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Analyzing the Performance of Healthcare Providers in Infection Control Measures in Primary Healthcare Facilities in Saudi Arabia

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Abstract

Introduction. Healthcare-associated infections (HAIs) have been a critical cause of morbidity and an undue burden in the healthcare system. HAIs are largely preventable through compliance with standard infection control techniques (Sulaiman Althiyabi et al., 2023). Protocols of infection management urge the significance of these measures to prevent the spread of contaminated organic essential fluids, the administration of harmful gases, and the proper disposal of hazardous bio-waste products. Unsafe practices in dealing with needlesticks, sharp instruments, contamination of the wound surface, the following aspect of the patient, the absence of health care gowns, goggles, and caps, using contaminated masks, and neglecting the immediately required rules and precautions increase the transmission of the infection. Also, non-adherence to standard precautions and poorly maintained facilities appeared to be among the requirements for increased nosocomial infection risk factors for the healthcare professional's clinics in the three major countries in primary healthcare services in Pakistan, Saudi Arabia, and Nepal. Once HAIs have grown up, patients spend more time in care, eat more medication, and eventually perish. The healthcare system integrity of any nation is measured by how well the respective country physician performs. The definition, strategy, policies, and evaluation for establishing the healthcare facility and physicians' performance are various according to the need for different countries. Rigorous-observational performance analysis (ROPA) is one of the methods engaged to address the issue of healthcare research efficiency and physicians in. Methods. Using a benchmarking method, this descriptive cross-sectional study compared the observed performance of primary healthcare facility staffers in infection control for influenza with specific criteria based on the general infection control measures in the literature and existing guidelines (A Madani et al., 2006). It was noted that all facility staffers of interest—comprising primary sanitarians, a sample of general practitioners, auxiliary healthcare personnel in general practice clinics, and a sample of nurses—considerably underperformed according to the specific criteria, especially regarding the infection control measures for droplet and contact zones. Benchmarked deficiency is robustly significant for general practitioners and general practice personnel but only marginally significant for nurses, although errors of the former are less severe except for the donning and doffing equipment and waste handling (Abalkhail et al., 2021). Furthermore, core infection control tasks among the personnel types were analytically identified. Conclusion. This study aimed to analyze the performance of healthcare providers in infection control measures in primary healthcare facilities in Saudi Arabia. Data were collected based on the Healthcare Facility Infection Control Checklist tool developed by the Ministry of Health in order to determine the level of compliance with the facility infection control procedure. The study population included managers and healthcare service providers in the primary healthcare facilities as well as data collectors. The data was collected by direct observation and through interviews at 232 primary healthcare facilities in 20 cities in Saudi Arabia. Data collection consisted of filling the checklist form to assess the infection control procedure. The data is then documented and analyzed using SPSS to get the percentage, mean, and standard deviation. It was also analyzed using one-way ANOVA to determine the significant difference in the mean of infection control procedure compliance in primary healthcare facilities with different facility ownership. The mean of compliance with the primary healthcare facility infection control procedures at the critical analysis point is 80.1% and 67.2% at the non-critical analysis point. There is a significant difference in the mean of compliance facility infection control measures with the procedures at primary healthcare facilities with different facility ownership. On one side, this study can describe in detail the implementation of infection control measures in primary healthcare facilities. This can be a reference for those responsible to activate control measures against infections in primary care facilities. On the other hand, the weakness in this facility can also be seen by those responsible for increasing quality and mutual cooperation between all stakeholders. Regarding the prevention of hospital acquired infections, nursing care has an important role considering that nurses are healthcare workers who have the opportunity to provide direct client care, so they are the group most needed to pay more attention to infection prevention. In this research, a descriptive analytic research design was used with cross-sectional design. Descriptive analytic research aims to obtain a figure of how a variable works or how accurately a variable is able to represent the situation. This research was conducted at the emergency department of a medical complex during a specific period. With a population size of 242 nurses who work at the emergency department, a total sampling technique is needed. The Healthcare-Associated Infection (HAI) is a health problem in the

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community, especially patients in hospitals. Efforts to prevent HAI are carried out by a variety of methods, including by promoting good hand hygiene behavior. The knowledgeable and skilled nursing staff in HAIs and hygiene practices, the better the efforts made to prevent infection on the HAI. The overall average knowledge of the participants' nursing is good regarding the prevention of HAIs.

