ECRONICON OPEN ACCESS

EC MICROBIOLOGY
Research Article

Factors that Affect Saudis' Trust in Information Obtained through Social Media Regarding Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Ali Al-Hazmi*, Abdulmalek Abdullah Alqahtani, Naif Hussain Abdullah, Turki Salah Aldeen Bukhari and Faisal Saad Alhilan

College of Medicine, King Saud University, Saudi Arabia

***Corresponding Author**: Ali Al-Hazmi, Department of Family and Community Medicine, College of Medicine, King Saud University, Saudi Arabia.

Received: January 04, 2020; **Published:** January 22, 2020

Abstract

Objectives: The objectives of this study were to determine the factors that affect Saudis' trust in information obtained through social media regarding MERS-CoV, and to determine the different social media's sources of information that Saudis obtain information from, also to determine the relationship between the daily hours of social media use and the degree of trust in different sources of information regarding MERS-CoV.

Methods: Cross-sectional study, surveys were distributed in King Khaled University Hospital outpatient's clinics. The participants were chosen by simple random sampling technique. The total number of responses were 734 individuals with a response rate of 84.2%.

Results: The study showed that there are different levels of trust in the sources that we studied. And there are different factors affecting the level of trust. The study revealed that governmental sources and non-profit organizations are the most trusted sources however celebrities and the unknown sources are least trusted social media sources of health information regarding MERS-CoV.

Conclusion: We should invest more in social media to make it a trustworthy source for health information and must keep in mind the factors that affect the trust when trying to increase the general awareness level in matters like MERS-CoV.

Keywords: *Social Medial; MERS-CoV; Saudi Arabia; Cross-sectional Study*

Introduction

Middle East Respiratory Syndrome Coronavirus (MERS-CoV) is a major concern to the Saudi population and to the world, since 2012 there were 2494 Cases in the world and majority of them were reported from the kingdom of Saudi Arabia, with 858 of the cases passed away (November 2019) [1]. MERS-CoV is in the scope all around the world, as for that we gain new information about the disease on a daily basis. Thanks to social media, communication between healthcare providers and the public has shown a great effort in increasing the general awareness level regarding MERS-CoV, which will affect the general attitude towards the disease especially infection control and personal hygiene [2]. Understanding how much people know about pandemic diseases is important to predict their behaviour and attitude toward the disease, and that is applicable for both the population and healthcare workers. Again, communication between healthcare providers and the public is important to get rid of many myths and confusion about the disease that is circulating within the popula-

tion [3]. On the other hand, there is an increase in using social media by both healthcare workers and patients to get information about diseases and general healthcare information. However, there are some doubts about how much social media can affect the general health status in its current condition. Moreover, there are many concerns about privacy and security. Yet there is a promising future for the use of social media in healthcare [4]. Similarly, there is a rising role for social media in significant events that has worldwide effect such as Ebola and MERS-CoV, however, there are several challenges to overcome before the technology can achieve its potential [5].

Yet, information without the confidence in the source is nearly equal to nothing. So, the most important factor that influence social media's effect on medicine is public trust. Thus, raising public trust should be the ultimate goal when dealing with new changes in public approach to healthcare and healthcare information [6].

Methods

Study design

This is a cross-sectional study, and it was aiming to evaluate the trust of Saudis in social media health related information concerning MERS-CoV and to determine the factors affecting their trust. Trust means the self-reported trust according to the respondents believes. The cross-sectional study was set in a form of a survey and was developed in English first and then translated into Arabic.

Data collection

Surveys were distributed in King Khaled University Hospital outpatient's clinics.

The participants were chosen by simple random sampling technique and they were given a consent form with the survey paper. The survey was distributed between 24/2/2016 and 8/3/2016 and the average time for answering took 5 minutes to finish. Number of responses were 734 individual's 214 of them were males and 520 of them were females a ratio of around 2:5 from 13 years or older, with a response rate of 84.2%.

