Trends of influenza’s symptoms drug search terms in Indonesian-language using google trends in the covid-19 pandemic

Nailis Syifa1*
Nurul Purborini1

1Department of Pharmacy, Faculty of Health Science, University of Muhammadiyah Malang, Indonesia
2Department of Nursing, Faculty of Health Science, University of Muhammadiyah Magelang, Indonesia

*email: nailissyifa@ummm.ac.id

Keywords:
Covid-19
Google trend
Influenza’s symptoms drug
Indonesia
Searching trend

Abstract

Introduction: Covid-19 has spread globally which cause severe acute respiratory syndrome. The symptoms of covid-19 have similarity with influenza, such as cough, fever, runny nose, and sore throat. Therefore, the internet sources tend to have an increasing searching related to influenza symptoms drugs.

Objectives: To assess the searching trend of influenza’s symptoms drug using google trend analysis in Indonesia.

Methods: We explore google trend analysis using search terms in Indonesian language related with influenza’s symptoms drugs from 6 December 2020 to 30 November 2021. The positive confirmed cases were obtained from Indonesian government website covid.go.id.

Results: Our results demonstrated the increasing search terms related to influenza drug’s symptoms during July and August. The highest term search was “obat batuk”. The positive covid-19 confirmed cases in Indonesia increased during July and August.

Conclusions: During the peak of covid-19 outbreak in Indonesia on July-August 2021, there were increasing of google trends searching related to influenza’s drug symptoms.

INTRODUCTION

Covid-19 pandemic has been affected more than 200 countries around the world, including Indonesia. The first cases of covid-19 in Indonesia were detected on 2 March 2020 in Jakarta, the capital city of Indonesia (1). Up to 7th, 2021, according to WHO (covid19.who.int), there were 265,194,191 total cumulative cases of covid-19 around the world, and there were 5,254,116 cumulative deaths, with 7,952,750,402 vaccines was administered around the world. In the end of March 2020, the case fatality rate (CFR) in Indonesia reaches 8.9%. During covid-19, to prevent the spread of covid-19, Indonesian government imply stay-at-home notification (2).

Covid-19 causes a similarity symptom with influenza virus, such as cough, fever, runny nose, sore throat, and fatigue. In some cases, covid-19 can complicate differential diagnosis (3). Since the influenza and covid-19 showed similar symptoms of respiratory disease, influenza pandemics seems to be a model of covid-19 pandemics (4). Moreover, covid-19 symptoms can cause weakness, taste disorder, and myalgia (5). The patients who present those symptoms should be promptly checked for SARS-CoV-2 infection. The diagnostic testing for covid-19 including molecular testing, serology testing, and other laboratory assessment (6). The pharmacology treatments of covid 19 including antiviral drugs, anti-inflammatory drug, low molecular weight heparins, plasma, and hyperimmune immunoglobulins (7).

Anxiety, stress, depressive symptoms, and post trauma growth (PTG) are others effect of Covid-19 pandemic (8, 9). This condition is influenced people’s health seeking behavior. A study in Lahore, Pakistan found that there was a change in people’s health seeking behavior. During the Covid-19 pandemic, trend of self-medication was increasing and the number of people who visited
hospital was decreasing (10). In Indonesia, a study in four provinces (East Java, Central Java, Riau, and South-East Celebes) also found that during the Covid-19 pandemic, people tended to do self-medication comparing to visit health center services or hospitals (11). A qualitative study in Makassar, Indonesia also found that the increasing trends of self-medication because people were afraid to visit hospital. They also thought that medicine from drug store could cure their diseases, such as influenza's symptoms (12). In Indonesia, the self-medication was used for influenza's symptoms (such as fever, headache, and cough), dizziness, signs of nausea, and many other symptoms (13, 14).

During the Covid-19 pandemic, the top three of diseases that curing by self-medication in Indonesia were fever, flu, and cough. People got the information related to the medication from family, friends, or internet (12, 15).

Nowadays, the internet is popular for source of health information. One of internet that can be used for searching of health care information is Google Trends. Since 2004, Google Trends is used to explore web behavior topics or terms. In Google Trends, users can use up to five topics or terms and the result will be displayed as a set of time series (16). Google trends has become a powerful tool to demonstrate an epidemiologic surveillance. It has believed to be reliable for surveys related to RSV around the world (17). Previous research related to covid-19 has been published using google trends (18-20). However, the use of google trends to assess the drug related terms in Indonesia is limited. Therefore, this study aimed to investigate the trends of influenza’s symptoms drug searching terms in Indonesia. We also search the positive confirmed cases during covid-19 in Indonesia.

