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Knowledge and Perception of Health Practitioners towards MERS-CoV in Hail Region, Kingdom of Saudi Arabia

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Abstract **Objective:** This research determines the level of knowledge and the perceptions of the health practitioners about MERS-CoV to target the needs in addressing the health threat. It also aims to relate the participants' age, gender, civil status and educational attainment between the seriousness, susceptibility and extent of anxiety, efficacy, and self-efficacy, and the intention to carry out the measures. **Methods:** This research utilized a correlational approach. The participants were the health practitioners in the hospitals of Hail Region, Kingdom of Saudi Arabia. A total of 264 health practitioners completed the survey (response rate of 83%) as a result of a convenience sampling. Weighted mean, standard deviation and Chi-square test of independence were used to analyze the data. **Results:** The health practitioners have high knowledge on MERS-CoV; as an inflammation of the lungs (2.64 ± 0.48); always gives symptoms (2.67± 0.52), and can be prevented by practicing good hygiene (2.62 ±0.64). The MERS-CoV is perceived as a very serious disease (4.24±0.56). Moreover, the susceptibility of MERS-CoV, and extent of anxiety are perceivably contracted in the absence of preventive measures (3.30±1.18), and with no vaccination (2.7±0.90). On efficacy/self-efficacy, the health practitioners are very certain (4.40 ± 0.69) and neutral with their intention to carry out the measures (3.38±0.72). Age (P=0.001), civil status (P=0.026) and educational attainment (P=0.001) yielded significant relationship with the intention to carry-out the measures. Equally, the educational attainment (P=0.031) prove significant to efficacy and self-efficacy. **Conclusion:** The high level of knowledge and good perception of the health practitioners about MERS-CoV may contribute in anticipating the disease outbreak.

Keywords: *knowledge, MERS-CoV, perception, health practitioners*

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1. Introduction

Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) is a zoonotic malady with bats and dromedary camels playing critical parts in its rise and epidemiology. [1] Such virus makes respiratory disease and leads a high level of mortality. [2] MERS-CoV was known to cause extreme viral pneumonia among individuals. The exact mechanism of transmission is not precise, including whether other intermediate hosts are involved. [3] Although MERS-CoV is thought to be a zoonosis, probably camels act as a direct source of human MERS-CoV infection, but most cases are now due to human-to-human transmission. [3]

The clinical sickness related to MERS-CoV ranges from mild upper respiratory manifestations to fulminant pneumonia and multi-system failure. [4,5,6] Human-to-human transmission of MERS-CoV is all around recorded in the family, group settings and more frequently in social insurance settings [4,7,8]. As such, bigger hospital outbreaks have been driven by a combination of overdue recognition, over-crowding, and inadequate infection control precautionary measures [6,9,10]. In any case, MERS-CoV between human transmissibility is believed to be moderately restricted. Based on the World Health Organization [11], up to 12 of August 2015, an aggregate of 1,401 laboratories affirmed MERS-CoV infections, including 500 related deaths, have been accounted for. Similarly, as with many rising viral infections, a zoonotic source was associated not long after the different proof with MERS-CoV. [12]

Information educational campaign materials have been exhibited to propose additional comprehension of the illness. In that capacity, it advances the learning and view of the health practitioners in the counteractive action and rising of MERS-CoV. It is in this context that this present study investigates the knowledge and perceptions of the health practitioners towards MERS-CoV prompting control of the approaching wellbeing risk. These health practitioners refer to the members of the healthcare team who have direct contact with the patient. Being on the front lines in the delivery of care, they are most of the

time at risk to acquire MERS-CoV. This study aims to determine the level of knowledge of the health professionals and their level of perceptions regarding the seriousness of MERS-CoV; susceptibility, the extent of anxiety, efficacy, and self-efficacy, and the intention to carry out the measures. This research further aims to associate the demographic profiles of the health practitioners such as age, gender, civil status and educational attainment to specifically target the needs in addressing the health threat.

2. Methods

2.1. Design

This research utilized a descriptive, correlational approach in probing the perception of health professionals about MERS-CoV in the tertiary hospitals of Hail Region, Kingdom of Saudi Arabia. The study involved the participation of the health practitioners comprised of nurses, physiotherapists, medical technologists, and radiologists. A total of 264- health practitioners completed the survey having a response rate of 83% as a result of a convenience sampling. The researcher included all tertiary hospitals in Hail Region, Kingdom of Saudi Arabia. The data collection started in January 2017 and ended in June of 2017.

The inclusion criteria were set to those health practitioners who are working at the participating hospitals and have voluntarily agreed to participate. Excluded in the study were the students, trainees, and interns serving the hospitals.

