

The Presentation of the Anti-Vaccination Movement in Social Networking Sites

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ABSTRACT

Introduction: The anti-vaccination movement has started to develop into a major public health problem. After 1998, measles re-emerged in the UK and subsequently caused further outbreaks in Europe. **Methods:** MEDLINE, EMBASE and CINAHL databases were searched with keywords antivaccine, media, internet, social media. The results were ranked according to their content. The anti-vaccination movement's online media presence was reviewed on websites and search engines and social media such as facebook, twitter, instagram, pinterest and the older chatrooms and myspace. **Results:** While Web 1 was static, Web 2 and its future evolution, the Semantic Web is mutable and interactive. Social media offers the possibility to publish not only text but also image and video increasing the power and immediacy of communication. Users can upload content such as videos, pages and interact with each other. Thus, the roles of producers and consumers of news alternate, without the need for an intermediary. Thus, anyone is at the same time a channel owner, a broadcast producer without being subject to ethical rules. **Conclusions:** The anti-vaccination movement is not new. But has evolved with the advancement of technology and managed to follow the trends of the time by exploiting the nature of interactive media. The rhetoric of the anti-vaccination movement uses the power of image and video, the emotional charge of the personal stories they invoke. His argument is rooted in safeguarding personal liberty, conspiracy theories, and concern about adverse reactions are the main arguments used by vaccine hesitancy groups and should be addressed in communication with the health care service users.

Keywords: Anti-vaccination movement, internet, websites, social networking

INTRODUCTION

The anti-vaccination movement is poised to become a major public health problem. After 1998, when the now retracted

research of on MMR vaccine association with autism, Measles has re-emerged in the UK and slowly in Europe in outbreaks. An important role was played by the dissemination of the news by the newspapers of the time. Also, celebrities questioned the effectiveness of vaccines and the safety profile by arguing that they actually cause autism. Finally, new technologies such as the internet and social media are being used by the anti-vaccination movement to increase their influence on the general public. The purpose of the study is to show the extent and the way the anti-vaccination movement is presented in the Mass Media.

Fear and concern about vaccines is not a new phenomenon. Already in the 18th century the vicar A. Massey in England preached against vaccines arguing that they interfered with the will of God. Concurrently in the USA, at the same time, the prevailing religious views considered them the work of the devil. Religious considerations aside, when vaccination became compulsory in Great Britain in the 19th century, Anti-Vaccination Legions were formed to urge people not to vaccinate in response to what they saw as an attack on their individual liberties. Since then, the anti-vaccination movement has gained momentum in many parts of the world by acquiring arguments that draw from personal perceptions, outdated scientific theories and in some cases conspiracy theories [1].

The presentation of the anti-vaccination movement in the online media

In 1962, Marshall McLuhan distinguished the history of mankind into 4 eras: The first is dominated by the oral tradition of the tribe, the second by the culture transmitted by manuscripts, the third constitutes the Gutenberg Galaxy and the fourth constitutes the electronic age [2]. As stable and reproducible as communication was in Gutenberg's Galaxy, On the contrary it is as relativistic and fluid in the internet age. While Web 1 was static Web 2 and the Semantic Web is mutable and interactive. As users can post content such as videos, pages and interact with each other, the roles are alternated between producers and consumers of news, without the need for an intermediary [3]. Since 2000, already, multiple reports and observations have suggested that, sources of public misinformation and non-compliance with vaccination guidelines can be found on the internet. These reports initially refer to websites, blogs and chatrooms. After 2010 there is a shift in the literature where emphasis is placed on more personalized means of

communication such as social media, which are characterized by a participatory nature. As a result, the spread of rumors is facilitated, similar to oral word-of-mouth transmission [4]. As a staggering 50-80% of internet users have searched for health information online, the dimension of the problem becomes even more understandable [5].

