

EVALUATION OF NATIONAL INFECTION CONTROL PROGRAM AT HOSPITALS IN AL-MUTHANNA GOVERNORATE.

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ABSTRACT

Aims: Generally aimed for this research is to monitoring quality view of the national program for infection control throughout improving the actual processes by ranking and estimating the distances measurements among different locations (Departments) in the studied hospitals at AL-Muthanna Governorate, as well as to identification and to evaluating the conventional tasks for application the national infection prevention and control program in studied hospitals. **Methodology:** Only twenty departments in the four hospitals were chosen to the study setting. Data collection carried out using ready-made infection

prevention and control observation checklist. The selection of department among studied facilities in the pilot study was done with a clear intention to include ten units and departments that are afford mostly infected from AL-Hussein teaching hospital using the convenient sampling technique. Reliability coefficient of (Inter Examiners) reported high degree checking interview are obtained in light of expert. Census technique were used to choice studying hospitals in AL-Muthanna Governorate. **Results:** Results shows 8(40%) among 20 main domains (Departments) in the studied hospitals had a passed a cutoff point evaluation, and illustrated that "Evaluation infection prevention measures within the operating room (department)" recorded the best degree and accounted (WMS = 2.38), and the lowest passed with "Evaluation work of the infection control committee in the hospital", while leftover departments 12(60%) had low evaluated under or equal a cutoff point, and illustrated that "Policy of hand hygiene" recorded the first degree and accounted (WMS = 2.00), and the lowest failure with the "Kidney dialysis unit, intensive care unit, and burn unit", and accounted (WMS = 1.00) for each. **Conclusions:** Generally, global weight mean of score illustrated that studied hospitals worked out off controlled due to the ready-made

infection control observation checklist, as well as a monitoring quality view adding for the National Infection Control Program controlled and improving the ranks and distances measurements among different of studied locations (Departments).

KEYWORDS: Infection prevention and control observation checklist, monitoring quality view checklist.

1. INTRODUCTION

Infection and its prevention have been a prime concern of mankind for a long time. Infection is a condition that results when a microorganism is able to invade the body, multiply and cause injurious effect or diseases. [Tankersley, 2007].

Infection control therefore refers to policies and procedures used to minimize the risk of spreading infections, especially in hospitals and human or animal health care facilities. Infection control is a quality standard and is crucial in all health care facilities,[South Africa guidelines, 2007]. Many hospitals remain deficient in trained infection control professionals and now there is a good awareness of the need to improve this shortfall.

Infection control is a quality standard and is very important in all health care facilities for the wellbeing and safety of patients, healthcare worker, visitors and all who come within the scope of activities. Each healthcare facility designs and establishes a coordinated program to identify and reduce the risk of infection acquisition and transmission among patients, staff, and visitors [GCC,2009]. Infection Control Manual]. Infectious diseases remain a leading cause of morbidity and mortality in the Republic of Iraq, but most of the diseases are extremely preventable or treatable. The ministry of health annual report [MOH2016] lists Mumps, chickenpox and pneumonia is as the 3 most common communicable diseases in Iraq with patients suffering from it[MOH, 2016].

Infection and control program had been shown to be clinically and cost-effective, less antimicrobial resistance and decreased costs of treatment for infections [Haley,*et al.*, 1985]. providing important cost savings in terms of fewer Health care-associated infections and reduced length of hospital stay[Graves,*et al* 2007].

Health care-associated infections are an important public health problem because they occur frequently, cause morbidity and mortality and represent a significant burden among patients, health-care workers and health systems. Health care-associated infections occur worldwide

and affect all countries, irrespective of their degree of development. World Health Organization [WHO,2018]. The most common types of Health care-associated infections include infections of surgical site infection, the blood stream, the urinary tract infection and the lower respiratory tract (pneumonia). In some settings, gastrointestinal infections are also common. Infection rates are higher among patients with increased susceptibility because of their age, severity of the underlying disease, use of invasive devices and procedures, or conditions that impair the immune system [Ehrenkranz, 1986].

