Expanding pharmacist’s educational role using virtual and social media portals before and during COVID19 outbreak

Aisha F. Badr*, Ghady A. Ismail, Rawan H. Alghuraybi, Raghad Z. Lahza

King Abdulaziz University Faculty of Pharmacy, Pharmacy Practice Department, Jeddah, Saudi Arabia

A R T I C L E   I N F O

Article history:
Received 8 December 2020
Accepted 13 April 2021
Available online 23 April 2021

Keywords:
Social media network
SMN
Virtual Pharmacist
CMR
Complete medication review
MTM
Medication therapy management
COVID-19
Corona virus
Public health
Digitalization

A B S T R A C T

Background: There are many ways to raise public health awareness and recently, Social media networks (SMN) have played a big role in it. The study aims to assess SMN use for acquiring health care information and publics’ perception of virtual encounters with pharmacists for health-related purposes; particularly in times of a pandemic crisis.

Methods: A bi-phasic cross-sectional survey was distributed on 2017 and again during COVID-19 pandemic. both phases (phase 1) and (phase 2) respectively, were compared and analyzed.

Results: On phase 1 and phase 2 we collected 566 and 409 respondents respectively. Most used SMNs in both phases were Twitter, Snapchat and Instagram. In both phases respondents preferred acquiring health care information by going physically to the hospital or pharmacy, however virtual interactions were only accepted by (14%) in phase 1 compared to (36%) in phase 2. Additionally, while only 15% said they would “definitely” reach a pharmacist virtually in phase 1, 50% said they would in phase 2. In phase 2, 90% follow the Saudi Ministry of Health website, while 41% follow verified doctors for acquiring medical health-care information. Virtual contact with a pharmacist was mostly (76%) for medical consultation.

Conclusion: This study is the first to shed light on society’s acceptance and perception of an innovative educational tool taken by the pharmacist through social media and virtual portals among the Saudi population in Jeddah. There’s an opportunity for Medication Therapy Management (MTM), CMR, medication refill, and disease follow up that the pharmacist can take the lead in, if properly implemented. Future studies should look into safe and reliable ways to make use of SMNs as well as virtual tools to expand public health awareness especially in a highly technology dependent society.

© 2021 The Authors. Published by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Social media is currently widely used by the public, including health care professionals (HCPs). (Schneider et al., 2010) Social media portals include, but are not limited to: social networking platforms, blogs, microblogs, wikis, media-sharing sites such as Twitter, snapchat, Instagram, and virtual reality and gaming environments. Unfortunately, smartphones and the widely use of social media across all ages allows non-experts to access, interpret and generate medical statements for themselves and others (“Over 18 million users of social media programs and applications in Saudi Arabia,” 2016a).

During the H1N1 pandemic, in 2009, the Center for Disease Control and Prevention (CDC) used Twitter to increase awareness among users by creating an emergency information account that attracted more than 1.2 million followers. CDC twitter account (@CDCgov) today, has 3.3 million followers since the COVID-19 outbreak. (“CDC (@CDCgov)/Twitter,” n.d.; Eytan et al., 2011) This CDC experience highlighted the essential and powerful use of social media in health promotion and disease prevention. (ALrukban, 2014; Eckler et al., 2010).

Moreover, with the COVID-19 outbreak of March of 2020 in Saudi Arabia, the Saudi Ministry of Health has played a vital role, using it’s verified and official account on twitter to educate routinely the public using many different ways; such as raising awareness via infographics, animated videos and inviting trusted, local public healthcare practitioners to speak virtually to the public. The ministry’s account had a total of 450,000 followers in 2014.
compared to 4.4 million followers during the COVID-19 pandemic. (ALrukban, 2014; “ترويج أول حملة للتوعية الصحية السعودية (SaudiMOH),” n.d.)

There are many ways to raise public health awareness to influence knowledge, attitudes, and behavior. However, during a pandemic social media networks can be used to potentially reach vast populations, particularly when coming from a verified source such as the CDC and a local verified source such as the Saudi Ministry of Health. (Chou et al., 2009).

