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RESEARCH ARTICLE

ANALYSIS OF FACTORS INFLUENCE COMPLIANCE TO PRACTICE OF HAND HYGIENE AMONG NURSES AT HEALTHCARE CENTER XYZ QATAR.

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Compliance, Facilities, Hand Hygiene, Supervision.

Abstract

Introduction: Healthcare Associated Infections (HCIs) is a major problem for patient safety and its prevention must be a first priority for settings and institutions committed to making healthcare safer. Healthcare associated infections is an infection acquired during healthcare delivery, are common and are a risk factor for developing sepsis but we can prevent this. Effective hand hygiene plays a key role. Hand hygiene is the primary measure to reduce infections.

Aim: This study aims to determine and analyze the factors influencing compliance to the practice of hand hygiene among nurses working at healthcare center XYZ Qatar.

Method: This study is a quantitative with analytic survey method with cross sectional research approach. This study conducted in March 2019 until July 2019 at healthcare center XYZ Qatar. This study used respondents of all nurses who work at healthcare center XYZ Qatar. Total respondents obtained amounted to 100 nurses.

Result: The results showed that there was a significant influence between individual characteristics ($p = 0.006$), knowledge ($p = 0.048$), attitudes ($p = 0.002$), perceptions ($p = 0.04$), facilities ($p = 0.033$) and supervision ($p = 0.02$) were influencing compliance to the practice of hand hygiene among nurses who work at healthcare center XYZ Qatar.

Conclusion: Finally, in order to maintain and improve nurse discipline in compliance to the practice of hand hygiene. Continuing education and training must be organized and improved supervision especially for nurses and support from management related to evaluation and the provision of reward and punishment must be implementing in order to make compliance to the practice of hand hygiene as a culture at healthcare center XYZ Qatar.

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Introduction:-

Healthcare Associated Infections (HCIs) is an infections that occur in patients during treatment in hospitals and other healthcare facilities when there was no infections at the time admitted and not during the incubation period, including infections in the hospital but appear after the patient discharge home, also infections caused by healthcare

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workers related to the process of healthcare services in healthcare facilities (Kemenkes RI, 2017). The impact of HCAs implies prolonged hospital stay, long-term disability, increased resistance of microorganism to antimicrobials, massive additional financial burdens, an excess of death, high costs for the health systems and emotional stress for patients and their families. Healthcare worker's hands are the most common vehicle for the transmission of healthcare associated infections.

Hand hygiene is the primary measure to reduce infections. A simple action, perhaps, but the lack of compliance among healthcare providers is problematic worldwide. On the basis of research into the aspects influencing hand hygiene compliance and best promotional strategies, new approaches have proven effective. A range of strategies for hand hygiene promotion and improvement have been proposed and the World Health Organization (WHO) First Global Patient Safety Challenge, "Clean Care is Safer Care", is focusing part of its attention on improving hand hygiene standards and practices in healthcare along with implementing successful interventions. Insufficient or very low compliance rates have been reported from both developed and developing countries. Adherence of healthcare worker's to recommended hand hygiene procedures has been reported as variable, with mean baseline rates ranging from 5% to 89% and overall average of 38,7% (WHO, 2009).

Healthcare center XYZ Qatar is one of clinical facilities provided by company to give clinical pre-hospital services. Healthcare center XYZ Qatar also has a hand hygiene program for its employees. An Infection Prevention and Control Committee has been formed which is a team tasked with preventing infections related to health services. One of the programs implemented to reduce infection is the hand hygiene program. By adopting the technique of implementation according to WHO, the socialization as culture to the practice of hand hygiene for nurses and other health workers working at the healthcare center XYZ Qatar. The compliance to the practice of hand hygiene among healthcare workers until the end of 2017 is still below the target set by the company ($\geq 90\%$) that was 84.62% while in the January-March 2018 the compliance of healthcare workers in the practice of hand hygiene is also still below the target was 88.23%.

Based on the data has been obtained where the data shows that it is still below the target set by the company and baseline rates from World Health Organization (WHO) on compliance to the practices of hand hygiene. The researcher are interested in knowing and researching deeper to find out what factors may influencing on compliance to the practice of hand hygiene among nurses who work at healthcare center XYZ Qatar. The purpose this study was to analyze the factors influencing compliance to the practice of hand hygiene among nurses working at healthcare center XYZ Qatar.