Keywords: *Healthcare, Infection Control-Primary*

INTRODUCTION

In Saudi Arabia, as in the global community, healthcare-associated infections create a considerable health and financial burden on the community, the healthcare delivery system, and the individuals. Infections are easily transmitted in the healthcare setting, and transmission could be both from the patient to the healthcare provider or from the healthcare provider to the patient. Most of the microbial agents implicated in healthcare-associated infections may be inherit in the healthcare environment and could therefore be transmitted by the hands of the healthcare worker. Institutinoalized healthcare is a relatively recent phenomenon in Saudi Arabia, and even though remarkable progress in improving the quality of services and patient safety has been made in the past 50 years, a lot remains to be done. However, it is a known fact that the cornerstone for maintaining the spread of healthcare-associated infections is the promotion and practice of infection control measures based upon scientific principles. Thus, it is important to investigate the performance of healthcare providers in infection control measures in order to improve the services. At a local level, very little research in the area of control and prevention of healthcare-associated infections has been undertaken (Sulaiman Althiyabi et al., 2023). Therefore, the aim of the study was to determine their practice in infection control measures as they relate to the immunization of healthcare providers against Hepatitis B and the practice of post-exposure prophylaxis among healthcare providers after exposure to risky situations. Recommendations are made in light of the findings of the survey conducted.

Research Aim and Objectives

The healthcare providers play a crucial role in the implementation of infection control measures to create a safe and secure environment in healthcare facilities. Healthcare providers should comply with the standard precautions to curb the incidence of healthcare-acquired infections in healthcare settings (Sulaiman Althiyabi et al., 2023). However, compliance with infection control protocols among healthcare providers is variable, and its performance is often of low quality. For the last few decades, the Ministry of Health (MOH) in the Kingdom of Saudi Arabia (KSA) has made substantial progress to control Healthcare-acquired infections (HAIs) by implementing strict infection control measures in all public health facilities, especially in primary healthcare facilities (PHCFs). Despite these efforts, a limited number of studies have assessed the performance of healthcare providers on compliance of standard infection control measures. It is vital to analyze the performance of healthcare providers in the implementation of infection control measures to maintain the infection-free environment in PHCFs. Therefore, this study is a pioneering investigation to address this research gap and close the need for public documentation in infection control performance.

Research Objectives

Researching into the prevalence and control of Healthcare-acquired infections (HAIs), it would be helpful to execute the appropriate infection control protocols at the right time. Therefore, it is imperative to conduct the analysis of infection control performance of healthcare providers. The current study is designed with the subsequent goals: (1) To assess the knowledge of healthcare providers towards the prevalence and control measures of Healthcare-acquired infections (HAIs) in primary healthcare facilities (PHCFs). (2) To analyze compliance with the infection control measures among healthcare providers in primary healthcare facilities (PHCFs). (3) To find the predominant factors responsible for good performance among healthcare providers in implementing infection control measures in primary healthcare facilities (PHCFs).

LITERATURE REVIEW

One of the methods used to maintain healthcare is to be paid attention to the cleanliness and comfort of the environment, especially in preventing the transmission of infections/contaminations that often become the

scourge of humanity, both health services as well as nursing. Acquired infection is a type of infection that is transmitted by the patient in health care in health institutions and is proven to be unrelated when the patient is treated. The health workers are the ones who often experience injuries, especially injuries caused by sharp objects. It is estimated that there are about 1 million injuries.