The study was approved by the Institutional Review Board (IRB) of King Saud University College of Medicine.

Measures

The demographic variables used in the study were gender, age, education, occupation status, specialty (healthcare worker or not) and the daily use of social media per hour.

The participants were asked to evaluate their level of trust by the question "rate your level of trust in the information obtained by the following sources regarding MERS-CoV" and these social media sources are: Official government, Official non-profit organizations, Doctors, Healthcare providers (other than doctors), Health awareness managed by non-Healthcare providers, Alternative Medicine (including Herbal, Traditional and Spiritual medicine), News, Celebrity, Personal and unknown sources. Participants were asked to answer the question using a five-point Likert scale, with responses ranging from (fully trust) to (fully distrust).

And they were also asked to provide information about their behaviour toward the information obtained through social media by these questions "Do you check the validity of the information obtained from social media regarding health information?", "Do you check the validity of the information obtained from social media regarding MERS-CoV?" and "Do you share the information obtained from social media before checking the validity of the information?". Participants were asked to answer the questions using a five-point Likert scale, with responses ranging from (Always) to (Never).

Data analysis

To analyse the relationship of demographic and daily use with trust in Social media sources chi-squared test was used and binary logistic regression was performed, using trust in Social media sources as the dependent variable and demographic and daily use as inde-

pendent variables. We identified two groups according to their level of trust in each social media source (high trusting and low trusting groups) and it was recoded as dichotomous variables (fully distrust/distrust/neutral = 0, trust/fully trust = 1). Variables that were significant ($p < 0.05$) in bivariate analysis were used to determine the binary multivariate relationships of demographic and daily use with trust in social media sources. We included every covariate that were statically significant in the bivariate analysis in the binary logistic regression. Data were analysed by SPSS version 23.0.

Results

Demographic characteristics

Among 734 Participants 70.8% Females, 52.6% are Undergraduate and 86.5% use social media at daily bases. Demographic characteristics summarized in table 1.

Variables	N (%)
Gender	
Male	214 (29.2)
Female	520 (70.8)
Age (yr.)	
13 - 18	50 (6.8)
19 - 25	178 (24.3)
26 - 40	328 (44.7)
Above 40	178 (24.3)
Education	
Primary education	35 (4.8)
Intermediate education	68 (9.3)
secondary education	203 (27.7)
Undergraduate	386 (52.6)
Postgraduate	42 (5.7)
Occupation status	
Student	178 (24.3)
Non-employment	226 (30.8)
Employment	292 (39.8)
Retire	38 (5.2)
Specialty	
Healthcare worker	120 (16.3)
Non-healthcare worker	614 (83.7)
Daily use of social media (H)	
No daily use	99 (13.5)
1 - 2	16 (21.8)
3 - 4	203 (27.7)
5 - 6	139 (18.9)
7 - 8	61 (8.3)
Above 8	72 (9.8)

Table 1: *Demographic characteristic.*

Favourite social media sources

Most of the participants choose WhatsApp as their first favourite social media source (38.8%), Twitter (22.6%) and Snapchat (15.8%). The second favourite social media source were Snapchat and WhatsApp (21.3%) and Instagram (18%). The third favourite social media

source Snapchat (20.6%), Instagram (19.3%) and WhatsApp (14.9%). However (2.6%) only favour the use of one social media source and (3.1%) only favour the use of two social media sources. As detailed in table 2.