The Republic of Iraq is located in the Middle East, bordering the Iran from East and the Turkey from north and Kuwait and Saudi Arabia from South, West South Jordan and Syria from West has estimated population of(37883543) (2016) [Ministry of planning / Central statistic organization]. Currently the Ministry Of Health is the major government provider and financier of health care services in Iraq Total number of governmental hospitals (260) with (44821 beds), Total number private hospitals (121) and Total number of Primary Health Centers 2669 primary health care centers [MOH 2016]. Al-Muthanna Governorate is located in South of Iraq has estimated population of (806368) (2016). total number of governmental hospitals (4). total number of primary health centers (69) [MOH, 2016].

Health care-associated infection is a medical and economic problem of global importance, The impact of Health care associated infection implies prolonged hospital stay, long-term disability, increased resistance of microorganisms to anti-microbial, a massive additional financial burden for health systems, high costs for patients and their families, and excess deaths In Europe. Health care-associated infection cause 16 million extra-days of hospital stay, 37000 attributable deaths, and contribute to an additional 110 000 every year. Annual financial losses are estimated at approximately € 7 billion, including direct costs only. In the USA, approximately 99 000 deaths were attributed to HCAI in 2002 and the annual economic impact was estimated in approximately US \$ 6.5 Billion in 2004 World Health Organization[WHO, 2008].

A successful infection control program relies on several vital and interdigitating components, adequately trained manpower services, responsive hospital based infrastructures, and nationwide professional communication. [.Memish 2002].

Iraq has rapidly activated each of these components to build a vital and current infection control community of high standards. The Ministry of Health provides training courses in

infection control for allied health professionals. In addition and now offers field epidemiology training. After thorough searching of databases, there are no published studies addressing in evaluation of infection prevention and control programs in Iraq. To our knowledge nobody evaluate the current status of infection prevention and control programs at health care facilities in Iraq, therefore, the main purpose of this study is to describe the current status of Infection prevention and control programs at Ministry of health, in health facilities. Additionally, the study was designed to evaluate the current status of infection control programs at health care facilities in Iraq and to monitoring of the national program for infection control improving process by Ranking and distance measure among different location in studied Hospitals at AL-Muthanna governorate.

2. METHOD

Design this study is a descriptive cross sectional conducted in AL-Muthanna Governorate over a period of 6 months from October 2017 through March 2018. Twenty department from four hospitals were included in the study setting. Data collection were carried out using infection prevention and control observation checklist.

The study included 20 department were designed and developed by a health care professional in the Ministry of Health in Iraq. A convenient sample of (10) section in AL-Hussein teaching hospital were selected randomly for studying evaluation of the national infection prevention and control program. The purposes of the pilot study was to determine reliability of the researcher dependency (Inter Examiners), to confirm the clarity & contents adequacy for the instrument's structure throughout the subjects understanding, to estimate the average time needed for data collection for each section during the interviewing the process, to identify the best approach needed to find out nature of difficulties which they might be faced. In addition to that, table (3-1) showed the determination of reliability of the pilot study. This result showed that inter examiners, recorded highly and adequate reliability coefficient reported for checking interview are obtained in light of expert.

Table 1: Reliability coefficient for inter examiners of the pilot study (Inter Examiners).

Groups	Standard Coefficient	Actual values %
Expert X Researcher	70%	95.3%

Reliability coefficient for the pilot study was calculated by using AL-Naqeeb formula, 2007.^[10] Statistical tables including, observed frequencies, percent's, range, mean of score

(MS), standard deviation (SD) of scoring scales, relative sufficiency (RS%), as well as scoring scales of four categories, such that (0, 1, 2, and 3), where the first scale belong to no, and leftover scales belong to yes, although the ordered of responses is descending from the highest to the lowest, and that bounded between (1 – 3) scales. reevaluate scoring scales random variable, preceding scoring scales according following intervals: L (Low) 0.00 – 33.33; M (Moderate) 33.34 – 66.66; H (High) 66.67 – 100. Transformed all studied items' main domains for screening estimators grand and global mean of score in compact form by overall evaluate through transforming the recorded responses of each periods in quantitative measure scale using percentile transformed technique, as well as weighted mean of score (WMS) used for obtaining ordered of evaluation degrees concerning studied main domains, and that under the weight (1, 2, and 3) scales for (Low, Moderate, and High) of evaluation score respectively.