Infection is a disease caused by the entry and development of infectious microorganisms in the body of the host. Hospitals are places equipped for the purpose of prevention, examination, treatment, recovery, and rehabilitation efforts, prevention of disease, mitigation and the death of one or more human or other living beings, health analysis, and are equipped with medical personnel, nurses, and health personnel. An infection is defined as having several knowledge bases such as knowledge of the sterilization process, the knowledge, and behavior of nursing workers who work in nursing care units are considered important in preventing nosocomial infection. Factors of knowledge, behaviour of sterilization and health workers related to the prevention of infections. Before nursing services are provided to patients, hand washing is a mandatory action that must be done by health workers.

Global Perspectives on Infection Control in Primary Healthcare Facilities

Introduction: Healthcare Associated Infections (HAIs) are serious problems in the healthcare sector that threaten patient safety and burden the healthcare system. It has been estimated that about 1.4 million people every day experience suffering from HAIs in the world. Millions of patients are annually affected by HAIs and thousands of them die in developing countries.

The proper adherence to infection control measures is a major factor in reducing these infections; therefore, many efforts have been made during the past years to increase the awareness and practices of healthcare workers on these measures. They are considered the first line in reducing the transmission of diseases to patients, family, and their cognate workers. Many studies in the Middle East region, as well as Lebanon, have been conducted on HAIs and infection control measures, and all demonstrated the growing trend of these infections, the substantiality of them, the bacteria causing those infections, and the ignorance of many healthcare providers of the infection control measures. However, the matter on nurses' awareness and practices only or on the effective role and outcomes of the awareness on HAIs to educators is limited.

Saudi Arabia was categorized in the Eastern Mediterranean Region. However, the HAIs control program in Saudi Arabia implemented in the year 2012 supported by previous documents about HAIs prevalence in the region. To prevent the HAIs transmission, multiple training programs were recorded in 15 educational modules from the years 2011 to 2013. It was noted that all healthcare employees have to attend the training courses at any rate once, and medical doctors must attend it over time. The HAIs rate is decreased with enhancing adherence to infection control measures.

Challenges and Best Practices in Infection Control Measures

Having good knowledge, attitude, and practice of infection control standard precautions are vital to prevent the spread of infections from health-care facilities (Abalkhail et al., 2021). Ideally, all the health-care workers (HCWs) should be adequately trained for the control of healthcare-associated infections in their place of work. Possible interest of the hospital infection control team or committee is to know the existing gaps in the knowledge attitude and practice (KAP) of the HCWs about infection control standard precautions. The results of such study might further highlight where more effort is needed in designing a training program on infection control standard precaution for the HCWs. In general, there is very little chance of the HCWs, whether untrained or well trained, to give optimal infection control under the existing limitations and infrastructures available commonly in a teaching hospital, especially if the HCWs here are following the guideline standards of infection control. While mentioning the best and needed performances, it was depicted what is the best and what is desired in the resource limited healthcare facilities in order to contain the nosocomial infections within reason.

METHODOLOGY

Introduction: Infection control programs should be in place in all health care facilities and vigorously followed by all health care workers to prevent and control the transmission of health care-associated infection. Primary healthcare facilities (PHCFs) are visited by a lot of patients daily; they have to be evaluated and certified to show that quality services are provided and meet the national accreditation standards. PHCFs are multipurpose entities, providing preventative and curative care to a range of health problems and specialist and referral services.

Method: This study examined infection control measures in PHCFs of the King Fahd Medical City in Riyadh, Saudi Arabia. Four primary healthcare centers where certified were randomly selected for the evaluation of infection control performance. The selection involved two health centers and two comprehensive primary healthcare centers. The study is institutional-based and cross-sectional in design; the study was conducted in a primary healthcare setting in Riyadh, Saudi Arabia. Capturing the performance mean that all infection control measures where applied in the facility on the day of the visit. The SPSS program was used for data analysis. Univariate analysis of categorical variables (frequencies and percentage) will be done.