Websites that are critical of vaccines are more widespread but also less restrained. They are not subject to restrictions as they are not accountable, nor are they bound by a code of conduct. They may be characterized by poor research design and lack of critical review. In a large percentage (over 60%) there is no separation of sources while they are characterized by ambiguity regarding the target audience, which causes ambiguity with the purposes of the presentation. In addition, many websites are loaded with advertisements for consumer products and services ranging from cosmetics and household goods to law firms [6]. Since 1998 the vaccination refusal started with alleged link of the MMR vaccine to autism (now withdrawn from the journal). So far, many studies have been published that have not proven this relationship. In a recent study to see how persistent this connection is in online media, an internet search was conducted with the Google search engine in English as well as other popular languages such as French, Italian, Portuguese, Chinese, Arabic for the terms "vaccine" and "autism" and the results were studied. Websites linked to news agencies made up 25-50%, while independent sources (blogs, social media) made up 27-41%. These sources were even more critical of vaccines. While searching with google.com showed the first critical page at number 43, there were negative sites in the first 10 search results in local publications. The British, Australian, French version had 1 negative website in the top 10 while the Italian, Portuguese and Chinese version had 2. An important finding was also that although the number of websites promoting alternative therapies was quite low, 1-5% of the total those were quite critical at a rate of 50-100% [7]. Google's monitoring of traffic data conducted in the 28 countries of the European Union found that searches for the terms "anti-vaccination movement" were positively associated with a decrease in measles vaccination and an increase in reported cases. Measles has a high mortality rate of 1-2/1000, an increased economic cost of dealing with complications that exceeds the cost of vaccination. It is also characterized by high infectivity so that a large coverage of the population is required to prevent its transmission. Thus, outbreaks similar to measles could be observed in other vaccine preventable

infectious diseases [8]. These data have been confirmed with similar findings from the United States where data were drawn from the Vaccine tool Sentimetre, an online tool for measuring online publications with spatial distribution. From 2012-2014 analyzing internet traffic showed an uptick in negative sentiment regarding the terms “vaccine safety” 47%, “hepatitis B” 19% and “Vermont” 18%. Vermont is a state in the USA where in 2015 the possibility of exempting children from compulsory vaccination due to beliefs was inaugurated. This outbreak has been geographically accompanied by an increase in measles cases [9]. Public interest in vaccines has been stable in recent years. It shows increased mobility in outbreaks such as the 2009 influenza pandemic and fluctuates with media coverage. However, from analyzing trends on Google, one-third of health searches were about vaccination. The search for the HPV cervical cancer vaccine has been of great interest mainly from teenage girls, who are also the target population. Users also searched for information on the adverse effects of the vaccine rather than the infectious disease itself, mainly for the following diseases: influenza, meningitis, diphtheria-tetanus-pertussis, yellow fever, chicken pox [10]. The presentation on the Internet that targets vulnerable population groups is also important for public health. In an analysis of online articles about the vaccination of pregnant women against influenza and whooping cough, the majority were positive, but inaccurate. Critical articles about the adverse effects of the vaccines were also observed. The benefit of influenza vaccination was greater for the mother, while for pertussis vaccination was greater for the child, a fact that appears to have been perceived by the population as shown by a concurrently distributed questionnaire. However, a percentage of pregnant women stated that they did not intend to accept the flu vaccination 22% or whooping cough 8%. Presentation of fetal risks may have played a role in lower pertussis vaccination refusal [11].

Social media and the anti-vaccination movement- Facebook, Twitter

Organized anti-vaccination groups have exacerbated parental anxiety and contributed to reduced compliance with vaccination program guidelines. Study of the example of the presence of a website named “Voice for Choice” (Voice for Choice) with a presence on facebook where inaccuracies and incomplete data are reported under the guise of offering information for better information [12]. Many times the critics of vaccines cite names of scientists who were ridiculed in their

time to be vindicated later such as Semmelweis, Galileo and Copernicus, thus implying that the scientific community is narrow-minded and there are scientific facts that are being hidden. However, these experts cite evidence from personal experiences and perceptions instead of scientific data [13].