3. RESULTS AND FINDINGS

Results showed that the total facility level in all over AL-Muthanna Governorate was advanced or moderate with score of (33.34 – 66.66) and results showed descending ordered statistically of evaluation degrees concerning studied domains, and illustrated that "Evaluation infection prevention measures within the operating department" are recorded the best degree, and accounted (WMS=2.38), then followed by "Evaluation infection control within the Endoscopy unit", which recorded (WMS = 2.27), then followed by "Evaluation infection control in the central sterilization unit", which was recorded (WMS = 2.21), then followed by "Evaluation infection control within the laboratory unit", which was recorded (WMS = 2.20), then followed by "Evaluation the medical waste management in hospital", which was recorded (WMS = 2.16), then followed by "Evaluation infection control in dental clinics, and Evaluation of infection control in isolation unit", which were recorded (WMS=2.13), then followed by "Evaluation infection control committee in the hospital", which recorded (WMS = 2.05), and then followed by "Evaluation of the policy of hand hygiene", which recorded (WMS = 2.00), then followed by "Evaluation availability of personal protective equipment in the hospital ", which was recorded (WMS = 1.88), and then followed by "Evaluation hospital environment cleaner proceedings", which recorded (WMS=1.83), then followed by "Evaluation infection control within the premature unit", which recorded (WMS = 1.80), and then followed by "Evaluation of infection control unit in hospital ", which recorded (WMS = 1.73), then followed by "Evaluation infection control in emergency department ", recorded (WMS = 1.71), and then followed by "Surveillance",

which recorded (WMS = 1.67), then followed by "Evaluation the work of the laundry unit and dealing with sheets and linens", which recorded (WMS=1.64), then followed by "Evaluation of the occupational health and safety unit", which recorded (WMS = 1.50), then followed by " Evaluation of infection control measures within the kidney dialysis unit, The evaluation of procedures prevent infections in the intensive care unit, and Evaluation of infection control in the burn unit", which were recorded (WMS = 1.00) for each. In addition to that global weighted mean of score was estimated (GWMS=1.816), which indicating that a low evaluation process are assigned toward the application of national program for infection control generally in the studied Hospitals in AL-Muthanna Governorate, since preceding of that estimate fall under a cutoff point (2).

Table 2: Evaluation degrees according to each main domain with Ranking Ordered.

No.	Main Domains	Evaluation Degrees			WMS	Order
		L	M	H		
1	Evaluation infection control committee in hospitals	8	5	9	2.05	8
2	Evaluation infection control unit in the hospitals	5	4	2	1.73	13
3	Evaluation of the policy of hand hygiene	3	2	3	2.00	9
4	Evaluation availability personal protective equipment in hospital	4	1	3	1.88	10
5	Evaluation occupational health and safety unit	5	5	0	1.50	17
6	Evaluation hospital environment cleaner proceedings	4	6	2	1.83	11
7	Evaluation infection control in laundry and dealing with sheets and linens	9	1	4	1.64	16
8	Evaluation medical waste management in hospital	20	3	28	2.16	5
9	Evaluation infection control in central sterilization unit	4	3	7	2.21	3
10	Evaluation infection control within the operating department	3	10	20	2.38	1
11	Evaluation infection control within the kidney dialysis unit	38	0	0	1.00	19
12	Evaluation infection control within the Endoscopy unit	5	9	12	2.27	2
13	Evaluation infection control in the intensive care unit	20	0	0	1.00	19
14	Evaluation infection control within the premature unit	14	8	8	1.80	12
15	Evaluation infection control in the Emergency Department	12	3	6	1.71	14
16	Evaluation infection control in dental clinics	7	7	10	2.13	6.5
17	Evaluation infection control within the laboratory unit	10	8	17	2.20	4
18	Evaluation infection control in isolation unit	6	2	8	2.13	6.5

19	Evaluation infection control within burn unit	34	0	0	1.00	19
20	Evaluation Surveillance	6	0	3	1.67	15
Evaluation of National Infection Control Program at Hospitals in Al-Muthanna Governorate		219	77	139	GWMS = 1.816	

L: Low; M: Moderate; H: High
WMS: weighted mean of score

For summarizes preceding results, and concerning weighted mean of score for the actual evaluations of studied hospitals according to main domains which were descending ordered statistically, and confirmed that 8(40%) among 20 main domains (Departments) passed evaluated a cutoff point, and illustrated that "Evaluation infection prevention measures within the operating department" recorded the best degree and accounted (WMS = 2.38), and the lowest passed with "Evaluation work of the bacterial contamination control committee in the hospital", while leftover departments that 12(60%) had low evaluated under or equal a cutoff point, and illustrated that "Policy of hand hygiene" recorded the first degree and accounted (WMS = 2.00), and the lowest failures with the "Kidney dialysis unit, intensive care unit, and burn unit", and accounted (WMS = 1.00) for each.