2.2. Instrument

The researcher used the Effective Communication in Outbreak(ECOM) [13] instrument which is a standard questionnaire on risk perception of an infectious disease outbreak. The use of the instrument has been granted by the original developer. The questionnaire has been slightly modified and validated to suit its relevance in the local context. The reliability of the questionnaire was measured by pretesting the questionnaire among the 36 health practitioners (10 physiotherapists, 10 medical technologists, and 10 nurses, 6 radiologists). These health professionals were no longer part of the actual respondents. The Cronbach's alpha was computed at 0.94.

2.3. Ethical Consideration

This study has been approved by the authorities of participating hospitals. Consent from the participants has been sought.

2.4. Data analysis

Statistically, the gathered data were analyzed using Statistical Package for Social Sciences version 21 (SPSS v. 21). Frequency count and percentage were computed to establish the profile of the respondents. Weighted mean and standard deviation were computed for each of the given items used as indicators in determining the perception on the level of knowledge of the health practitioners, as well as the level of perceptions in terms of the seriousness of MERS-CoV; susceptibility, extent of anxiety, efficacy and self-efficacy, and the intention to carry out the measures. Chi-square test of independence was used to examine the relationship of demographic profiles of the health practitioners with the aforementioned indicators. All statistical analyses were performed at 0.05 level of significance.

3. Results

Most of the health practitioners(101) belonged to 30 to 34 years old (38.26%; n=101) followed by the younger group which is 25-29(24.62%) years old. There are 40 (15.15%) who are between 35-39 years. Majority of them are dominated by females with 181(68.56%), and only 83(31.44%) are males. Most of them are married (65.53%, n=173). There are 91 (34.47%) of the health practitioners who are single. Of the 264 health practitioners participating in this study, 230 (87.12%) have bachelor's degree while 34(12.88) have a master's degree (Table 1).

Table 1. Demographic Profile of the Health Practitioners (n=264)

Profiles	Frequency n = 264	Percentage %
Age		
25 – 29	65	24.62
30 – 34	101	38.26
35 – 39	40	15.15
40 – 44	30	11.36
45 – 49	15	5.68
50 – 54	4	1.52
55 – 60	9	3.41
Gender		
Male	83	31.44
Female	181	68.56
Civil Status		
Single	91	34.47
Married	173	65.53
Educational Attainment		
Bachelor's degree	230	87.12
Master's degree	34	12.88

Table 2. Knowledge Items

Statements	Mean	SD	Interpretation
MERS-CoV is an inflammation of the lungs	2.64	0.48	High
MERS-CoV always gives symptoms.	2.67	0.52	High
MERS-CoV can only be contracted once in a lifetime.	2.08	0.52	Low
There is a vaccine against MERS-CoV.	1.92	0.55	Low
MERS-CoV can be prevented by good hygiene.	2.62	0.64	High
Mean	2.40	0.31	High

Rating Score	*Descriptive Rating*	*Parameter Limits*	*Interpretation*
3	*Correct*	*2.34 – 3.00*	*High*
2	*Incorrect*	*1.68 – 2.33*	*Low*
1	*Unknown*	*1.00 – 1.67*	*No Knowledge*

Table 3. Level of Perceptions

Perceptions on the Seriousness of the Disease	Mean	SD	Interpretation
1. How serious do you think MERS-CoV is?	4.72	0.53	**Very serious**
2. How would you feel if you were to contract the following diseases in the coming year?			
Flu	3.36	1.08	**Neutral**
Bladder infection	4.38	0.77	**Very serious**
Diabetes	3.34	0.96	**Neutral**
Mers Cov	3.89	1.01	**Serious**
Mean	3.77	0.75	**Serious**
Grand Mean	4.24	0.56	**Very serious**
Perception of Susceptibility to the Disease and Extent of Anxiety			
1. Do you think that you can contract MERS-CoV in the coming year if you do not take any preventive measures?	3.30	1.18	**Neutral**
2. Suppose you have not been vaccinated MERS-CoV. What do you think your chance of contracting MERS-CoV in the coming year is?	2.70	0.90	**Neutral**
3. How large do you think the chance is that you will contract the following diseases in the coming year?			
Flu	2.89	1.00	**Neutral**
Heart Attack	2.34	1.12	**Less sure**
Bladder Infection	2.42	1.00	**Less sure**
Diabetes	2.55	1.09	**Less sure**
MERS-CoV	2.77	1.14	**Neutral**
Mean	2.60	0.87	**Less sure**
4. How concerned are you about contracting MERS-CoV?	4.29	0.64	**Very certain**
Grand Mean	3.22	0.46	**Neutral**
Perception on Efficacy and Self-Efficacy among the Health practitioners			
Do you think that information dissemination helps to prevent MERS-CoV**?**	4.52	0.76	**Very certain**
Do you think that you will manage to carry out information dissemination if this is advised?	4.28	0.73	**Very certain**
Mean	4.40	0.69	**Very certain**
Intention to Carry Out the Measure(s)			
Would you carry out information dissemination if this was advised?	3.39	0.72	**Neutral**

As shown in Table 2, the health practitioners have a high level of knowledge on MERS-CoV as an inflammation of the lungs (2.64 ± 0.48), always gives symptoms (2.67± 0.52), and can be prevented by practicing good hygiene (2.62 ±0.64). However, they claimed that they have a low level of knowledge on MERS-CoV to be contracted once in a lifetime (2.08 ±0.52) and the availability of a vaccine against MERS-CoV with a mean of 1.92 (SD=0.55).

