

Impact of social media on vaccinations



Introduction

The social media implications of vaccine acceptance has contributed to maintaining vaccine fears even when vaccine safety and efficacy are strong. Many scientific studies have shown that the use of vaccines is affected by media elements (9). Since, social network components allow users to develop and share their vaccination experience, these stories add a new dimension to healthcare information, namely the personal and embodied view of disease, vaccines, and the potential effects of vaccinations (3, 9). This paper will illustrate the impact of social media on acceptability rates of vaccines, vaccination information on social media and immunization strategy to influence vaccine decision-makers.

Over the years, the influence of social media on vaccine decision-making is increasing. Web use has generally grown tremendously in personal and professional life. People use social media to stay connected to friends and family, but also to collect health information (1). The use of social media is still of low importance in health decisions, but the use of the internet is growing. Although people do not report social media as a key information engine, it may be challenging that information received on the internet does affect health-related decisions, such as vaccinations (4). A population-based survey conducted on 2005-2007, examined individuals seeking health-related information through the internet. Results of the survey showed that there is a potential tendency to communicate the use of social media information among people born in a digital age compared to those who are not (13). Moreover, the accuracy of online vaccination information still varies widely, and health-related information is more likely to impact the often

believed decision related to vaccine (4). With this being discussed, people become cynical about the safety of vaccines since vaccination misinformation has increased on social media. However, vaccine hesitation and misinformation on the Internet can be reduced by proper use of social media (17).

Facts concerning Vaccination

According to the World Health Organization, vaccines are one of the most important means for recovering 2-3 millions of lives each year and are recognized as the most economically and effectively managed and successfully operated public health interventions (12). For example, 400, 000 people die each year from infectious diseases that can be altered or prevented from immunizing in the Western Pacific region such as Australia, the American Samoa, Cambodia, New Zealand and 33 other partner countries. World Immunization Week 2018 in the Western Pacific region has made significant progress in eliminating polio from all Western Pacific regions, eight countries have eliminated measles and 19 countries eliminated childhood hepatitis B (12). The goal of the campaign was to increase the vaccination rates in every community by providing immunization to ensure the safety of every child in all countries. This demonstrates the effectiveness of the vaccines by protecting people against infectious diseases that prevent millions of deaths each year. Furthermore, the most important reason to use the Western Pacific region as an example, is that it includes large and poor countries (such as China) and others with a rapidly aging population (such as Niue, where only one thousand people live) (12).

Vaccination information on social media and internet

People regularly search social media and the web for information and prevention of infectious disease. However, information on disease prevention found on social media and the internet varies widely (10). For example, a pandemic alert research for the term “ hand cleaning” was conducted in 2009 using popular search sources through various servers located in four countries: USA, UK, Canada, and Australia. Each site resulting from the search engines were examined to determine whether or not the information on swine flu was consistent with recommendations from the World Health Organization. Results showed that 75-80 percent of the hits were consistent with WHO’s recommendations on swine flu prevention and explained that the likelihood of accurate preventive information consistent with the World Health Organization varied by search engine, website type and country (10). On the other hand, another study revealed that 51 percent of the search results provided an accurate response regarding the relationship between the autism vaccine and measles, mumps and rubella (MMR). This shows that the quality of information on the internet and social media varies widely and the information is often variable depending on the search and the topic which can range from highly reliable to very inconsistent (16). In study analyzing the twitter posts during the 2009 H1N1 outbreaks, revealed that 52.6 percent of the information and news related to H1N1 material was tweeted and that tweets increased from 8.8 percent to 40.5 percent using H1N1 information indicating the terminology of the World health organization and recommendations for prevention of swine flu. This study explained that there is a potential for using social media to disseminate information about

vaccination from reliable sources (7). However, a potential difference between websites and social networking sites is possible. Because different websites are available with quality health-related information, ranging from poor to excellent. For example, all government websites (end in . nhs or . gov) provided factual advice, school websites (e. g. websites affiliated with university organizations) had a precision rate of about 80 percent, and sponsored websites generally gave poor information (16). By comparison, individuals are not only a messenger of health information through social media, but they also communicate, and circulate their own views, potentially as health advocates. Although, social media does not seek data on health issues, they become highly common platforms to discuss health-related matters (14).

