كلية فقيه للعلوم الطبية
Fakeeh College for Medical Sciences

Nursing Student's Knowledge about Outbreak of
Middle East Respiratory Syndrome-Corona Virus

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Abstract

Aim of the study: This study aimed to investigate the nursing students' level of knowledge regarding Middle East Respiratory Syndrome Coronavirus (MERS-CoV) outbreaks and their preparedness for enrollment in clinical training during epidemics. This study also aims to provide possible guidelines or policies that will help clinical instruction during infection outbreaks.

Methodology: This paper is a descriptive study on MERS-CoV. A convenient sample of 60 nursing students (21 male and 39 female) from all levels of Fakeeh College for Medical Sciences (FCMS) participated in the study. The participants were composed of students who experienced the MERS-CoV outbreak in the Kingdom of Saudi Arabia. New students who enrolled in FCMS after August 2014 were excluded from the study. A structured questionnaire composed of eight questions with five levels of answers based on the Likert scale was prepared, and the response time was limited to an hour. The questions addressed basic knowledge on MERS-CoV, signs and symptoms, mode of transmission, complications, and measures to prevent the spread of MERS-CoV. The questionnaires were distributed from February 9, 2015 to February 13, 2015 by the investigator. Ethics permit and informed consent was secured from the Institutional Review Board and the participants, respectively, prior to the investigation.

Result: Both male and female nursing students showed a comparable level of aptitude with regards to MERS-CoV outbreak. Moreover, the students showed high percentage of awareness on the signs and symptoms of the disease, mode of transmission and its prevention. However, female and male nursing students got a lowest result which addressed to the complications of MERS-CoV. In addition to increase their knowledge about the disease process, students relied on TV network and social media instead of reading materials.

Conclusion: Nursing students' knowledge about MERS-CoV outbreaks has a substantial effect on their preparedness for enrollment in hospital training, where outbreaks could negatively affect them and their training. Nursing students from FCMS showed remarkable knowledge regarding most aspects of MERS-CoV outbreaks. However, the students only demonstrated a passable level of awareness with regards to the disease being a new infection that was declared as an outbreak

and its complications. Moreover, FCMS nursing students did not rely on instructional materials to gain knowledge about the disease, but rather on television and social media. Future studies are encouraged to investigate the causality on the students' reliance on multimedia instead of academic materials for obtaining information.

Recommendation: Carry out awareness programs for nursing students about infectious diseases and include these programs in the requirements for attending clinical training in times of outbreaks. Additionally, encourage them to rely on credible sources of scientific knowledge to keep their information accurate and up to date. Policies that will guide nursing training during epidemics should also be developed. Because there are few previous studies on this problem, the investigator suggests that this research be replicated using a larger sample size comprising both nursing and other allied-health students.

Introduction

The incidence of Middle East Respiratory Syndrome Coronavirus (MERS-CoV) infection has been recently increasing with 857 reported cases in the Kingdom of Saudi Arabia (KSA) in 2012, according to the Ministry of Health (moh.gov.sa; 2015). This disease is caused by a single-strand RNA virus belonging to the genus Beta coronavirus and is transmitted via aerosol inhalation or ingestion of products from infected animals. Bats were the natural reservoirs of the virus, evolving to infect dromedary camels, and by around 2010, started spreading to humans (Doucleff; 2012).

Nursing students' clinical training is a vital element of the learning process and can be affected by MERS-CoV outbreaks, as their safety can be compromised while dealing with patients and other staffs. Because the disease currently still has no antiviral medications and treatment is mostly supportive (CDC; 2016), effective information dissemination and case handing techniques must be instilled on trainees to prevent nosocomial infections. Hence, knowledge about MERS-CoV should be a key point in guiding all relevant training activities for nursing students. Assessments on MERS-CoV awareness will serve as an important aid in the formulation of

policies, guidelines, and hospital training programs that will ensure the safety of nursing students, health-care workers, and patients during epidemics.

The problem

Camel flu is a new disease caused by MERS-CoV, a virus discovered in 2012. As a novel infection, not much information and treatment is readily available during outbreaks, leading to public hysteria. Furthermore, students who are training in hospitals catering to MERS-CoV patients can be negatively affected by such outbreaks, especially if they lack awareness about the disease and how to handle such cases.