Social media	#1 n (%)	#2 n (%)	#3 n (%)
WhatsApp	285 (38.8)	156 (21.3)	109 (14.9)
Twitter	166 (22.6)	100 (13.6)	91 (12.4)
Snapchat	116 (15.8)	156 (21.3)	152 (20.6)
Instagram	66 (9)	132 (18)	142 (19.3)
YouTube	38 (5.2)	83 (11.3)	104 (14.2)
Google plus	26 (3.5)	42 (5.7)	47 (6.4)
Facebook	15 (2)	17 (2.3)	17 (2.3)
Path	12 (1.6)	15 (2)	12 (1.6)
Telegram	7 (1)	13 (1.8)	14 (1.9)
BBM	3 (0.4)	1 (0.1)	5 (0.7)
Total	734 (100)	715 (97.4)	692 (94.3)
No use	-	19 (2.6)	42 (5.7)

Table 2: *Showing the type of social media sources used for gaining information as provided by the survey.*

Practice toward health information

A chi-squared test was performed to determine if there is a relationship between the demographic characteristics/daily hours of social media use and the practice towered the information obtained though social media and these are the results: gender ($p = 0.029$), age ($p = 0.037$), education ($p < 0.001$), occupation status ($p = 0.043$) and specialty ($p = 0.038$) were significantly associated with checking validity of general health information obtained though social media. Age ($p < 0.001$) and occupation status ($p = 0.047$) were significantly associated with checking validity of health information obtained though social media regarding MERS-CoV. Gender ($p = 0.028$), age ($p = 0.019$), education ($p = 0.049$) and occupation status were significantly associated with sharing health information without checking the validity of these health information. Daily hours of use of social media showed no association with the practice toward health information obtained through social media.

Factors associated with trust in social media sources regarding MERS-CoV

To identify the predictive factors associated with trust in social media's sources of health information regarding MERS-CoV, these independent variables (demographic and daily uses of social media) were identified, and chi-squared test was done, and these are the results of the test: official government was significantly associated with Education ($p = 0.018$) and Specialty ($p = 0.049$), Official non-profit organizations sources was significantly associated with Education ($p = 0.026$), Specialty ($p = 0.045$) and Daily use of social media ($p = 0.010$), Doctors was significantly associated with Gender ($p = 0.021$), Healthcare providers was significantly associated with Gender ($p < 0.001$), Health awareness managed by non-Healthcare providers was significantly associated with Gender ($p = 0.005$), Occupation status ($p = 0.005$), Specialty ($p = 0.037$) and Daily use of social media ($p = 0.044$), Alternative Medicine was significantly associated with Education ($p < 0.001$) and Specialty ($p = 0.018$), News was significantly associated with Education ($p = 0.032$), Celebrity was significantly associated with Age ($p = 0.002$) and Education ($p = 0.012$), Personal was significantly associated Age ($p = 0.017$), Education ($p = 0.012$) and Specialty ($p = 0.021$), Unknown was significantly associated with Gender ($p = 0.008$) and Age ($p = 0.019$).

Females were associated with greater trust towards Doctors accounts (odds ratio {OR} = 1.4) and towards healthcare providers (OR = 2.0), however females were less likely to trust unknown sources (OR = 0.3). Participants of the age groups (19 - 25) and (above 40) years

were less likely to trust celebrity account (OR = 0.3). Nevertheless, age groups between (19 - 25) and (26 - 39) were less likely to trust unknown sources (OR = 0.2). Higher level of education was associated with low degree of trust in alternative medicine, participants with secondary degree (OR = 0.3), undergraduates (OR = 0.2) and postgraduates (OR = 0.3). higher education level except secondary degree participants were associated with lower trust in News accounts (OR = 0.4). Non-employments show greater trust in health awareness accounts (OR = 1.9). Specialty has no direct effect on the level of trust in all kind of social media sources regarding MERS-CoV. Daily use of social media has different effect in trust level towards non-profit organization and health awareness accounts, however participants who use social media daily are more likely to have greater trust level in these sources. Participants trust in non-profit organization accounts and use social media between 1 to 2 hours (OR = 1.7), 3 to 4 hours (OR = 2.0), 7 to 8 hours (OR = 3.0) and above 8 hours daily (OR = 2.1) compared to who do not use social media daily. In addition, health awareness accounts and participants who use social media from 1 to 2 hours (OR = 2.7), 3 to 4 hours (OR = 2.1), and 5 to 6 hours (OR = 2.4) compared to who do not use social media daily (As seen in table 2).