Next, I will review preliminary articles on how this type of social media information affects a person's vaccine choice and improves vaccine acceptance.

Social media impact on vaccination

Many parents who are concerned about their children's vaccines use the Internet and social media to obtain vaccine information and often start assessing risks and benefits during pregnancy, seeking information from multiple sources, as well as expressing interest in receiving information on the vaccine prior to routine children's health visits (11). While physicians are confident sources of health-related information, vaccine-resistant parents are suspected of using traditional science sources and report receiving vaccine information via the internet, even when an exposure to social media anti-

vaccine messages appeared to exacerbate the concerns of parents and decrease the reasons for vaccination. Simultaneously, social media could alleviate parental vaccine fears and increase vaccination rates. (11). For example, a randomized controlled trial in Colorado from September 2013 to July 2016 investigated whether or not a social web intervention increases vaccine rates and reduces vaccination reluctance among pregnant women. The results showed that 92.5% infants in the group VSM (website with vaccine information and social media components), 91.3% infants in the group VI (website with vaccine information) and 86.6% infants in UC (usual care only), were up-to-date at the end of vaccine follow-up. Children in the VSM group (website with vaccines information and social media components) were more likely to be up-to-date at the age of 6 and half months than infants in the usual care group. Although the results did not differ significantly, the use of social media improved their attitudes towards vaccination among reluctant individuals (11).

In a study, the relationship between the use of social media and influenza vaccine rates among white and African American adults was examined. An online survey was conducted and data was collected from March to April 2015, with a \$5 incentive provided to those who completed the survey. The survey reported that a total, 61.83 percent of people used Facebook and 15.42 percent of people used Twitter. Results from the logistic regression models showed that Twitter participants (OR 4.41 percent, 95 percent CI: 1.43-13.60), as opposed to those who use Facebook (OR 1.66 percent, 95 percent CI: 1.01-2.72), are more likely to be vaccinated than participants who do not use Twitter and Facebook as the primary source of health

information. This study mainly suggests that social media may increase vaccine acceptance rates. While the number of people using Twitter is smaller than Facebook, it has been found that using Twitter as a health source is significant (2). In addition, people who use social media to obtain health information may be concerned about staying healthy by following health information, and may contribute to improved vaccine rates. (2) On the other hand, health information on social media is ignored by those who are using Twitter and Facebook because they are more informed, educated and reluctant about health- related information on social media (2)

An updated approach was also introduced in another study to increase the absorption of vaccines and combat low vaccines in adolescents. Authors suggested an innovative Facebook campaign for adolescents in Philadelphia (13-18 years old) with a message about benefits and opportunities of HPV vaccination. Six advertising campaigns were conducted for two weeks to include topics such as: acquiring ownership of health, risk of illness, summer protection, back-to-school and peer support, and raising awareness of HPV. The ad was designed to transfer adolescents to their 3forME Facebook page from advertising. Overall results showed that 155, 100 adolescents participated in the campaign and 2106 participated in the campaign events. As a results, 176 doses of HPV vaccine were given to 152 adolescents. These results indicate that the campaign was well received, reached young people, and it encouraged the conversation between adolescents about vaccination and vaccine uptake. Generally speaking, it appears that using social media in the field of vaccination may enhance the actions and barriers of people to vaccination (15).