Saudi Arabia currently has a total population of 33.85 million. Of that population, 23 million or 68% are active social media users. Median age is approximately 27.5 years old with a life expectancy of 74.8 years. Population is predominantly male with 57.3% compared to females of 42.7%. Arabic makes up a staggering 97.9% of Saudi Arabia’s online conversation, followed by English which is estimated to be 1.2%. It is believed that Saudis spend an average of 2 h and 50 min on social media daily. (“Over 18 million users of social media programs and applications in Saudi Arabia,” 2016b)

Most used social media network platform in Saudi Arabia is YouTube with 73% users, followed by Facebook (62%), Instagram (20.31%) and Twitter (56%). Most popular messenger applications used include, WhatsApp (72%), followed by snapchat (43%), and Facebook messenger (39%). (“Saudi Arabia Social Media Statistics 2020 (Infographics) - GMI Blog,” n.d.)

This study aims to compare results found on 2017 ‘during-COVID19 pandemic’ and ‘during-COVID19’ pandemic on most trusted sources of health information and suggest future ways for ultimate SMN use for spreading prevention and relative health information during a pandemic and ways to sustain it afterwards. Secondary outcome was to assess public’s willingness and acceptance for virtual communication with health care practitioners, particularly pharmacists and reasons for that.

2. Material and methods

2.1. Pre- and during-COVID 19 pandemic study

A cross-sectional survey was conducted between 30/11/2017 and 04/12/2017 in Jeddah, Saudi Arabia and included volunteer participants, who consent to be part of this study. Same questionnaire was used to compare the results before (phase 1) and during COVID-19 outbreak (phase 2). The second phase survey was distributed on 30/04/2020 to 20/05/2020. We added two sections in phase 2; section (6) and (7) and are described below. Consent was collected on the first page of the survey before proceeding to survey questions.

Survey was in Arabic and was distributed through social media networks including (WhatsApp and twitter). Survey items were selected based on a review of the literature to meet study's question. Google form was used to conduct the survey. A pilot study was conducted on 10 participants of different age groups to assess ease and language understanding of the questionnaire items. The questionnaire item was developed to choose one or more answers. Excel was used for data entry and data analysis. This study was approved by the Research and Ethics Committee, at King Abdul-Aziz University, College of Pharmacy. Data is analyzed using SPSS software version 22.

Survey sections:

(1) Responder's demographics; including gender, age, nationality and SMN use.
(2) Most used Social Media Network (SMN); including Facebook, snapchat, Instagram and twitter.
(3) Reasons for SMN use; including communicating with friends and family, sharing medical information and sharing local and international news.
(4) Preference of Patient Education (PE) methods; including physically going to the hospital/ pharmacy to ask a health care practitioner, trusted social media networks and virtually – using technology-based methods.
(5) Do you support reaching your pharmacist virtually or via SMN?

Phase 2 added sections:

(6) Which SMN/website would you get health information from?
(7) What would you use virtual contact with your pharmacist for?

3. Results

3.1. Respondent's demographics

A total of 566 respondents completed the survey on the pre-COVID 19 (phase 1) data. Majority were of Saudi nationality (93%), female (71%), and over 41 years old (39%). A comparative COVID 19 data was collected with a total of 409 respondents. Majority was also Saudis (85%), female (59%) and also above 41 years old (49%). In both phases almost, all respondents used SMN (99%). No statistical difference was seen between groups, (Table 1).

3.2. Preferred social media network

In phase (1), Overall Instagram (76%) was the preferred SMN used by most respondents in phase 1, followed by Snapchat (74%) and Twitter (60%). However, during COVID19 outbreak, Twitter (69%) was the preferred SMN by most respondents, followed by Snapchat (68%) and then Instagram (60%). Facebook was the least used SMN in Saudi Arabia where only (35%) and (33%) used them in both phase 1 and phase 2 respectively (Fig. 1).

3.3. Selected reason(s) for SMN use

Most respondents in both phases used SMN predominantly to connect with family and friends 327(58%) pre-COVID19 and 245 (60%) during COVID19. Followed by sharing local and international news; 208 (37%) in phase 1 and 149(36%) in phase 2. Sharing medical information via SMN in both phases was the lowest, where only 31(5%) and 15(4%) in phase 1 and 2 respectively (Fig. 2).

3.4. Preferred method for acquiring medical health-care information:

As shown in (Fig. 3), preferred method of acquiring health care information changed significantly between phase 1 and 2. Most surveyed respondents preferred going physically to hospital or pharmacy 273 (48%), followed by social media networks (SMN) 202 (36%) and only 14 (16%) preferred virtual methods. However, in phase 2 (COVID19 phase); although the majority 164 (40%) still preferred acquiring for health-care information by physically going to hospitals/pharmacies, a big number 146 (36%) preferred virtual encounters for that purpose. SMN was the least preferred source 99 (24%).