	Government	Non-Profit organization	Doctors	Healthcare providers	Health awareness	Alternative medicine	News	Celebrity	Personal	Unknown
Gender										
Male			Reference	Reference	Reference					Reference
Female			1.4 (1.1-1.9)°	2.0 (1.4-2.9)*	1.4 (0.9-2.1)					0.3 (0.1-0.8)°
Age (y)										
13- 18								Reference	Reference	Reference
19-25								0.3 (0.1-0.9)°	0.6 (0.2-1.4)	0.2 (0.1-0.8)°
25-40								0.4 (0.2-1.1)	0.5 (0.2-1.1)	0.2 (0.1-0.7)°
Above 40								0.3 (0.1-0.8)°	0.5 (0.2-1.1)	0.4 (0.1-1.2)
Education										
Primary	Reference	Reference				Reference	Reference	Reference	Reference	
Intermediate	1.4 (0.5-4.2)	0.7 (0.3-1.8)				0.4 (0.2-1.0)	0.4 (0.2-0.9)°	0.9 (0.3-3.5)	1.3 (0.5-3.9)	
secondary	2.2 (0.9-5.7)	1.3 (0.6-2.9)				0.3 (0.2-0.7)”	0.5 (0.3-1.1)	0.5 (0.2-1.7)	0.8 (0.3-2.2)	
Undergraduate	2.1 (0.9-5.3)	1.5 (0.7-3.2)				0.2 (0.1-0.4)*	0.4 (0.2-0.8)”	0.4 (0.1-1.3)	0.6 (0.2-1.6)	
Postgraduate	0.6 (0.2-1.1)	1.6 (0.6-4.8)				0.3 (0.1-0.9)°	0.4 (0.1-0.9)°	-	0.6 (0.1-2.4)	
Occupation status										
Student					Reference					
Non-employment					1.9 (1.2-3.1)°					
Employment					1.5 (0.9-2.4)					
Retire					1.0 (0.4-2.5)					
Specialty										

Healthcare worker	**Reference**	**Reference**			**Reference**	**Reference**			**Reference**	
Non -healthcare worker	0.5 (0.2-1.1)	0.7 (0.4-1.3)			1.3 (0.8-2.2)	1.7 (0.9-3.3)			1.8 (0.8-3.8)	
Daily use of social media (h)										
No daily use		**Reference**			**Reference**					
1-2		1.7 (1.1-3.0)°			2.7 (1.5-5.0)"					
3-4		2.0 (1.2-3.5)°			2.1 (1.2-3.9)°					
5-6		1.5 (0.8-2.7)			2.4 (1.3-4.7)"					
7-8		3.0 (1.3-7.0)"			2.1 (0.9-4.6)					
Above 8		2.1 (1.1-4.4)°			1.9 (0.9-4.1)					

Table 3: *Factors associated with trust in different social media source of health information. Values are presented as odds ratio (95% confidence interval). °p < 0.05, ''p < 0.01, *p < 0.001.*