The Aim of the Study

The lack of prior research regarding the current topic was one of the reasons for conducting this study. This study aimed to investigate the nursing students' level of knowledge regarding MERS-CoV outbreaks as it affects their preparedness for clinical training during epidemics. This study also aims to provide possible guidelines or policies that will help regulate clinical instructions during outbreaks, provide insights for future studies, and to contribute to the growing body of knowledge.

Definition of Terms

- Epidemic: affecting or tending to affect a disproportionately large number of individuals within a population at the same time.
- MERS-CoV: Middle East respiratory syndrome corona virus, a virus that infects unciliated respiratory cells and causes flu-like symptoms.
- FCMS: Fakeeh College for Medical Sciences, a school that offers bachelor's degree in nursing and medical laboratory science, as well as master's degree in psychiatric and mental health nursing.
- Nursing student: an undergraduate student who is currently enrolled under BSN program.

- Nosocomial infection: diseases acquired or occurring in a hospital.

- Reservoir: an organism that acts as a host to a pathogen of another species but is not damaged by the microbe.

- IRB: Institutional Review Board in Fakeeh College for Medical Sciences.

Literature Review

In a study by (Khan, M. U. et al., 2014) in Qassim, they concluded that healthcare workers possess adequate knowledge and positive attitudes towards MERS-CoV. However, further studies are still needed in KSA to achieve a high level of infection control to better serve the world. Another study by Bridget V. Stirling and J. Harmston in 2014 revealed that the majority of the students sought information regarding the MERS-CoV epidemic from Twitter (40%) and through television (36%). They concluded that nursing colleges may need to review existing guidelines or develop new epidemic related policies. These policies may include attendance of students in clinical settings and fostering patient care during epidemics.

Methods

Design

This research was conducted as a descriptive study about MERS-CoV. A total of 60 nursing students (21 male and 39 female) from all levels of Fakeeh for Medical Sciences (FCMS) participated in the study. The participants were composed of students who experienced the MERS-CoV outbreak in KSA. New students who enrolled in FCMS after August 2014 were excluded from the study.

Settings

This study was conducted at FCMS, which is a co-ed institution that grants a bachelor's degree in nursing and medical laboratory science and is located in Jeddah, KSA. The school also offers master's degree in psychiatric and mental health nursing.

Ethical Consideration

The participants were voluntarily involved in the study and, rules and regulations set by the IRB committee were applied to guarantee the application of the code of ethics. The investigator assures that no breach of confidentiality nor harm was levied on the participants.

Instruments

Questionnaires were prepared based on Likert scale and were composed of eight questions with five levels of answer, where strongly agree is 5, agree is 4, not sure is 3, disagree is 2, and strongly disagree is 1.

The questions addressed topics on basic knowledge of MERS-CoV, signs and symptoms, mode of transmission, complications, methods on preventing the spread of MERS-CoV, and primary source of information about this emerging disease, the overall Content Validity Index (CVI) for this instrument is 0.87.

Translating a questionnaire tool into different language must accommodate the cross-cultural adaptation of the tool to maintain the equivalency between source and target language based on content, but also to retain of psychometric properties of the original tool (Beaton, Bombardier, Guillemin, & Ferraz, 2000). For the current study, the research instrument will be translated based on Beaton et al. (2000) previously published standardized guidelines for translating survey tool, which includes: forward and back translation, cultural adaptation and pilot testing.

Firstly, the new tool will be translated into Arabic language by two independent translators. One will be a health care professional who is heavily involved in a previous research on respiratory problem, and the other is a professor in linguistics studies with subspecialty in English language, which is neither aware, nor informed of the concept of the research (Beaton et al. 2000). Both translators are fluent in the Arabic language and have an excellent knowledge of the English language. The translated versions will then be independently synthesized into one version (version A) by third translator. Thereafter, the synthesized version will be back translated into Arabic language by two independent translators who are blind to the original version, and who are fluent (and native) in English and have an excellent knowledge of the Arabic language. The

new translated version (version B) along with the (version A) will be submitted to an expert panel which is comprised of 8 members (methodologists 1, health professionals with PhDs 1, language professionals PhDs 1, and the 5 translators who were directly involved in the translation process). Rubio, Berg-Weger, Tebb, Lee & Rauch, (2003) suggested that the number of expert committees should be more than 5, but less than 10. The expert will review all the versions (A+B) of the questionnaires, reach a consensus on any discrepancies and agree on pre-final version of the questionnaire for pilot testing.