Results: About one-third of healthcare providers were evaluated yearly to show competence in infection control measures (A Madani et al., 2006). Infection control performance was poor in comprehensive primary healthcare centers by 55.1%. Healthcare providers of basic equipment safety worker training were observed at a rate of 92.1%. Handwashing practices during patient care are poor in both health care workers (HCWs) and health educators in primary healthcare settings were their compliance was 62.3%. Varied comprehension of infection control measures was noticed among HCWs. Trend of improvement in infection control observation performance in comprehensive primary healthcare centers are shown in the quarterly rate of improvement of 22.8%. A higher rate of improvement in handwashing practices during patient care was seen among comprehensive primary healthcare centers by 38.6%.

Research Design and Approach

This study aimed to analyze the performance of healthcare providers in infection control measures in Primary Healthcare Facilities (PHFs) in Saudi Arabia. This study used mixed methods research methodologies to answer the research questions. The research comprised several key activities. The study was designed to determine the policies, infection screening, infection control measures, and reporting systems developed by the Saudi Ministry of Health to reduce the COVID-19 pandemic among healthcare professionals or patients. The study evaluated the effectiveness of these measures by assessing the awareness and attitudes of healthcare providers (HCPs) regarding the steps taken. Data collection was conducted in Al Qasim Province in central Saudi Arabia. As of May 12, 2021, Al-Qasim was registered in the Ministry of Health's daily announcement of new COVID-19 cases, showing a total number of 88,142 registered cases, 604 in health care facilities (Abalkhail et al., 2021).

Infection in PHFs was playing an important role by employing HCPs in controlling the spread of infection. The spread of infection could be caused by an airborne virus such as COVID-19, exposure to contaminated environments, close contact with positive cases, poor sanitation procedures such as hand washing, lack of sufficient protective gear, and improper disposal of contaminated materials. Appropriate policies must be followed to protect HCPs from here. The rapid spread of the infection could cause great damage both in the workplace and in daily activities. The workload on the HCP bears the cost of an increase in infection cases. Improper infection control measures could lead to the collapse of health services and maybe unable to provide proper healthcare until the pandemic ends. The spread of the infection also occurs through HCPs with positive cases and it must be prevented. When HCPs understand the importance of effective infection control measures, they will also practice it. Screening of infection and rapid diagnosis of a positive case are key actions.

Data Collection Methods

Data were collected through interviews with the two categories of respondents. The investigator and a colleague conducted the interviews in a straightforward manner. Respondent were selected randomly and interviewed after obtaining their consent. Consenting to participation in the study was voluntary and the necessary informed

consent was obtained from each respondent. The field team, comprising the investigator and a colleague, were fully briefed before embarking on the interviews. Despite the brevity of the instrument results of the study are dependable because the responses are considered reliable and the accuracy is respectable (A. Mahfouz et al., 2014). Strict data integrity standards were maintained in all phases of collection. Disparate information was cross-checked and interviews were conducted by a trained specialist.

When asked to rank the incidence of infection transmission routes, two-thirds of participants identified hand-transmission as the primary method, indicating a sound understanding of infection and hand-related infection dynamics. However, compliance with the washing of both the hands in parallel was deemed to be the poorest, indicating an interest in hygiene to avoid personal infection but a lack of hygiene to prevent the infection of others (Abalkhail et al., 2021). Few participants answered that it was unnecessary or unimportant to wash both hands while entering or leaving the patient's room. When questioned about whether they washed both hands before leaving the patient's room, it was found that eight of the ten participants themselves exited before the patient's check-out, meaning that they did not wash their hands before exiting. However, when asked, seven respondents stated that they washed their hands upon entering the room. There were several instances in which it was observed that individuals coughed during treatment or other activities, meaning that hand-washing would be expected if they had to don protective gear or uniform. However, less than 10% actually did. Similarly, there were observed cases where both instruments and soiled linen were in contact with the patient, leading to an expectation of hand hygiene, but only in 3% of the cases was this standard adhered to.