Social media offers the possibility to publish not only text but also image and video increasing the power and immediacy of communication. An analysis of 800 articles from the social networking platform pinterest showed that the majority had negative content, focusing mainly on concerns about vaccine safety and possible side effects, often combined with conspiracy theories [14]. Observation of 123 videos of You Tube in Italy showed that 50% were positive for vaccination, 23% against and 27% neutral. Anti-vaccination videos were viewed more and usually invoked feelings of fear about potential adverse effects of vaccines [15].

Social media allows users to interact by reading, writing, commenting and discussing. 48% of MySpace content was negative and 6% had a dubious sentiment [13]. In 2016, a scandal broke out in China with the distribution of 2,000,000 doses of unsuitable vaccines with inadequate storage conditions. The public was informed by social media especially mobile phone before traditional communication media. In addition, a poll carried out at the time revealed little trust in traditional media 22.8% and the government 29%, while maintaining trust in scientific companies 81.6% and health professionals 88% [16].

Facebook is a popular social networking site with 2.4 billion monthly users. An analysis of 6 popular anti-vaccination activist websites had interesting results for the views of anti-vaccination supporters. The websites are imbued with strong negative feelings not only about the practice of vaccination but also essentially about the coercion and oppression they feel from perceived tyrannical governments, aided by the mass media [17]. Topics covered include covering up adverse effects of vaccination, intentional spread of the Zika virus from institutions, and trace chemicals in the atmosphere. Even though users may be in remote communities they can connect and are get exposure to similar content and recycle it either by personal choice or assisted by Facebook’s algorithm that recommends similar pages. Interestingly, the majority of users are women, which makes sense given that women are in charge of raising children and making health decisions [18]. Similarly, comments in Facebook groups in Israel following the addition of an extra dose of oral polio vaccine due to an

outbreak fell into four categories: personal opinions, concern about vaccine safety, lack of trust in the Ministry of Health, and refusal to acknowledge the existence of polio [19].

Next is that the anti-vaccination movement is also active on Twitter where the brevity of the message makes it easier to spread. From a survey of 1344 tweets with the hashtag #vaccinations 32% were positively related, 43% neutral and 24% negative. Positives and negatives had more broadcasts with negatives being rebroadcast [4] 13 times more than neutrals and positives [1] 58 times more. Positive tweets had links to twitter, the content curator trap. It and the official body of the US Center for Disease Control (Center for Disease Control). On the contrary, anti-vaccines tweets had links to other social media [20]. In larger studies, up to 57% of tweets reproduce the now-obsolete vaccine-autism link, especially when there is a resurgence of interest in mainstream media, more so among women [21]. Specifically for the cervical cancer vaccine in 3 English-speaking countries (Canada, Australia, UK) critical tweets were similar (14.9%, 19.4% and 22% respectively) but with critics of the vaccine being they have more international connections [22]. Additionally, not all posts may belong to users who have specific perceptions. There are Twitter accounts that have been labeled as suspects by the US government and the NBC network for trolling foreign governments. The tweets had both pro- and anti-vaccine views but were intended to be divisive. Additionally, negative tweets actually concealed malware or were deceptive to redirect to advertising and commercial content pages [23].

CONCLUSIONS

The anti-vaccination movement is not new. But it evolved with the advancement of technology and managed to follow the trends of the time by exploiting the nature of interactive media. Indeed, the rhetoric of the anti-vaccination movement uses the power of image and video, the emotional charge caused by the personal stories they invoke. His argument is rooted in safeguarding personal liberty, conspiracy theories, and concern about side effects.

Due to the interactivity, there is a soundproof chamber “echo chamber” by users who echo similar views and only respond to similar perceptions to their own.

Clinician have a duty to be aware of the rhetoric of the vaccine hesitance movements in order to address the concerns of service users.

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