Questionnaire Validity: The expert panel will review the face validity of the questionnaire. Each member of the panel will rate each item of the pre-final version of the questionnaire from 1 (Not relevant to the topic being discussed) to 5 very relevant to the topic being researched). Content Validity Index, (CVI), and inter-rater reliability index) will be calculated by examining the panel members numerical responses to each item, and regrouping of the panel members responses into dichotomous responses (Relevant and non-relevant) (Rubio et al. 2003).

Questionnaire Reliability: The reliably and internal consistency of the tool will be calculated using Cronbach Alpha measures for each item and for the overall tool (Field 2013).

Data Collection and Analysis

The questionnaires were distributed by the investigator to 60 FCMS nursing students (20 male and 40 females) who voluntarily consented and participated in the study from 9-15 February 2015. Participants were given a 1-hour time limit in answering the questionnaires. Collected data were analyzed using SPSS V.19.0 and Microsoft Excel 2010 programs.

Limitations

This study is limited to its scope in the determination of nursing students' level of awareness about MERS-CoV and their primary sources of information. This study includes the differences in the degree of familiarity between the male and female participants, as well as the questions on

which are most cognizant of. This study does not encompass knowledge on other diseases exhibiting influenza like symptoms (e.g., SARS, respiratory syncytial virus infection, or parainfluenza), students of other institutions or programs, or interns of other hospital.

Results and Discussion

The response rate was excellent with 100% for the male and 97.5% for the female students (39/40 students). We increased the number of male students to 21 instead of 20 to obtain a total sample size of 60 students. The nursing students showed general knowledge about MERS-CoV, where the mean results of the male and female students were 83.69% and 80.45%, respectively. The overall average of all the students' scores was 82.07%, which is in agreement with the study of Khan, et al. 2014. The students demonstrated best knowledge on the signs and symptoms of MERS-CoV with the highest result of 90.47% and 87.17% for the males and females, respectively. Students showed remarkable knowledge on MERS-CoV mode of transmission with 88.57% and 81.53% of the males and females obtaining the correct answer, respectively. The lowest result was on the question which addressed the complications of MERS-CoV with 73.33% for the males and 71.79% for the females. Nursing students also demonstrated remarkable knowledge on the prevention of the disease with results of 83.80% and 81.02% for the males and females, respectively. They also exhibited high awareness for the vulnerability of some individuals to MERS-CoV compared to other groups, where the result for question number six for the males and females were 84.76% and 80.51%, respectively. In general, both male and female nursing students showed comparable levels of aptitude about the MERS-CoV outbreak. However, the students showed only passable knowledge (the lowest results in the entire set) on the complications of MERS-CoV with results of 73.33% and 71.79% for the males and females, respectively. Most of the nursing students (89.52% male and 83.07% female) relied on the TV and social media as their primary source of information about MERS-CoV instead of academic materials. This finding is almost 2-fold higher than the results of Stirling and Harmston (2014) where a mass of students obtained information regarding MERS-CoV from Twitter (40%) and through television (36%). Both genders exhibit comparable knowledge on the disease as shown by the averaged responses in (Figure 1). Differences mainly lie in the degree of the response, with

males tending to answer more on the extremes of the scales (Figure 3), whereas females tended to choose the middle options (Figure 2). However, if the participants aren't familiar with the topic, both genders are more inclined to select the medial choices.

Figure 2. Responses of the female participants on the MERS-CoV questionnaire.

Figure 3. Responses of the male participants on the MERS-CoV questionnaire.

Conclusions

Nursing student's knowledge about MERS-CoV outbreak has a considerable effect on their preparedness for enrollment in hospital internship, where outbreaks could negatively affect

them and their training. In this descriptive study, nursing students in FCMS showed outstanding knowledge regarding most aspects of MERS-CoV epidemics. However, the students exhibited only a good level of understanding with regard to the disease being a new infection which was declared as an outbreak and its complications. Moreover, FCMS nursing students did not rely on instructional materials to gain their knowledge about the disease, but rather on television and social media.

Recommendations

Based on the results of our study, the investigator recommends the following:

- Carry out awareness programs for nursing students about infectious diseases and develop policies that will guide nursing training during epidemics.
- Include the developed programs in the requirements for attending clinical training during outbreaks.
- Investigate the causality on the student's reliance on multimedia instead of academic materials for obtaining information. Because there are few previous studies on this topic, this investigation should be replicated using a larger sample size which includes both nursing and other allied-health students from various academic and hospital institutions.

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