Generally, global weighted mean of score illustrated that (GWMS = 1.816) which indicating that studied hospitals are working under controlled.

Figure (1) represents the weighted mean of score for the actual evaluation of studied hospitals in AL-MUTHANAA Governorate according to main domains which were descending ordered statistically.

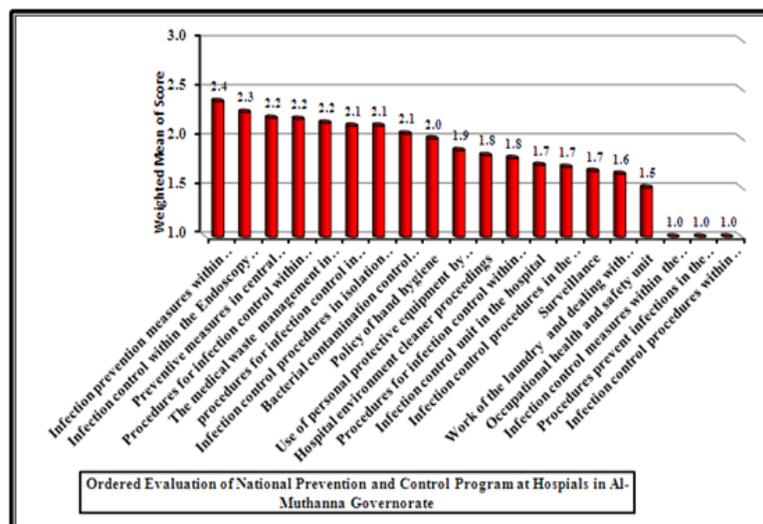


Figure 1: Bar Chart Evaluation degrees descending ordered statistically for studied main domains.

Table (3) shows the descriptive statistics of evaluation process by main, and sub domains application of the national program for infection control in hospitals in AL-Muthanna Governorate using percentile transforming formed, and such that "Maximum, and Minimum responding, Percentile Grand Mean of Score (PMS), Percentile Standard Deviation (PSD), Percentile Standard Error for mean of score (PSE), and evaluation degrees according to the three intervals according to: [L:Low (0.00 – 33.33); M: Moderate (33.34 – 66.66); H:High (66.67 – 100)].

Table 3: Descriptive Statistics of studied Evaluation Sub, and Main Domains application of national program for infection control in Hospitals in AL-Muthanna Governorate.

Evaluation Main Domains application of the national program for infection control in hospitals in AL-Muthanna Governorate	No.	Min.	Max.	PMS	PSE	PSD	Ev. (*)
Evaluation infection control committee in the hospital	4	50.0	66.7	56.1	3.80	7.50	M
Evaluation of the infection control unit	4	33.3	48.5	37.1	3.80	7.60	L
Evaluation of the policy of hand hygiene	4	41.7	62.5	50.0	4.50	9.00	M
Evaluation the availability of personal protective equipment in the hospital	4	45.8	50.0	46.9	1.00	2.10	M
Evaluation of the occupational health and safety unit	4	20.0	53.3	29.2	8.10	16.2	M
Evaluate the hospital environment cleaner proceedings	4	36.1	44.4	40.3	1.80	3.60	M
Collect the sheets and linens	4	23.8	23.8	23.8	0.00	0.00	L
Washing sheets and linens and stored	4	66.7	71.4	67.9	1.20	2.40	H
Evaluation infection laundry unit and dealing with sheets and linens	4	45.2	47.6	45.8	0.6	1.20	M
Work with evidence of medical waste chromatography and by type of waste and the color and type of vessel	4	25.0	25.0	25.0	0.00	0.00	L
Initial processing of highly contagious wastes directly into producing departments according to the following methods	4	0.00	0.00	0.00	0.00	0.00	L
Liquid waste disposal through	4	33.3	66.7	44.4	7.9	15.7	M
Medical waste collection from the unit to the central storage location (internal transfer)	4	61.1	61.1	61.1	0.00	0.00	M
Medical waste storage	4	80.0	80.0	80.0	0.00	0.00	H
External transport for medical waste incinerator (incinerating wastes) and ensure the central place of wastes stored somewhere suitable patrol addressed	4	66.7	66.7	66.7	0.00	0.00	M
Methods of treatment and final disposal of waste	4	0.00	0.00	0.00	0.00	0.00	L

