

# Digital Media Literacy in Reading and Understanding Health-Related Information on the Internet and Social Media

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**Abstract.** This article explains the literacy program conducted by the team from Communication Department, Universitas Diponegoro, in 2019 in Semarang, Central Java, to educate public in reading and understanding health-related information, particularly information about medicine, in the Internet and social media. Research have shown that the Internet and social media have become one of the information sources where people seek their health information. This health information could be related to disease, medicine (drugs), diet (food or nutrition), healthy lifestyle, health facilities, and health financing (insurance, medicine price etc.). The nature of free and unlimited information on the Internet renders distribution of high number of unverified and untested health information among users on social media, which largely known as misinformation, disinformation or misinformation. The target audience of the program is a group of women in a neighborhood in Semarang, who were actively involved in Family Welfare Empowerment program (*Pemberdayaan Kesejahteraan Keluarga/PKK*) and in managing (*Tanaman Obat Keluarga/TOGA*) in their neighborhood. The goal of the program is to educate the target audience to be able to understand types of medicine in the market and their characteristics, and to be able to recognize inaccurate information, unverified sources as well as to apply critical thinking to comprehend health information in relation to medicine.

**Keywords:** Digital Media Literacy, Health Information, Internet, Social Media.

## 1 Introduction

The expansion of access of information technology and its numerous applications have brought changes in the ways in which people consume, circulate, and use information. On the positive side, technology has afforded easier access of information and enable people to gain knowledge with less barriers. On the negative side, however, the issue of trustworthy become essential since not all information circulated on the Internet can be trusted to contain true or valid information. Various information is uploaded and distributed daily on the internet from politics, businesses, entertainments, leisure, arts, cultures, etc. Among that information, health information is one type of information that have a large present on the Internet. With the popularity of social media, health information has also occupied this information channel, to which Li *et al.*, [1] mentioned that social media became a type of “conciierge” to help patients to find quick answer to their questions, discuss their health problem, and even make appointment to their healthcare personnel.

The use of the Internet, particularly social media, in disseminating and accessing health information has drawn the attention of many scholars in the field of health and medicine, communication studies, sociology, computer mediated communication, and computer science [1][2][3][4]. A number of scholars have made observation that social media, such as Facebook, YouTube, and Twitter, have become sources of information where people go to find relevant knowledge when they encounter health problems. Not only because many people share their experiences and stories as well as discuss health-related issues in social media, but also because many healthcare facilities, such as hospitals, clinic, medical laboratory, and even medical doctors have increasing present on social media as a channel to deliver their health information. Social media has been seen as tool providing many advantages in delivering health information, because it is not only conveying information in text, but also in the forms of image and video that can easily accessible to people without background of medical knowledge.

## **2 Literature Review**

There are two opposite and conflicting circumstances, however, when it comes to the matter of circulation of health information through social media and the Internet. On one hand, the use of social media and the Internet in sharing, discussing, and commenting health-related issues is seen as a positive sign in creating and developing health communities online. This can drive and reinforce increasing access of information and social advancement when it comes to health improvement [1]. The ability of Web 2.0 application that enable users to create their own content on the Internet makes possible two-way communication or dialog among users, and among patients and healthcare providers, so that patients can acquired answers to their health-related questions. A number of scholars have argued that the use of social media and the Internet for health-related issues can generate “health empowerment” for the people [5][6].

On the other hand, there is a rising concern about the quality and validity of health information online, which frequently contain misleading content and poses high risk to susceptible users of social media. An investigative reporting from BBC [7] mentions YouTube to have more than 80 videos containing health misinformation, particularly deceptive cancer cures across 10 different languages. Medically untested remedy, such as consuming baking soda, donkey milk, bitter gourd, turmeric, and other substance were promoted through the channel and reached thousands of people and viewed thousands of times. BBC argues that the high reach of these types of video is partly advanced by YouTube algorithm on popular videos as the sites run adverts for major brands on the misleading videos. Another BBC report shows different mode of disseminating health-related information through social media; this time by ‘influencer’ of the Instagram [8]. This report presents a story of a Russian Instagram influencer, who has thousands of followers, has recommended a regime of medication to be taken by women who want to be pregnant or who want to have healthy pregnancy. Upon further investigation, the medication suggested in the Instagram account has not been proven medically to yield the result as suggested.

The similar problem also happened in Indonesia. A number of media reports in Indonesia have mentioned that large number of circulated hoaxes on the Internet is related to health information [9]. Citing the Head of Press Council on an interview, IDN Times [10] mentioned that 95% of health information circulated through WhatsApp application are wrong

information, or disinformation, or hoax. Media also reported a research conducted by Sukardi from Indonesia Journalist Association (PWI) that wrong information about health is the number one hoax she found among about thousand data sample of news/information that she gathered from 2016 to 2017 [11]. This health-related inaccurate information is the top of circulated disinformation with 27 percent, followed by information of politics (22%), entertainment news (15%), and information about business competitions. The researcher mentioned that the circulation of health-related hoax was often without malicious intent or elaborate agenda. It is only because the users considering the information was trustworthy enough according to his/her logic, without further questioning the information, or without applying critical thinking in consuming and distributing information [11]. This situation calls for more intensive information literacy among social media and Internet users in Indonesia in digesting the online information.