Literature Review

Hand Hygiene

Hand hygiene is done by washing hands using soap and running water if the hands are clearly dirty or exposed to bodily fluids or using alcohol (alcohol-based hand rubs) if the hands do not look dirty. Nails should always be clean and cut short, without artificial nails, without wearing ring jewelry (Kemenkes RI, 2017). Hand hygiene should be done when it is estimated that there is a possibility of transfer of germs through the hands hence before taking any nursing care procedures should be carried out cleanly and after nursing care procedures might result in contaminations.

According to World Health Organization (WHO, 2009) Hand hygiene is the primary measure to reduce infections. Hand hygiene is the primary measure proven to be effective in preventing HCAI and spread of antimicrobial resistance. Encouraging hospitals and health-care facilities to adopt guidelines, including the "My 5 Moments for Hand Hygiene" approach will contribute to a greater awareness and understanding of the importance of hand hygiene. WHO has vision for the next decade is to encourage this awareness and to advocate the need for improved compliance and sustainability in all countries of the world. My 5 Moments for Hand Hygiene:

1. Before touching a patient.
2. Before clean/aseptic procedure.
3. After body fluid exposure risk.
4. After touching a patient.
5. After touching patient surroundings.

Hand washing is the most basic technique for avoiding the entry of germs into the body where this action is carried out with the aim of: removing impurities that are attached to the hands, eliminating odors inherent in the hands,

preventing the spread of cross-infection, maintaining the condition of the hands to remain sterile and giving a fresh and clean feeling to the hand. Hand wash can be divided into three ways: clean hand wash, aseptic hand wash, and sterile hand wash. Clean hand wash is cleaning hands using soap and running water.

Aseptic hand wash is cleaning or washing hands should be done before aseptic action on patients by using an antiseptic solution. Washing hands with an antiseptic solution, especially for personnel who deal with patients who have an infectious disease or before performing aseptic surgery with an antiseptic and a sterile brush. Aseptic hand washing procedure is same as preparation and procedure for sterile hand wash or clean hand wash, only the detergent or soap is replaced with an antiseptic and after washing hands should not touch any non-sterile material (Kozier, et al, 2009).

Sterile hand wash technique is cleaning or washing hands should be done especially when going to perform surgery procedures. Equipment needed to perform sterile hand wash is to provide a wash basin with foot pedals or knee control, antimicrobial soap (non-irritating, broad spectrum, fast work), surgical scrub brush with plastic nail cleanser, paper mask and cap or head cover, towel sterile, clothing in the screening room and eye protection and shoe covers (Kozier, et al, 2009).

Washing hands sometimes cannot be done because of conditions or due to limited resources. The number of patients who come in contact with nurses at one time or difficulty of getting adequate sources of clean water is an obstacle in washing hands. WHO suggests another alternative for hand hygiene with alcohol-based handrubs. Alcohol-based handrubs have the following immediate advantages:

1. Elimination of the majority of germs (including viruses)
2. The short time required for action (20 to 30 seconds)
3. Availability of the product at the point of care
4. Better skin tolerability
5. No need for any particular infrastructure (clean water supply network, washbasin, soap, hand towel).

Hand hygiene can be performed by using either plain soap or products including antiseptic agents. The latter have the property of inactivating microorganisms or inhibiting their growth with different action spectra; examples include alcohols, chlorhexidine gluconate, chlorine derivatives, iodine, chloroxylonol, quaternary ammonium compounds and triclosan. Alcohol-based handrubs with optimal antimicrobial efficacy usually contain 75 to 85% ethanol, isopropanol or n-propanol or a combination of these products. The WHO-recommended formulations contain either 75% isopropanol or 85% ethanol (WHO, 2009).