Chemical cleansing: used to treat certain wastes such as waste infectious acute and small sizes provided address	4	100	100	100	0.00	0.00	H
Thermal treatment: this method is used to treat acute infectious wastes and wastes subject to the following	4	66.7	66.7	66.7	0.00	0.00	M
Evaluate the medical waste management in hospital	4	50.3	53.4	51.4	0.7	1.3	M
Zone 3: sterile material storage area	4	66.7	83.3	75.0	4.8	9.6	H

Continue ...

Evaluation Main Domains application of the national program for infection control in Hospitals in AL-Muthanna Governorate	No.	Min.	Max.	PMS	PSE	PSD	Ev. (*)
Memorize sterile in places close to the workplace where - sealed and away from walkways and high humidity and metal shelves thanks to be great to prevent moisture	4	75.0	75.0	75.0	0.00	0.00	H
Evaluation infection control in central sterilization unit	4	67.9	73.4	70.6	1.6	3.20	H
Evaluation infection prevention measures within the operating department	4	74.0	82.3	78.9	1.9	3.70	H
Evaluation of infection control within the kidney dialysis unit	4	0.00	44.7	11.2	11.2	22.4	M
Evaluation infection control within the Endoscopy unit	4	65.4	78.2	69.2	3.0	6.00	H
Evaluation of infection control in the intensive care unit	4	0.00	51.7	12.9	12.9	25.8	M
Evaluation infection control within the premature unit	4	0.00	72.7	45.7	15.8	31.6	H
Evaluation infection control in the Emergency Department	4	34.9	54.0	42.9	4.00	8.00	M
Evaluation infection control in dental clinic	4	58.7	62.7	60.3	0.80	1.70	M
Evaluation infection control within the laboratory unit	4	59.1	65.7	62.4	1.70	3.30	M
Evaluation of infection control insolation unit	4	52.1	70.8	59.4	4.00	8.10	H
Evaluation of infection control in the burn unit	4	0.00	73.5	18.4	18.4	36.8	H
Surveillance	4	33.3	40.7	35.2	1.90	3.70	M

(*) Evaluate Intervals Scales: [L: Low (0.00 – 33.33)]; [M: Moderate (33.34 – 66.66)]; [H: High (66.67 – 100)].

Results shows that subjects to respect of low evaluations degree of sub, and main domains are accounted 5 / 33 (15.15%), then followed with 17/ 33 (51.52%) for a moderate evaluations degree, and finally followed with 11/ 33 (33.33%) for a high evaluations degree. Figure (4-3) illustrated percentile grad means of score (PMS) of sub, and main domains.

4. DISCUSSION

One of the causes for conducting this research is importance and sensitivity of the infection prevention and control for all people, no one can deny the bad consequences of health care associated infections is on the health of people. This study were evaluated the national infection prevention and control programs applicable in the four hospitals in AL-Muthanna Governorate. Prior to designing a strategy for implementation of infection prevention and control program, the opinions of the health care professionally ought to be explored. It is clear from this results that all studied hospitals showed that evaluation of infection prevention and control program application in sub and main domains were low to moderate. This is due to the fact that the hospitals were built in the seventies and eighties of the last century and suffering from a great shortage of medical and health staff, since governorate is not attractive to medical staff and most of the health and nursing were not involved in specialized courses on infection control program due to overcrowding and lack of medical and health, especially in infection control. This study coincides with a study conducted in the Kingdom of Saudi Arabia, where the results of the study were close. [Alsaleh, *et al.*, 2014]. Since unfortunately no any others study were found in light of ranking of evaluation and measuring the distances among studied different locations (The Departments) under application of the national infection prevention and control program checklist, in order to monitoring quality view for that program, which is for first time as far (as we know).

5. CONCLUSION AND RECOMMENDATION

CONCLUSION

Generally, global weight mean of score illustrated that studied hospitals are worked out off controlled (Low to Moderate) due to ready-made infection prevention and controlled observation checklist.

Recommendation

Monitoring quality view which was adding for national program for infection controlled are improving by ranking and measuring distances among different of studied locations (Departments), and that enables, and gives global screening views for making the process's evaluation.

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