These opposing social facts regarding the circulation of health-related information through the Internet and social media, particularly in Indonesia, has made digital literacy programs regarding health-information are urgently needed. Motivated by this urgency, team from Communication Department, Diponegoro University, conducted a digital literacy program in a small community of neighborhood in Semarang, the biggest city in the province of Central Java, Indonesia. This literacy program was focusing on information about medicine/drugs and to uncover some most circulated false information regarding medicine. The detail of the literacy program will be explained in the subsequent sections.

### **3 Methodology**

Data/information in this article was gained from participatory observation in the literacy program, since the preparation stage to the implementation stage. The literacy program itself was a three-hours program that consisted of presentation/talk session and discussion (questions and answers) session, which has been conducted in December 2019. The speakers involved in this literacy program were a team of researchers from Communication Department, Diponegoro University, and pharmacists from PT. Erela Semarang, one of the pharmaceutical companies based in Semarang, Central Java. The participants of the program were women, in the age group above 40 years old, and involved in Family Welfare Empowerment (*Pemberdayaan Kesejahteraan Keluarga/PKK*) in Kelurahan Pedalangan, Kecamatan Banyumanik. There were 25 women who participated in the program. The detail of the literacy program will be explained in the subsequent section.

## **4 Result and Discussion**

### **4.1 Health Information Literacy Program**

The literacy program was aimed to educate the target audience to be able to recognize false information, to identify unverified sources as well as to apply critical thinking to comprehend various health information. This literacy program was conducted by using social marketing campaign approach that was designed by adopting multi-level marketing techniques. This technique utilizes personal communication networks and interpersonal relationships to spread information to be able to change behavior in consuming health

information. This technique was chosen based on consideration of the efficiency of available resources of information channel to disseminate information among the target groups. With that in mind, the campaign was expected to not only for the participants to understand how to recognize fallacious information, but for them to be able to act as agents, who will, in turn, disseminate the knowledge and skills to recognize wrong information to a network of friends and relatives.

In the stage of campaign preparation, there were three activities carried out simultaneously. The first activity was to compile sample materials of inaccurate or untested health information on circulated social media. In this stage, researchers have gathered samples of what can be considered as inaccurate health information. The data compilation showed large number of the information was about the claims of traditional and herbal medicine effects in curing various illness. Considering this finding, the program was decided to focus on educating the target participants about the types of medicine recognized by the medicine regulation in Indonesia. This literacy program would also educate target participants about the characteristics of each type of medicine and the level of potency in curing illness. This knowledge was expected to help target participants to read critically information about medicines (including traditional medicines) through social media and to inform their decision in consuming different types of medicine.

The second activity was to gather the more accurate information about medicines/drugs to counter inaccurate information from the sample found in social media. For this second activity, several resources of information are consulted, particularly those who have competencies in health-related knowledge, including from those who had backgrounds in medicine (pharmacy). The team from Communication Department was then initiating collaboration with pharmacists from PT. Erela Semarang to provide more accurate information about medicinal knowledge.

The third activity was to approach a community that would be the target of the literacy program. After considering several target candidates, it was finally determined that the target participants were a group of women involved in Family Welfare Empowerment (*Pemberdayaan Kesejahteraan Keluarga/PKK*) in Pedalangan Subdistrict, Banyumanik, in the city of Semarang. This neighborhood was chosen considering that it has community with herbal plant activists. They were close to family health issues since they have regular activities to develop a sustainable family medicinal plants (*Tanaman Obat Keluarga/TOGA*) in their neighborhood.

In the stage of program implementation, the program was divided in three segments. The first segment was to show several examples of untested medicines that are spread on social media from the previously compiled information to the participants. Some of the examples were: the claim that turmeric, coconut, and coconut water can cure cervical cancer; the claim that pumpkin seeds, sunflower seeds, and sesame seeds can cure cyst, myoma, endometriosis; the claim that cilantro juice can cure hepatitis; the claim that honey, coconut water, and cilantro can cure stroke; and some other examples. This information usually circulated in the form of infographic, with materials that include text and image illustrations. In this first part, the participants were also asked if they have ever encountered the similar information in their social media, and they were encouraged to tell their experiences. The experiences of the participants were added to the list of information about untested medical information.

The second part of the program was the talk from the experts invited in the literacy program (the pharmacists) to explain more accurate information regarding medicines. The experts emphasized that circulation of fallacious information is often related to the uneven level of education in Indonesia, which made it difficult for people to understand various

medical terms. This situation has made public tried to seek health information that was easier to understand. Problems began to emerge when health information entered the realm of entertainment, so what was disseminated no longer the essence of the medical information, but the more attractive and entertain information. Usually those who work on information on social media were most likely creative design people (and not necessarily people with medical background) who use “match-up” text and image to be able to communicate health information easily. This well-intentioned information dissemination could become the source of the problem when accuracy is not the main consideration. Aside of this well intention, however, there were also parts of the information dissemination that deliberately aimed to mislead public with inaccurate information. For both of these motives, public education for recognizing health information are equally needed.