Compliance

According to the Oxford English Dictionary compliance is an action that is in accordance with the results of a desire, request, condition, direction and grants an instruction. Compliance is also called adherence derived from Latin “complire” which means to fulfill and complete an action, transaction or process and to fulfill a promise (Aronson et al., 2007). Sarwono (2012) compliance will result behavior change that are temporary and individuals will tend to return their original behavior if the group's supervision begins to slowly reduce or if the individuals is moved from the group. Factors that influence compliance in the practice of hand hygiene are divided into internal factors and external factors:

Internal Factors

Here are some internal factors that affect the compliance to the practice of hand hygiene:

1. Individual Characteristics
2. Capability
3. Motivation
4. Perception
5. Knowledge
6. Attitudes

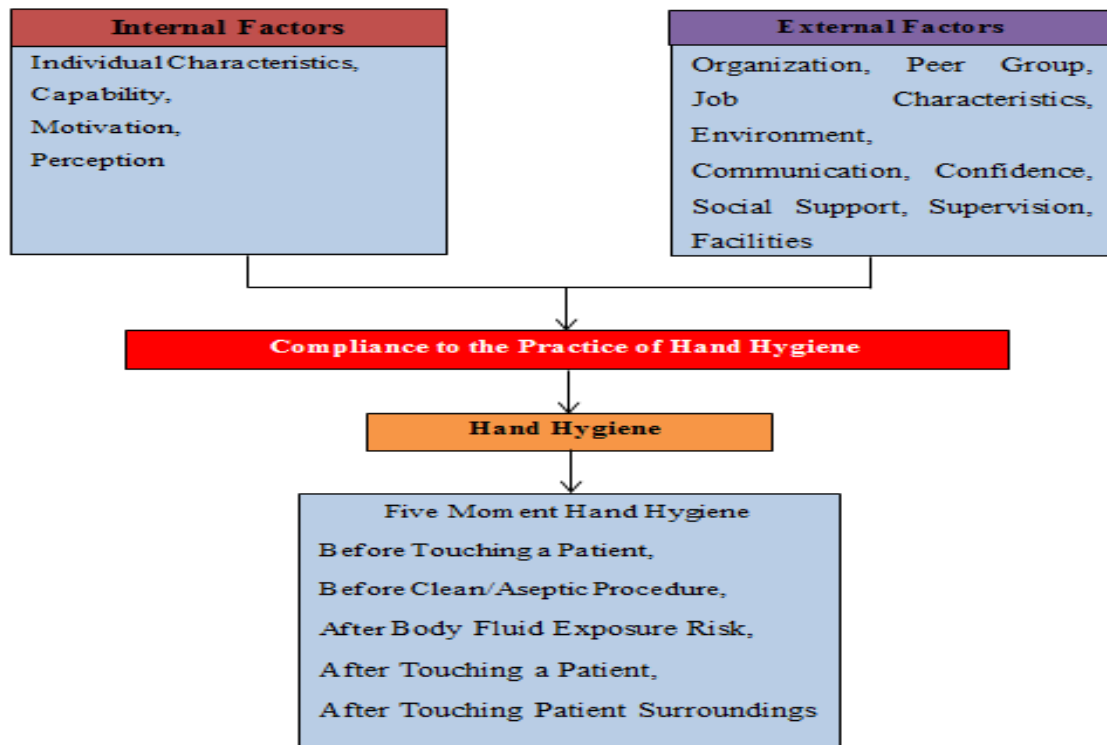
External Factors

Here are some internal factors that affect the compliance to the practice of hand hygiene:

1. Organization Characteristics
2. Group Characteristics

3. Job Characteristics
4. Environment Characteristics
5. Communication Pattern
6. Confidence
7. Social Support
8. Supervision
9. Facilities

Framework of Theory and Research



Method:-

This study is a quantitative with analytic survey method with cross sectional research approach. This study was conducted in March 2019 until July 2019 at healthcare center XYZ Qatar. Total respondents obtained amounted to 100 nurses. The questionnaire was used to find out the factors that influencing nurses compliance in the practice of hand hygiene. The questionnaire will consist of seven parts: individual characteristics, assessment of knowledge, attitudes on hand hygiene, perception on hand hygiene, facilities available for hand hygiene, supervision to the practice of hand hygiene and compliance to the practice of hand hygiene. The questionnaires were given option to select on 1 to 5 point Likert Scale. The total of statements was 43 statements covering individual characteristics (age, gender and years of service), assessment of knowledge using 10 statements, attitudes on hand hygiene will be measured using 5 statements, perceptions on hand hygiene using 10 statements, availability of facilities for hand hygiene using 5 statements, supervision to the practice of hand hygiene using 8 statements and compliance to the practice of hand hygiene using 5 statements.