3.5. Support of reaching pharmacist via virtual and/or SMNs

Responses changed significantly in both phases, where only 13% said “Definitely” in phase 1 compared to 50% in phase 2. Moreover, in phase 1, 25% of respondents said “never” compared to only 9% in phase 2. (Fig. 4) illustrates phase 1 and 2 - support for virtual con-
tact with the pharmacist using SMN and other technology-based methods.

3.6. Website(s) and SMN sources selected by respondents for acquire medical health-care information (PHASE 2 ONLY)

During COVID 19 phase, the majority of respondents 367 (90%) selected the official Saudi Ministry of Health (MOH) website as the major source for acquiring health-care information, followed by a known/verified/trusted doctor on SMN 166 (41%) and the Centers for Disease Control and Prevention (CDC) 83 (20%). Other selected sources included known/verified/trusted specialized academics 64 (16%) and 16 (4%) selected SMN influencers (regardless of their profession) (Fig. 5).

3.7. Phase 2: Reasons selected for virtual contact with pharmacists (PHASE 2 ONLY)

Medical consultation was the most agreed upon reason for virtual communication with the pharmacist, 311 (76%), followed by

---

Table 1

|                        | Phase 1 (n = 567) |       | Phase 2(n = 409) |       | P value |
|------------------------|-------------------|-------|------------------|-------|---------|
|                        | N     | %    | N     | %    |         |
| **Gender**             |       |      |       |      |         |
| Male                   | 165   | 29   | 169   | 41   | 0.624   |
| Female                 | 402   | 71   | 240   | 59   |         |
| **Age (years)**        |       |      |       |      |         |
| Less than 29           | 183   | 32   | 119   | 29   | 0.261   |
| 30–40                  | 164   | 29   | 88    | 22   |         |
| More than 41           | 220   | 39   | 202   | 49   |         |
| **Nationality**        |       |      |       |      |         |
| Saudi                  | 528   | 93   | 347   | 85   | 0.812   |
| Non-Saudi              | 39    | 7    | 62    | 15   |         |
| **Used SMN**           |       |      |       |      |         |
| Yes                    | 561   | 99   | 406   | 99   | 0.488   |
| No                     | 6     | 1    | 3     | 1    |         |

---

Fig. 1. Preferred social media network by respondents.

Fig. 2. Reasons for social media network use by respondents.
medication refill for chronic diseases, 237 (58%), and medication reconciliation/Complete Medication Review (CMR) for the elderly, 174 (42.5%). Other selected reasons included ease of communication, 143 (35%) and chronic disease follow up, 129 (32%) (Fig. 6).

4. Discussion

To our knowledge this is the first study to assess SMN use in Saudi Arabia and public’s acceptance for virtual communication with health care practitioners, particularly pharmacists. In our study almost, all respondents stated that they used SMN (99%). Most respondents in both phases were Saudi females and over 41 years of age. This was of great interest to our study since SMN and virtual communication is known to be perceived better in the younger generation who are used to the digital and technological changes than the older adults.

Respondents in both phases used SMN predominantly to connect with family and friends followed by sharing local and international news. Although Facebook was the second most used SMN in Saudi Arabia, it is believed to be the least used according to our study. Twitter, Instagram and Snap Chat are the most widely used social media networks with slight increase of twitter use during COVID-19 (9% increase). This may be due to public’s engagement with official health networks such as the MOH and CDC which will be discussed further.

Overall the preferred method of acquiring health care information before and during COVID-19 outbreak remained by physically going and discussing matters with doctors and pharmacists. However, we noticed a drop of Social media networks during COVID-19 compared to before the outbreak. This may be the result of false information distributed by social media influencers that was widely attacked by the nation. The World Health Organization stated the danger of “infodemic” of spreading fake health related news in addition to the “pandemic”. A lot of “influencers” nationally and internationally were promoting non-FDA approved supplements and were all part of paid false advertisement. (“Mythbusters,” n.d.; Nations, n.d.) (Thomas et al., 2018).

We were happy to see public’s shift towards this and hope to see further restrictions lead by the MOH to penalize those who
use their platforms to advertise for medications and medical devices. (Hua and Shaw, 2020) Furthermore, we noticed that although only (16%) would prefer contacting their providers (doctors or pharmacists) virtually, the number increased to (36%) during COVID-19. Before the pandemic, 13% supported virtual contact with the pharmacist, whereas 50% supported it during the pandemic.