The pharmacists, then, explained the types of medicines/drugs acknowledged in pharmacy regulation in Indonesia, which usually indicated in the medicine packaging by using several different symbols. The information shared by the pharmacists was based on the regulation issued by the Indonesian National Agency of Drug and Food Control (*Badan Pengawas Obat dan Makanan/BPOM*) [12][13][14]. There were six symbols in the medicine packaging in Indonesia. First, the green circle is a symbol for over-the-counter (OTC) medicines, or drugs that are often found in stores. This drug is free to use, in the sense, people know when to take this medicine and also know when to stop. For example, people will take fever medicine when they feel high fever and stop taking when they feel better. Second, the blue circle is a symbol for limited over-the-counter drugs. These drugs can be bought in shops but the users still need to know and to pay attention to the appropriate dosage. For this type of drugs, users are recommended to ask the right dosage to consume to the medical professionals, and then to comply with it. Third, the letter K in circle is a symbol for potent drugs, which are drugs that if entered the human body it will have direct effect to the body. It is also called potent drugs; such as antibiotics. Potent medicine is not recommended when people do not really need it. From these three types of medication, therefore, if one needed to get medication, she/he must pass through over-the-counter drugs, then moving on to limited drugs, and then they will be given potent drugs when the two previous drugs do not work. However, one has to pay attention to the number of potent drugs that are consumed, because when someone has used too much potent drugs, it will no longer have benefits in one body.

The fourth symbol is the image of leaf twigs inside a circle, which is the symbol of herbal medicine. This medicine comes from plants that contain many substances with no specific indication and contra-indication. This herbal medicine is highly praised by the people in Indonesian because of several reasons; first, there is a general perception that all medicine or drugs are all the same; and second, people do not truly know what ingredients enter their bodies. Herbal remedies should not claim to be able to "cure" diseases, but they should only claim to "help". Thoughtfulness and willingness to pay attention closely and to examine carefully the substance in herbal medicine are needed in using this type of medicine. Further, herbal medicine (or known popularly as *jamu* in Indonesia) is a drug that has not been experimented or tried clinically to either to animal or human. The claims of the effects of this medicines only arises from traditions or empirical observation, but not from laboratory experiment [13]. For example, the assertion that guava leaves can cure diarrhea is generally come from the presumption that has formed in many communities in Indonesia, and had been perceived effective based on the empirical experience of a group of people, but have not been proven through scientific experiments.

The fifth symbol is a circle with three-asterisk shape, which is the symbol of standardized herbal medicines. This type of medicines are plant-based medicines that have

been experimented on animal level [13]. The effect of this drugs would be more constant because those have been tried to animals, and proven scientifically. The last type of medicine is another plants-based medicine named phytopharmaceuticals. This is the type of plant-based drugs that have been extracted from plants, then tested on animals, and then tested further on humans. Phytopharmaceuticals have more reliable effect, because it has been medically tested on humans and it is declared safe for humans' consumption. In Indonesia there are only small number of phytopharmaceuticals companies, which mean there is a higher standard of verification and safety for this type of medicine [13].

After the explanation about the types of medicine from the experts, the third segment of the program was the questions and answers session. This this session, the participants involved in discussion where they could pose many questions about their personal encounters to herbal medicine as well as numerous of information they acquired from social media. These questions were answered in detail by the experts to the point that the participant fully obtained the expected answers. Furthermore, in this session, the experts also prompted questions to assess the comprehension of participants regarding the explained information in the previous session. From several questions asked, the participants were able to answer with relatively high accuracy. The responses from the participants indicated that they could digest and comprehend the information well.

From this discussion session, the team from Communication Department, UNDIP determined that with the knowledge of medicines explained in the program, participants were able to understand the information behind the drugs they encountered in the market. They were also able to assess the claims regarding abilities or potencies of herbal medicines to cure certain illness through information about level of verification, whether a medicine has been tested or not been tested medically. This information encouraged them to think critically on numerous claims of plants potency for health remedies. Furthermore, the participants were also encouraged to use considerations of risk and benefit in using medicines. This means when a person inserts chemical substances into her/his body, the benefit is that a person would possible to recover from illness, but at the same time, the same substance would also have possibility to expose risks to the person body. The careful consideration that the benefit surpasses the risk should be made before consuming medicines.

## **5 Conclusions**

The literacy program regarding health-related information was greatly needed because of the wide spread of health information found on the Internet and social media. Although this channel of information could be used to make health information easier to access, at the same time it can also poses risks when inaccurate information also widely disseminated. The literacy program was then conducted in a neighborhood that actively discussed family-health issues. The literacy program focused on medicine or drugs information was provide knowledge of type of medicine, both chemical-based medicine and plant-based medicine. The various claims regarding the ability of herbal medicine to cure disease should be examined critically by knowing what types of medical experiment that has been conducted to test the effect of the herbal medicines. The information about types of medicine with different level of potencies and different level of proof of efficacy and effectiveness were able to help participants to assess medicines information they encountered through social media and other information channel.

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