The emergence of social media, especially Facebook or Twitter, has brought health communication and vaccination promotion into the digital world as a result of new ways of providing health-related information (14). Social networking sites are considered an effective platform for an exchange of information and in discussing content with other people that affects how people look for information on health issues (14). Although careful consideration on health information is essential, the message itself is critical to health promotion in social media and it has been found that message framing affects individual decisions or their reaction to the message given (14). For example, a research study examines the effects of social media message framing where scientists wanted to examine whether online messaging is used to increase the behavioral intentions of specifically receiving vaccines (HPV) for young adults or not through an online survey program. Authors say their gain-framed message focused on the benefits of getting HPV vaccine. While their loss-framed messages were emphasized on the risks of not taking the HPV vaccine such as cervical cancer or genital warts. The results of this study showed that Facebook was more effective with the loss-framed message as more students were willing to receive HPV vaccination than people assigned to the gain-framed message. Moreover, no significant effect was found when this message framing was developed on an online newspaper website. Generally speaking, these findings show that the social media message framing influences people's decision to receive the vaccination. Since loss-framed messages have increased the behavioral intent of young adults to be vaccinated against HPV and reduced barriers to HPV vaccination (14).

Next, I will describe how the government uses social media as a tool to address specifically vaccination- related public health crisis.

Public Health in the digital era – Social media

Most of people use social media every day for both personal and professional purposes as it is a key part of our lives (2, 8). This platform is being adopted by public health officials to monitor and to distribute information on public health particularly in the remote areas where people are hard to reach (1). Additionally, public health officials have launched social media campaigns to promote specific health campaign topics as it has been found that social media is a useful support tool for people suffering from similar health conditions. In the context of health crisis such as measles outbreak, social media were also supposed to be effective in prompt dissemination of health information (1). For example, in a study focusing on Baltimore City, the City Health Department took its most important initiative to inform the public about two measles outbreaks in Baltimore City in 2015 through social media to reduce misinformation and panic among Baltimore citizens. The City's Health Department has worked with city, county and federal agencies to post contacts on social media about possible exposures to measles in response to both cases of measles infections. As a result, there was sufficient information on Facebook post to Health Officers to develop a strategy for tracking all affected patients and then provided sufficient information and preventive measures to the public (18). The Irish Government has taken the initiative to increase the uptake of HPV vaccination among school children, similar to the Baltimore City study. The Irish Government launched a social media campaign in cooperation with local authorities and other officials committed

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to raising awareness of HPV vaccination. As a result, the consumption of immunization increased from 55.8 percent in 2016 to 61.7 percent in 2018 (6). These studies show that the use of social media has helped spread their message publicly, provided city officials with a deeper understanding of the use of digital systems, the importance of early detection and monitoring, and enhanced interconnectivity to enhance public access as city and state leaders and doctors have come together to help meet these differences (18).

In addition, public health officials use the digital environment within the Department of Public Health's jurisdiction that requires alternative responses. They are also aware that if content in social media affects health or spreads misinformation. However, the social media agency system can also effectively monitor and extract destructive information. This offers government agencies the opportunity to circulate reliable information or to develop strategies to address with the crisis situation (1). For example, a case study of China's illegally expired vaccine scandal in 2016 examined the effectiveness of the Chinese government's public health crisis response strategies to address the expired vaccine scandal. The Chinese government used "Weibo" a platform similar to Facebook as a leading means of information exchange and political communications. Their plan includes three postures and 10 strategies. And, authors coded 90 posts and 230 comments to determine the effectiveness of the Chinese government's strategies. As a result, corrective action was the most effective of all other 11 strategies as the corrective action promises to identify a solution to the problem and prevent it from occurring in the foreseeable future by taking appropriate action. Additionally, justification strategy has been most widely

used by government and other media. These results demonstrate the possible visible impact on the public and their relationship with governments as a result of minor changes in the public health's crisis management (5).

Recommendation based on these Studies

As 60 percent of government departments use social media, 86.7 percent use Twitter and 56 percent use Facebook, the government should securely embrace these digital technologies within the public health's jurisdiction (18). Government officials should use social media accounts to distribute accurate health-related information, respond to questions, concerns, and prevent misinformation about vaccination as 72 percent of internet users report seeking health information online. Moreover, the Department of Public Health also needs to learn more, as well as understand and monitor how social media content affects health, how effective social networking companies is in extracting and communicating harmful data to third parties (1, 18).