On the health practitioners' perception of the seriousness of the MERS-CoV disease, they perceived it to be a very serious disease (4.24). Moreover, the susceptibility of MERS-CoV, and extent of anxiety have been perceived as to be contracted in the absence of preventive measures (3.30) and with no vaccination (2.7). On efficacy and self-efficacy on education and prevention of MERS-CoV, the health practitioners are very certain(4.40±0.69) about the need to disseminate the information to prevent MERS-CoV and they believe they have the skill to carry out if the information campaign is needed. On the other hand, the health practitioners' are fair with their intention to carry out the measures with 3.38(SD=0.72). See Table 3.

3.1. Relationship of Demographic Profiles of the Health Practitioners with their Level of Perception

As revealed in Table 4, the age of the health practitioners yield no significant relationship to the seriousness (P=0.936), susceptibility, (P=0.756), efficacy and self-efficacy (P=0.277), however, it yielded significant relationship (0.001) to the intention to carry-out the measures. As to gender, it proves no significant relationship to the seriousness of the disease (P=0.782), susceptibility and extent of anxiety(P=0.816), efficacy and self-efficacy (P=0.374), and the intention to carry out the measures (P= 0.857). On the other hand, the civil status proves no significant relationship to the seriousness of the MERS-CoV (P=0.580), susceptibility and extent of anxiety (P=0.752), efficacy and self-efficacy, (P=0.247), but significant to intention to carry out the measures (P=0.026). Lastly, the educational attainment of the respondents proves significant to efficacy and self-efficacy (P=0.031) and the intention to carry out the measures (P=0.001).

Table 4. Relationship of Demographic Profiles to Seriousness, Susceptibility, Efficacy and Self-efficacy, and the Intention to Carry out the Measures

Indicators	Age		Gender		Civil Status		Educational Attainment	
	Chi^2	p-val	Chi^2	p-val	Chi^2	p-val	Chi^2	p-val
Seriousness	70.538	0.936	10.574	0.782	13.285	0.580	35.583	0.223
Susceptibility	183.863	0.756	25.642	0.816	27.183	0.752	66.729	0.452
Efficacy and self-efficacy	34.095	0.277	5.360	0.374	6.658	0.247	16.728	**0.031***
Intention to carry-out the measures	45.508	**0.001****	0.793	0.857	9.303	**0.026***	54.905	**0.001****

4. Discussion

4.1. Knowledge and Perception of Allied Health Practitioners towards MERS-CoV

This present study suggests that health practitioners have a high level of knowledge about MERS-CoV. This finding is corroborated by the investigation of Althobaity et al. [14] where the health practitioners demonstrated a good level of the overall knowledge about the nature of MERS-CoV including the causative agent, the signs of the disease, its similarity to flu, and the severity of the disease. In relation, the study of Bawazir et al. [15] show that roughly 66% of the study participants had overall good knowledge regarding MERS-CoV. Although this current study reveals a high knowledge and awareness regarding the MERS-CoV but more effort should be paid to enhance the public misconceptions regarding the disease, how it can be contracted once in a lifetime and the availability of a vaccine. Conversely, the health practitioners' perception of MERS-CoV disease is "very serious" with heart problems and diabetes as the most likely to happen to a patient if contracted with the disease. This finding concurs with the investigation of Badawi and Ryoo [16] which showed that cardiovascular infections, hypertension, and cardio-artillery illnesses might have been consolidated in the event of MERS-CoV.

Past researchers have also noted that diabetes can be a comorbidity of MERS-CoV. [16,17,18] This finding gives epidemiologic confirmation of diabetes and coronary illness as a risk factor for MERS-CoV disease. The preventive measures are being practiced at home and in the hospital whereby the respondents are confident that they may not contract MERS-CoV disease. The findings of this study coincide with the study of Alnajjar et al. [19] which stipulated that anxiety level was significantly associated with increased perception of susceptibility to infection and that clinical prevention was modest. Similar to the findings of Aldrees et. al [20], they demonstrated that the medical professionals believed their job put them at considerable risk of exposure and were afraid of contracting MERS-CoV; however, they also believed that it was part of their professional duty to care for MERS-CoV patients and accepted this risk of infection. Participants were also not willing to change their jobs due to the risk of exposure to MERS-CoV, and they were confident that the hospitals would look after them if they were infected. The finding of this study is substantiated by an abundance of researches that tackles susceptibility and anxiety about MERS-CoV disease. [20]

