the lowest compared to other choices.

There are various methods used in the training that show effective results in education, such as scenario-based simulation, direct seminars (face-to-face), online seminars, group discussions, and computer-assisted learning. (Columbine & Wharrad, 2007; Mikkelsen et al., 2008; Reime et al., 2008) Today, there are new ways to gain good knowledge on different topics without conflicting with daily working hours, such as taking online courses that have shown to improve healthcare staff knowledge on infection control. (Atack & Luke, 2008).

Healthcare staff must gain good knowledge, positive attitude, and right practice during their certificate education in universities or institutes on infection prevention and control programs to follow safe practices in hospitals.(Organization, 2004) However, most of the students got familiar with infection control in the undergraduate program lectures at the end or before healthcare procedures, which did not give enough intention to the students, although other lecturers restricted themselves to a few topics on infection control knowledge (theoretical). Summarily, graduated healthcare staff do not have enough competition to work in hospitals related to infection control; for that reason, they need training to increase their skills and ensure good adherence to the infection control guidelines. There is much evidence showing that training increases and updates healthcare staff's knowledge and changes bad attitudes and wrong practices in infection control.

For knowledge and attitude, the Gaikwad study on the healthcare staff that never participated in the training concluded that educational intervention training has a significant improvement effect on the healthcare staff's education. (Gaikwad et al., 2018) in addition, Sharma and George (Sharma & George, 2014) status training of the healthcare staff increased

knowledge about waste management in the hospitals, which is one of the main contributors to the infection control programs. For practice, the Farotimi (Farotimi et al., 2018) study concluded that the training is very effective in changing medical staff attitudes and practices about infection control. Even some researchers show that effective training for patients and their relatives in hospitals has an effect on the incidence of health-related infections. (Erdek et al., 2017).

In the systematic review of the papers from 2006 to 2021 on the factors that influence compliance with the IPC programs in health care facilities, it was shown that an effective education and training program is a primary factor in the success of the IPC program and also increases compliance of the medical staff with the IPC elements such as staff vaccination, implementation of safety precautions, hand hygiene, etc. Furthermore, they also concluded that an effective education and training program decreases staff needle prick injury and increases control of ventilator-associated pneumonia. (Alhumaid et al., 2021) Training in health care facilities must have some characteristics to provide effective educational intervention. One of the main characteristics is that the training must be continued. Training continues to provide updated information for the staff and limit the number of untrained staff inside healthcare facilities. Also, the training must be targeted because the medical staff includes different categories with different needs for information and skills, so each category must have different training.

CONCLUSIONS:

The study reveals that most of the governmental and non-governmental hospitals claim that they having a continuous training for pre-employment and healthcare staff when they need it based on the evaluated data on the healthcare staff knowledge. Contrast majority of the healthcare staff reported that they did not attend any infection control training in the previous or the current hospital which

led to that most of them depend on their daily experience to gain this knowledge.

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TABLES:

Table (1): The hospital administration response about infection control training

Questions		Frequency	Percentage
Infection control unit in your hospital responsible of staff training?	Yes	11	61.1
	No	3	16.7
The health workers in your hospital undergo pre-employment training on infection control?	Yes	14	77.8
	No	3	16.7
This hospital has the continuous training on the infection control for the healthcare workers?	Yes	16	88.9
	No	2	11.1
In what duration this hospital provide training on infection control for the staff?	Occasionally	3	18.75
	In regular times	3	18.75
	When the workers needed	9	56.25
	Missing	1	6.25
This hospital evaluates staff knowledge on infection control?	Yes	15	83.3
	No	1	5.6
	Missing	2	11.1

Table (2): The healthcare workers demographic characteristics

Variables		Frequency	Percentage
Age groups	20-30	93	46.5
	31-41	50	25
	More than 42	54	27
Gender	Male	57	28.5
	Female	143	71.5
Level of education	High School	27	13.5
	Institute Diploma	103	51.5
	Bachelors	67	33.5
	Master	3	1.5
Specialty	Physician	7	3.5
	Nurse	155	77.5
	Laboratory worker	33	16.5
	Missing	5	2.5
Hospital	Governmental	117	58.5
	Non-Governmental	49	24.5
	Both	33	16.5
	Missing	1	0.5

Table (3): The Healthcare staff response about infection control training

Questions		Frequency	Percentage
Did you attend any training or course about infection control?	Yes	87	43.5
	No	111	55.5
	Missing	2	1
Did you attend any training in the current hospital about infection control?	Yes	55	27.5
	No	142	71
	Missing	3	1.5
What is your source of information about infection control?	My experience	105	30.7
	Reading book or articles	46	13.45
	Training	62	18.13
	Learning from my co-workers	54	15.79
	Certificate education	75	21.93