In addition, the government should implement policies on how social media companies should be able to monitor and intervene to safeguard public health. We should also create public-private organizations to monitor ongoing public health issues due to the relative affordability and cost-effectiveness of social media and its establishment across various community groups and geographic distance (18). These organization's activities may include tracking and early detection of vaccines, social media campaigns, etc., since collaborative work with clear and wide-ranging

strategies can contribute to enhancing the reach of social media interventions with a view to improving acceptance rates (1).

Promoting immunization on social media with communication & knowledge deficit approach

In this digital age, many parents' refusal to vaccinate their children has been increased as social media misinformation is immense (8, 17). There are also fewer reasons for posting pro-vaccine information on social media, given that during vaccination visit everything was good for the individual.

However, on the other hand, if their child has had adverse effects on vaccination, people are more likely to post a negative post as they are delineated to share their experience or anti-vaccination forum observation. Social media also plays an important role in the decision-making process of individual vaccination as people are more likely to follow the general interest if they perceive that all others accept the same approach. Consequently, the department of public health is more focused on developing knowledge-based strategies and ways of communicating with the public on social media to increase people's knowledge of vaccine risks and benefits to enhance immunization. (17). For example, the study examined the randomized trial of social media intervention by the large Colorado healthcare organization's to increase vaccine acceptance and it was successful as the intervention incorporated interesting components such as "discussion" "forums," "chat room" and "blog" (8). This shows the effectiveness of communication strategies as a means of interacting with health experts outside healthcare facilities to improve the relationship between doctor and patient and to

improve patient knowledge of the benefits of vaccination by responding to or discussing issues related to the vaccine (8).

Additionally, it has been shown that message framing and knowledge deficit approach are effective in promoting vaccination on social media (14). To illustrate this, the Department of Public Health in Philadelphia has launched a social media campaign to enhance adolescent's vaccination acceptance. As a result, the campaign was properly received as it involved a method of knowledge-deficit and communication to target adolescents. The Philadelphia Department of Public Health aimed at adolescents with a specific HPV vaccine message focusing solely on providing beneficial information to increase their knowledge and address misinformation, answering questions about the effects of HPV vaccination (15). These results show that using effective social media strategies can have clear effects on the independent attitude towards vaccination. Over time, it has also been shown that people change their attitude or behavior if they receive the information from a credible source (8, 15).

Conclusion

Health-related information on social media is huge and uncontrolled. In this way, it spreads carelessly across all social media platforms through pro and anti-vaccine groups. As a result, individuals are cynical of the benefits of vaccines that increase vaccine hesitation (11, 17). Since vaccine information on social media has changed in many ways: every social media user can generate and/or disclose information to the vast majority of people, immunization information on social media needs no specialist advice, as

forums and blogs provide vaccine-related information to people, and the Internet has increased the speed of social media material by providing components such as “ like”, “ share” or “ tweets” (17). Overall, despite the availability of misinformation on the internet, social-media based interventions and clear strategies can help people become directly aware of vaccine benefits and increase vaccines acceptance (15). Additionally, government and other health professionals should use social media accounts and continue to strive to be the primary source of health-related information, improve vaccination, and reduce the threat of growing vaccine hesitation (16, 17). Because of the high level of Internet use, social media networks are becoming a key source of health-related information in people’s lives. So, we need to intervene in online areas where people spend most of their time to ensuring and safeguarding their health with credible information, resources, and policies (1). Social media platforms can generally be seen as threat to immunization because they spread misinformation and alleviate individual’s decision to take vaccine. However, social media can build confidence in vaccination as public health and other community members can implement web-based interventions, strategies and policies to address these issues (17). Overall, I aimed to explain the essential role of social media, web-based intervention and strategies to enhance the acceptance of immunization.

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