The health practitioners in this study have the efficacy on education and prevention. However, there is still room for improvement in certain areas like the possible sources of virus transmission and the management of MERS-CoV. Extensive health education campaigns should be provided to health practitioners to bridge the gap between the current and the required knowledge by focusing on less knowledgeable areas. The finding of this study is in line with the study of Ghobain et al. [21] wherein they indicated that respondents were knowledgeable about MERS, but they were ignorant about environmental and health-related matters. Likewise, the study of Aldrees et al. [20] showed that health practitioners reported receiving adequate training in the use of personal protective equipment. When asked about the intention to carry out information dissemination for MERS-CoV prevention, the respondents customarily believed that their work put them at risk of infection. The research of Altamimi et al. [22] corroborate this finding in which they concluded that having a good attitude towards health promotion is not enough because the lack of confidence levels or the presence of other barriers can restrict any healthcare provider from promoting healthy behavior, even those with a good attitude. They recognized this as critical restrictions in executing an effective health promotion practice even in the best hospitals. [22]

4.2. Relationship of Demographic Profiles to Seriousness, Susceptibility, the Extent of Anxiety, Efficacy and Self-efficacy, and the Intention to Carry out the Measures

The finding of this study shows that there is no significant relationship with the age of the health practitioners between the seriousness, susceptibility to MERS-CoV disease, and efficacy/self-efficacy. This denotes that regardless of age, health practitioners have the same perspective regarding the aforementioned indicators. This finding supports the study of Al-Hazmi et al., [23] and Alqahtani and Aldawsari [24] whereby they stipulated that there is no association between younger and older students on the knowledge, prevention, and treatment regarding MERS-CoV. Contradictory to the findings of this research, the studies of Bawazir et al. [15] and Khan et al. [25] show a relationship of medical professionals' age with the indicators. The significant predictors of the prevention and treatment of MERS-CoV were on age ≥30 years [15] and ≥40 years. [25] This implicates that more emphasis should be placed on the young health practitioners at increasing awareness and to improve their knowledge about the MERS-CoV disease.

Corollary, no significant relationship between gender, and the seriousness, susceptibility of MERS-CoV disease, efficacy/self-efficacy and the intention to carry-out the measure of the disease. This insinuates that in any case, the health practitioners share the same standpoint with the aforementioned indicators. This can be attributed to their high knowledge about the disease and the certainty about the need to disseminate the information to prevent MERS-CoV. This research finding opposes the study of Khan et al. [25] where the use of protective equipment in dealing with MERS-CoV patient, the male medical professionals had a more positive attitude. The effect of gender and attitude could be well explained by the traditional norms and customs in Saudi Arabia in that the male has more interaction and socialization than females. On the contrary, Alqahtani and Aldawsari's [24] study stated that the female respondents had more grasp in prevention and treatment of MERS-CoV.

The health practitioners' civil status showed a significant relationship with their intention to carry out the measures to control MERS-CoV. Married couples comprised the 65.53% of the respondents have the intention to participate and to involve themselves in the preventive measure's

campaign. The rest of the indicators did not specify an association with their civil status. This may impute to the fact that married health practitioners have the desire and willingness to take part in carrying out the preventive measures because they have spouses and children to protect other than themselves and their clients. This finding is in concordance with the study of Honarbakhsh et al. [26] which they indicated that marital status is associated with preventive measures regarding respiratory hazards in the workplace. This research finding, however, conflicts with other past studies [15,27] where no significant association between marital status and the inclination to carrying out the preventive measures. On the other hand, the finding of this study shows a significant relationship between college graduate respondents to efficacy/self-efficacy perceptions and their level of intentions to carry out the preventive measures. This implies that higher education gave the health practitioners credence in themselves in that they can carry out preventive measures and deliver quality care to patients. This finding is in agreement with the study of Al-Mohrej and Agha [28] which demonstrated that more educated individual scored significantly higher than others when it comes to MERS-CoV awareness. It has been reported that a good explanation for a low level of efficacy/self-efficacy and desire to carry out the preventive measures regarding MERS-CoV infection is that the participants were health practitioners with no previous experience or exposure to such cases. [29]

5. Limitation

This study solely relies on self-reported, perception-based data gathered from currently employed healthcare professionals who participated in the survey. No triangulation of findings was adopted.

6. Conclusion

The high state of knowledge and prudent view of the health practitioners in Hail Region suggest that they can contribute to contain and put an end to MERS-CoV outbreak. The age, gender, civil status, and educational attainment are essential to consider in the planning session of the health practitioners in containing the spread of MERS-CoV.

Disclosure

The author has nothing to disclose.

This research has not been presented to any conference proceedings.

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