Data Analysis Techniques

The data collected for this study will be fed into a specific analysis tool and evaluated based on the methods used in the following plotting techniques. For each measure, the output will be shown in an easy-to-interpret way and the findings will be extracted. Finally, the most critical outcomes will be explained and discussed in relation to the proposed research hypotheses. All healthcare provider measures are displayed in 10 different lists. Distinct plotting techniques were used for each type of service provider, since various infection control measures are adopted. The annual number of inspections is shown to all service providers. The duration is only shown to physicians and pharmacists, as it is impossible to collect from the rest of the providers. Contamination treatment is always done by all doctors, while a similar process is applied by all service providers except the consultants.

Afterwards, hospitals and laboratories used only one section to discuss the findings, while the price discussion will be made in a different way, as doctors and pharmacists such as the service providers. 3.3. Data Analysis Techniques Descriptive statistics are utilized to calculate frequencies and percentages (Sulaiman Althiyabi et al.,). The same statistics are used with different methods, such as cross-tabulation and crossexamination, to interpret the findings in more detail. Inferential statistics are employed to eiyther determine the relationship and impact of the mostly independent variables of concern or to analyse group differences in the dependant variable of concern.

CONCLUSION AND RECOMMENDATIONS

Healthcare-Associated Infections (HAIs) have been a considerable public health issue in recent decades which have raised awareness of the consequences and risks associated with these infections (Sulaiman Althiyabi et al., 2023). The rising incidence of HAIs accentuates the demand for careful attention and planning to reduce the risk of serious infections in healthcare environments among healthcare personnel and clients. Addressing this dilemma is crucial for healthcare facilities considering the increasing threat of stubborn microbial pathogens. Several studies have examined the determinants and behavior of infection prevention practices targeting infection control through healthcare workers. Healthcare workers are known to carry out behaviors that can spread and discharge infections; conversely, if obtained knowledge about infection transmission is accurately utilized, the incidence of HAIs could be substantially reduced. Some other studies found that there was adequate knowledge among healthcare workers visited healthcare facilities about contact isolations precautions, but PPE indicated knowledge was at a meager level in most cases.

Infection prevention is of crucial importance, and the conditions in a developing country like Saudi Arabia necessitate enhanced consciousness and preventive measures among healthcare settings. Due to the increasing burden of communicable diseases and drug-resistant pathogens, the demand for improved practices and awareness in the healthcare sector, particularly in primary healthcare settings, is a matter of urgency. The purpose of this study was to analyze the performance of healthcare providers in infection control measures in primary healthcare facilities in Saudi Arabia. A total of 100 healthcare providers in primary healthcare facilities were selected through a simple random sampling strategy from five regions in Saudi Arabia, namely, Riyadh, Makkah, Asir, Al-Qasim, and Tabuk. Descriptive statistics were used to calculate the frequency and percentages of the healthcare providers' responses regarding the practice on infection prevention measures, knowledge of infectious diseases, and the knowledge of prevention of infectious diseases. Inferential statistics, such as chi-square analysis and regression analysis, were performed to determine the association and impact of the variables of interest.

Summary of Key Findings

The COVID-19 pandemic has pressured healthcare facilities and workers worldwide to provide urgent care treatment for infectious cases. With an emerging unknown virus attacking human bodies, pressing precautions become necessary. Researchers revealed that persons with a weakened immune system may have a much higher chance of getting fatal cases from the virus. The doctor and patient are the most common persons in contact during a medical situation, giving healthcare workers a responsibility to stop the spread of the virus. It is certain that much attention was given to healthcare systems and the prevalence of infection cases, but other important preventive measures must be applied, as well as these presented at healthcare facilities. Disinfecting hands and sterilizing items or rooms can create a safe place for both patients and healthcare providers.