During COVID 19 phase, we asked respondents two additional questions. We wanted to know most trusted websites by the public for health care information. Most respondents (90%) selected the official Saudi Ministry of Health (MOH) website followed by known/verified/trusted doctor on SMN (41%). Future steps should look into verifying public health personnel accounts on SMN, and monitor engagement on SMN to control delivered content. Furthermore, medical consultation was the most agreed upon reason for virtual communication with the pharmacist (76%), followed by medication refill for chronic diseases (58%), and medication reconciliation/ Complete Medication Review (CMR) for the elderly, (42.5%). We believe future studies should look into implementing virtual pharmacy lead encounters for these purposes.

We suspect that virtual tools will not only be active during the pandemic but even after it. Future studies should look more into patient-satisfaction, and the cost-effectiveness of these encounters. Our study is limited to those who were able to use smartphones and SMN to fill in the electronic google survey. The public who do not have access to the internet may have responded differently and are excluded by the default in this study.

5. Conclusion

This study is the first to shed light on society’s acceptance and perception of an innovative educational tool taken by the pharmacist through social media and virtual portals among the Saudi population in Jeddah. Twitter, Instagram and snapchat seem like the major SMN used in Jeddah and using them by verified specialist for spreading awareness is recommended. Most trusted portals for acquiring health care information was the MOH official website and a trusted specialist SMN. Virtual communication acceptance has increased drastically between both phases. There’s an opportunity for Medication Therapy Management (MTM), CMR, medication refill, and disease follow up that the pharmacist can take the lead in if properly implemented. Future studies should look into safe and reliable ways to make use of social media networks as well as virtual tools to expand public health awareness especially in a highly technology dependent society.
CRediT authorship contribution statement

Aisha F. Badr: Conceptualization, Methodology, Validation, writing -review & editing, Visualization, Supervision, Project administration. Ghady A. Ismail: Investigation, Writing - original draft preparation. Rawan H. Alghuraybi: Investigation, Writing - original draft preparation. Raghad Z. Lahza: Investigation, Writing - original draft preparation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

ALrukban, A., 2014. The health related uses of social media among users in Saudi Arabia -. Int. J. Med. Sci. Public Health 3, 1492–1497.
CDC (@CDCgov) / Twitter [WWW Document], n.d. Twitter. URL https://twitter.com/CDCgov (accessed 12.7.20).
Chou, W.-Y.S. et al., 2009. Social media use in the united states: implications for health communication. J. Med. Internet Res. 11, https://doi.org/10.2196/jmir.1249 e48.
Eckler, P. et al., 2010. Social media and health care: an overview. PM R 2, 1046–1050. https://doi.org/10.1016/j.pmrj.2010.09.005.
Eytan, T. et al., 2011. Social media and the health system. Pern. J. 15, 71–74.
Hua, J., Shaw, R., 2020. Corona virus (COVID-19) “infodemic” and emerging issues through a data lens: the case of China. Int. J. Environ. Res. Public Health 17, 2309. https://doi.org/10.3390/ijerph17072309.
Mythbusters [WWW Document], n.d. URL https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters (accessed 12.7.20).
Nations, U., n.d. UN tackles ‘infodemic’ of misinformation and cybercrime in COVID-19 crisis [WWW Document], U. N. URL https://www.un.org/en/un-coronavirus-communications-team/un-tackling-%E2%80%98infodemic%E2%80%99-misinformation-and-cybercrime-covid-19 (accessed 12.7.20).
Over 18 million users of social media programs and applications in Saudi Arabia [WWW Document], 2016a. URL https://www.mcit.gov.sa/en/media-center/news/89698 (accessed 12.7.20).
Saudi Arabia Social Media Statistics 2020 (Infographics) - GMI Blog [WWW Document], n.d. URL https://www.globalmediainsight.com/blog/saudi-arabia-social-media-statistics/ (accessed 12.7.20).
Schneider, A. et al., 2010. Social media networking: Facebook and Twitter. J. Med. Pract. Manag. MPM 26, 156–157.
Thomas, J. et al., 2018. Fake News: Medicines Misinformation by the Media. Clin. Pharmacol, Ther. 104, 1059–1061. https://doi.org/10.1002/cpt.1159.