The process of analyzing data using the Partial Least Square Structural Equation Model (PLS-SEM) technique, the Structural Equation Model (SEM) or structural equation model. PLS-SEM is a combination of two concepts, namely the concept of the measurement model analysis and the structural model concept. The PLS-SEM technique there are two types of variables namely latent variables and empirical variables. Empirical extracts are measurable (observable) extracts, called measurable because we can find out the magnitude of this construct empirically for example from a single item or the total score of measurement results. Empirical extracts are symbolized by squares.

Latent variables are variables that are not measurable (un-observed). It is not measurable because there is no empirical data that shows the magnitude of this construct that is depicted by a circular image.

Result & Discussion:-

Respondent Characteristics

Individual characteristics in this study consisted of gender, age and years of service. The following is an explanation of each individual characteristics.

Table 1:-Individual Characteristics Based on Gender

Characteristics	Description	Total	Percentage (%)
Gender	Female	38	38,0
	Male	62	62,0
	Total	100	100,0

Individual characteristics of respondents based on gender, the results obtained by the majority of respondents were 62 male (62.0%) and 38 female (38.0%).

Table 2:-Individual Characteristics Based on Age

Characteristics	Description	Total	Percentage (%)
Age	≤ 40 Years Old	45	45,0
	> 40 Years Old	55	55,0
	Total	100	100,0

Individual characteristics of respondents based on age with majority of respondents in this study has age above 40 years old were 55 people (55.0%) while those less than or equal to 40 years old were 45 people (45.0%).

Table 3:-Individual Characteristics Based on Years of Service

Characteristics	Description	Total	Percentage (%)
Years of Service	≤ 5 Years	42	42,0
	> 5 Years	58	58,0
	Total	100	100,0

Individual characteristics of respondents based on years of service with the majority of respondents in this study have worked for more than 5 years were 58 people (58.0%). Furthermore, there were 42 people with a work period of less than or equal to 5 years (42.0%).

Significant Level Results:-

The analysis technique used in this study is a Structural Equation Modeling (SEM) based on variance or component based SEM, which is call Partial Least Square (PLS). In this section consists of direct influence and indirect influence. Here are the results of calculations on structural equation analysis.

Table 4:-Significant Result Test

Variable	Correlation Coefficients	Significance	Remark
Individual Characteristics → Compliance	0,170	0,006	Significant
Knowledge → Compliance	0,215	0,048	Significant
Attitudes → Compliance	0,258	0,002	Significant
Perception → Compliance	0,186	0,040	Significant
Facilities → Compliance	0,184	0,033	Significant
Supervision → Compliance	0,099	0,020	Significant

Discussion:-

Individual Characteristics on Compliance

There is positive influence of individual characteristic variables on compliance has a significance value of 0.006 therefore the significance value is smaller than 0.05. It can be concluded that there is an influence on individual

characteristics of adherence. Individual characteristics in this study include gender, age and years of service. The results showed that person older and longer working period will be higher of compliance to the practice of hand hygiene.

Knowledge on Compliance

Based on the results of the study showed that the knowledge variable has a significance value of 0.048 which is smaller than 0.05. This means that there is an influence of knowledge on compliance to the practice of hand hygiene. The coefficient value is 0.215 with a positive direction. This means that higher knowledge will be higher the obedience. Knowledge is one of the factors that influence compliance to the practice of hand hygiene.

Attitudes on Compliance

The results showed that the influence of attitudes towards compliance had a significance value of 0.002 which is smaller than 0.05. This means that there is an influence of attitudes on compliance to the practice of hand hygiene. The influence coefficient is 0.258 with a positive direction means that better attitudes on hand hygiene will be higher compliance to the practice of hand hygiene. The attitudes on hand hygiene in this study is an expression of feelings, beliefs and the tendency of respondents to take an action in the practice of hand hygiene.