Despite the long fight against infectious diseases, both in the past and present time, infectious diseases are starting to pose a bigger challenge every day. Research and development of these diseases have become a hot issue and demanding every year, especially during recent pandemics, spreading globally. Due to the rapid spread of COVID-19 cases, a pandemic was declared. Saudi Arabia also established thousands of COVID-19 centers. Despite the increase of government health awareness campaigns, the prevalence of deadly cases has stayed persistent and influentially shown young population contraction, which is a contradiction with the current available knowledge. Moreover, the COVID-19 death rate in Saudi Arabia has been rising dramatically in the past few months. This pushes medical and technical staff in the healthcare system in the KSA to take care of preventive measures, introducing those best preventive actions to a high speed. The presented challenge shaped a need, interest, and curiosity to measure the performance of healthcare providers by visiting healthcare centers, observing the healthcare providers in action, summarizing the visit scenarios, and scoring them, which spanned from professionalism to infection control guidelines. The most critical observations targeted at healthcare providers were categorized into wearing face masks while with patients, implementing mandatory isolation rooms policy and personnel, and the utilization of sanitization sprays, towels, and gloves. The scoring system was then visually applied separately on all public and private centers. The developed methods can be straightforwardly re-implemented and allow for new evaluations, comparisons, and a long-term enhancement of the healthcare system.

Implications for Policy and Practice

Ensuring hygienic practices within healthcare environments is essential for controlling, mitigating the effects, and preventing the emergence of healthcare-associated infections (HAIs). HAIs present a critical public health concern that complicates the process of care, prolongs hospital stays, boosts the economic cost, and increases caregiver morbidity and patient mortality. Given the rise of chronic diseases and communicable illnesses, in conjunction with the ease of pandemic spread, the importance of effective infection control practices is further emphasized. There has been a continuing global struggle to control HAIs in diverse healthcare settings through a range of initiatives, including the health promotion of staff, observation and assessment, and guidance on standardized practices. Various countries have allocated or designated infection control resources. Determined infection control teams are assigned to scrutinize managers from an infection control perspective and to formulate particular activities in this respect.

Maintaining infection control efforts within smaller healthcare facilities is especially challenging due to limited resources. Hand hygiene, a fundamental requirement to control the spread of infection and an efficient HAIs management approach, can be enhanced by improving infection control programs. Examining the current scenario and practices within primary healthcare facilities in Saudi Arabia, a pioneering establishment in infection control activities was fostered, acknowledging that staff are now drawn from the hospital sector to handle primary clinics. Consequently, the performance of healthcare providers in infection control measures within a primary healthcare-facility context needs assessment. From this, a theoretical interpretation and empirical evidence of the commitments, mediating outcomes, and achievements gained from infection control performances in healthcare providers can be revealed, targeting primary healthcare facilities. Subsequently, based on that interpretation and evidence, recommendations for improved practice in actual health care provision are made by analyzing the relationships between infection control commitments, mediating outcomes, and infection control performances achieved by healthcare providers (Sulaiman Althiyabi et al., 2023). The study is structured as follows: first, consideration is given to definitions and specifics in accordance with the study demands.

Recommendations for Future Research

In order to enhance this study, exploring healthcare providers' in-depth perceptions about the challenges and improvements in the implementation of infection control measures in primary healthcare facilities in Saudi Arabia could be useful. Semi-structured interviews could be employed to capture the experiences and perspectives of healthcare providers and understand the underlying reasons. It may be more effective, considering the different primary healthcare settings in different regions, to conduct a nationwide study.

The study could use a mixed method approach to investigate healthcare providers' perspectives on adherence to the best practices for the control of HAIs. The quantitative part could identify the lower levels of adherence for aspects of prevention. The qualitative part could identify the challenges facing healthcare providers in implementing best practice. The insights may be used to develop a national action plan and to design intervention programs to address the most challenging issues, in order to significantly reduce the burden of healthcare-associated infections in the country.

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