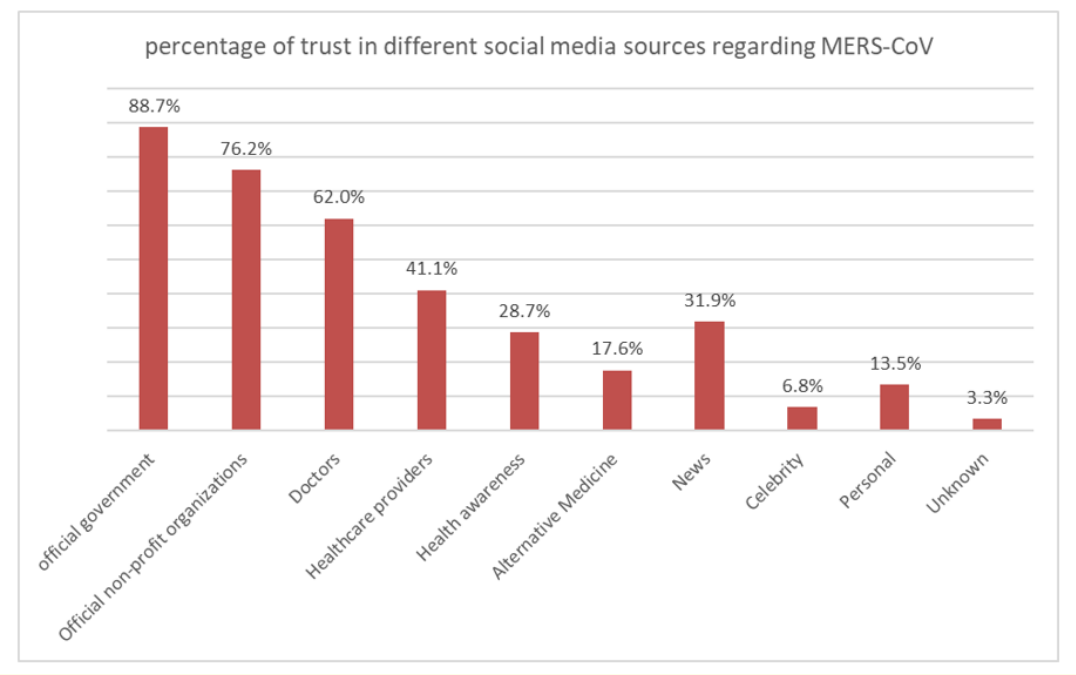

Figure 1: *Comparison between different social media sources and level of trust regarding MERS-CoV.*

Discussion

The study compared the degree of trust in different social media sources of health information and recognized the factors associated with trust in these social media sources. The study showed that there are different levels of trust in the sources that we studied, and there are different factors affecting the level of trust. The study revealed that governmental sources and non-profit organizations are the most trusted sources however the celebrity and the unknown sources are least trusted social media sources of health information regarding MERS-CoV. And we discovered that the same factors affect their practice toward that information. We also concluded that daily hours of use affect the trust in various sources.

A cross-sectional web-based survey administered to Twitter participants (210 physicians) revealed that 79% of the participants are seeking online health information, the majority of the participants assume that Twitter had a great role in expanding their medical knowledge. Over half of them think that there is a great demand for trustworthy health related Twitter accounts [7].

A cross-sectional survey was administered to 200 dental students In Jeddah to evaluate their knowledge about MERS-CoV and to determine the sources of information for the students, found that 27% of the students consider college as the main source of information, 25% consider Ministry of Health as the main source, and rest consider media and social community as the main source [8].

To identify ways to effectively use social media to communicate nutrition-related information to low-income populations a group of researchers found out that trust is a cardinal point in this situation, and that is because participants believe that reliable information from trustworthy sources is crucial when dealing with serious issues [9]. Similarly another group of researchers surveyed 114 members of famous pregnancy related websites. Results showed that considerable amount of time spent to assess trust and less time spent to gain health related information [10].

In 2015 a study on the Korean population showed that generally internet as a source of information is the least trusted comparing to interpersonal and traditional media, however different internet sources showed various levels of trust, governmental organizations were the most trusted in contrast blogs by laypeople were the least trusted [11]. By taking these information in consideration we established this study aiming to (1) determine the factors that affect Saudis' trust in information obtained through social media regarding MERS-CoV, (2) determine the different social media's sources of information that Saudis obtain information from, (3) determine the relationship between the daily hours of social media use and the degree of trust in different sources of information regarding MERS-CoV.

Kwon's study showed that online information was the least trusted comparing with interpersonal and traditional media, but it showed that education has no effect on the trust in contrast with our results which showed that level of education has great effect in the level of trust [11]. However other studies agreed with our study and defined level of education as one of the factors that affect the degree of trust in online health information [12,13].