Perception on Compliance

The influence of perception variables on compliance has a significance value of 0.04 which is smaller than 0.05. It can be concluded that there is an influence of perception on compliance to the practice of hand hygiene. Regression coefficient is 0.186 with a positive direction means that better person's perception on hand hygiene will be higher compliance to the practice of hand hygiene. Some people with a good perception on hand hygiene will certainly increase their compliance to the practice of hand hygiene and vice versa.

Facilities on Compliance

Based on the results of the study note that the facility variable has a significance value of 0.033 which is smaller than 0.05. This means that there is an influence of the facility on compliance to the practice of hand hygiene. The coefficient value is 0.184 with positive direction. This means more adequate facilities will be higher compliance to the practice of hand hygiene. Hand hygiene facilities infrastructure can be used to prevent transmission of infections. Hand hygiene facilities needed in healthcare facilities. Adequate hand hygiene facilities will support nurse's compliance to the practice of hand hygiene.

Supervision on Compliance

The results showed that the influence of supervision on compliance has a significance value of 0.020 which is smaller than 0.05. This means that there is an influence of supervision on compliance to the practice of hand hygiene. The influence coefficient is 0.099 with a positive direction means that higher supervision of hand hygiene will be higher compliance to the practice of hand hygiene. Supervision on compliance to the practice of hand hygiene is very important in order to make nurses aware of the activities. This monitoring is carrying out to improve the culture of compliance to the practice of hand hygiene.

Conclusions:-

Based on the results of the study conducted on nurses who work at healthcare center XYZ Qatar in 2019 conclusions as below:

1. Individual characteristics influencing compliance to the practice of hand hygiene. Individual characteristics in this study include gender, age and years of service. The study showed a person older their ages and longer their work experience will have higher compliance to the practice of hand hygiene.
2. Knowledge of hand hygiene influencing compliance to the practice of hand hygiene. The study showed higher knowledge will be higher compliance to the practice of hand hygiene.
3. Attitudes of hand hygiene influencing compliance to the practice of hand hygiene. The study showed better attitudes on hand hygiene will be higher compliance to the practice of hand hygiene. The attitudes on hand hygiene in this study is an expression of feelings, beliefs and the tendency of respondents to take an action in the practice of hand hygiene.
4. Perceptions of hand hygiene influencing compliance to the practice of hand hygiene. The study showed better person's perception on hand hygiene will be higher compliance to the practice of hand hygiene. Some people with a good perception on hand hygiene will certainly increase their compliance to the practice of hand hygiene and vice versa.

5. The availability of hand hygiene facilities influencing compliance to the practice of hand hygiene. The study showed more adequate facilities will be higher compliance to the practice of hand hygiene. Hand hygiene facilities infrastructure can be used to prevent transmission of infections. Hand hygiene facilities needed in healthcare facilities. Adequate hand hygiene facilities will support nurse's compliance to the practice of hand hygiene.
6. Supervision influencing compliance to the practice of hand hygiene. The study showed higher supervision of hand hygiene will be higher compliance to the practice of hand hygiene. Supervision on compliance to the practice of hand hygiene is very important in order to make nurses aware of the activities. This monitoring is carrying out to improve the culture of compliance to the practice of hand hygiene.

Suggestions

Hand hygiene is inexpensive and effective way of preventing the spread of infections and in promoting the safety and health of our patients. Hand hygiene practices of healthcare workers has been shown to be an effective measure in preventing healthcare associated infection (HCAIs). Our study showed significant influencing in compliance to the practice of hand hygiene among nurses. Factors showed significantly in our study were individual characteristics (Age, Gender & Years of Service), knowledge, attitude, perception, facilities and supervision on compliance to the practice of hand hygiene.

This study is expected to be an input and reference in the development of science so that it can continue to improve compliance to the practice of hand hygiene. Therefore in order to maintain and improve nurse discipline in compliance to the practice of hand hygiene. Continuing education and training must be organized and improved supervision especially for nurses and support from management related to evaluation and the provision of reward and punishment must be implementing in order to make compliance to the practice of hand hygiene as a culture at healthcare center XYZ Qatar.

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