WhatsApp and Snapchat were chosen as the first and third favourite social media respectively, the problem with theses social media networks that they mostly lack validity, which make our community to be exposed to many mistaken information regarding MERS-Cov or any other matter. Moreover, these networks are filled with the least trusted sources such as personal, celebrities and unknown sources. On the other hand, the most trusted sources like official governmental and official non-profit organizations sources cannot be seen participating in these networks, which could help in spreading the right information to the population.

Although daily hours of social media use showed significant association with the level of trust in different social media sources it also showed that it has no effect on the association with the practice towards health information obtained through social media. On the other hand, gender, age, education, occupation status and specialty were significantly associated various practices toward health information obtained through social media.

The main limitations for this study were that we did not study every possible factor that may affect the level of trust and it is hard to generalize the result since the study setting was limited to a small area in one city only, because of time limitation.

Conclusion and Recommendations

We concluded that social media was indeed a is source of information and with the number of responses we knew that the governmental and non-profit accounts were the most trustworthy of these health related information so in order to limit the distrust and some of the fabrications of information we have to invest more in the governmental and no-profit accounts and to launch campaigns through the social media platforms especially when it's needed like when the outbreak of MERS-CoV started, just to increase the awareness of the disease and the ways to limit it's spread.

Also, we should study various factors that was not include in our research and indeed we should educate people by doing campaigns or increasing the words in social media to not trust unofficial sources in a critical matter like MERS-CoV or any other serious health problem.

Bibliography

1. Middle East respiratory syndrome coronavirus (MERS-CoV).

2. Omrani AS and Shalhoub S. "Middle East respiratory syndrome coronavirus (MERS-CoV): what lessons can we learn?" *The Journal of Hospital Infection* 91.3 (2015): 188-196.

3. Almutairi KM., *et al*. "Awareness, Attitudes, and Practices Related to Coronavirus Pandemic Among Public in Saudi Arabia". *Family and Community Health* 38.4 (2015): 332-340.

4. Househ M., *et al*. "Empowering patients through social media: The benefits and challenges". *Health Informatics Journal* 20.1 (2014): 50-58.

5. Househ M. "Communicating Ebola through social media and electronic news media outlets: A cross-sectional study". *Health Informatics Journal* 22.3 (2015).

6. Chretien KC and Kind T. "Climbing social media in medicine's hierarchy of needs". *Academic Medicine: Journal of the Association of American Medical Colleges* 89.10 (2014): 1318-1320.

7. Almaiman S., *et al*. "The Prevalence of Using Social Media among Healthcare Professionals in Saudi Arabia: A Pilot Study". *Studies in Health Technology and Informatics* 213 (2015): 263-266.

8. Kharma MY., *et al*. "Assessment of the awareness level of dental students toward Middle East Respiratory Syndrome-coronavirus". *Journal of International Society of Preventive and Community Dentistry* 5.3 (2015): 163-169.

9. Leak TM., *et al*. "EFNEP graduates' perspectives on social media to supplement nutrition education: focus group findings from active users". *Journal of Nutrition Education and Behavior* 46.3 (2014): 203-208.

10. Hether HJ., *et al*. "It's better to give than to receive: the role of social support, trust, and participation on health-related social networking sites". *Journal of Health Communication* 19.12 (2014): 1424-1439.

11. Kwon JH., *et al*. "What predicts the trust of online health information?" *Epidemiology and Health* 37 (2015): e2015030.

12. Zulman DM., *et al*. "Trust in the Internet as a Health Resource Among Older Adults: Analysis of Data from a Nationally Representative Survey". *Journal of Medical Internet Research* 13.1 (2011): e19.

13. Hesse BW., *et al*. "Trust and Sources of Health Information: The Impact of the Internet and Its Implications for Health Care Providers: Findings from the First Health Information National Trends Survey". *Archives of Internal Medicine* 165.22 (2005): 2618-2624.

Volume 16 Issue 2 February 2020