MATERIALS AND METHODS

Google Trend Searching

Google trends was used to search influenza’s symptoms drug terms in Indonesian language between 6 December 2020 to 30 November 2021. The exploration data was showed by graphic which is indicated relative search volume (RSV). The terms related influenza’s drugs in Indonesian language were “obat flu”, “obat batuk”, “obat pilek”, “obat demam”, and “obat sakit tenggorokan”. “Obat flu” means “influenza medications”, while “obat batuk”, “obat pilek”, “obat demam”, “obat sakit tenggorokan” means “cough medications”, “runny nose medications”, “fever medications”, and “sore throat medications”, respectively. The terms were searched in comparison of those five terms/keywords, and individual search of those five terms/keywords.

Positive Covid-19 Confirmed Cases in Indonesia

To obtain the positive covid-19 confirmed cases in Indonesia, we access the Indonesian government website, covid.go.id, and WHO website, covid19.who.int. Both websites provided information related to the covid-19 cases in Indonesia, including positive covid-19 confirmed cases, recovered covid-19 cases, and mortality case of covid-19 in Indonesia.

RESULTS AND DISCUSSION

Figure 1. showed the positive confirmed cases of covid-19 in Indonesia from December 2020 to November 2021. This figure indicated there were an increasing covid-19 positive cases in Indonesia during July and August. Previous research showed the case fatality rate (CFR) of covid-19 reaches 8.9% in the end of March 2020 [2]. To minimize and prevent the covid-19 spread in Indonesia, the central government applied the regulation of social distancing project, called PSBB (Pembatasan Sosial Berskala Besar) by April 2020 [21].
Using the search terms related to influenza’s symptoms drug related, we reported trends of searching during covid-19 outbreak in Indonesia, on 6 December 2020 to 30 December 2021. The RSV of search terms “obat flu”, “obat batuk”, “obat pilek”, “obat demam”, dan “obat sakit tenggorokan” in comparison were displayed in Figure 2. This figure illustrated the increasing trend of all of the five (5) search terms during July and August. The main symptoms of covid-19 are fever, cough, fatigue, slight dyspnea, sore throat, headache, conjunctivitis, and gastrointestinal issues (22). The highest RSV were found on the term “obat batuk”. This result is in line with previous studies that cough is one common symptom in Covid-19. Cough is one of the usual symptoms found in covid-19, which can persist for weeks or months after the infection (23). Another longitudinal study in Geneva found that cough and loss of taste or smell were common symptoms in the early phase (24). A systematic review also found that cough was common symptoms of Covid-19 in 25 studies. Based on the studies in this systematic review, among 1000 people, around 655 people would get cough. From 655 people who got cough, 142 people would have Covid-19. The rest of 345 who did not get cough around 68 people would get Covid-19 (25). However, the result of current study is different from the result from Lai et al in 2020. This study found the most common symptom of covid-19 was fever, following by cough (26).

Next, to determine the individual trend of each term, we conducted the individual keyword using google trends. Figure 3 demonstrated the individual figure of each term. All of the individual figure showed the increasing trend between July and August 2021. Terms of “obat flu”, “obat batuk”, “obat pilek”, “obat demam”, and “obat sakit tenggorokan” were found to have the similar trend. The frame time of increasing individual trend search of “obat flu”, “obat batuk”, “obat pilek”, “obat demam”, and “obat sakit tenggorokan” is similar with the increasing of covid-19 positive cases in Indonesia. This condition can be related to anxiety and stress. During Covid-19 pandemic, the prevalence of mental health problems, such as stress, anxiety, and depression, among Indonesian people were increasing (27, 28). Information from the mass media could be one of the reason. A study in China found that the use of media mass was associated with negative affect, anxiety, and stress (29). In Indonesia, the use of media mass also positively associated with anxiety (30, 31). The content of information from media mass also related to people’s mental health. Stressful content was more associated with negative affect, stress, and anxiety. On the other hand, positive content, such as heroic acts and diseases prevention, was associated with positive affect and less depression (29). Between July and August 2021, more negative information, such as positive
cases and death news, were in media mass. This stressful content could lead anxiety in community.

Figure 3. Google Trends Search for Individual Term of “Obat flu”, “Obat batuk”, “Obat pilek”, “Obat demam”, and “Obat sakit tenggorokan” from 6 December 2020 to 30 November 2021. From the trend showed by combination terms or individual terms related to the influenza’s symptoms drugs, there were the similar pattern of those trends with positive covid-19 confirmed cases trends from government website. The increasing google trend search and positive covid-19 confirmed cases reached the peak on July and August 2021. In the future, google trends analysis related to the covid-19 drugs need to be investigated.

CONCLUSION

During the covid-19 outbreak peak in Indonesia, which is reported during July and August, there were increasing of google search terms related to the influenza’s symptoms drugs. The highest google search terms were observed on “Obat batuk” terms. Further research related to the correlation of positive covid-19 confirmed cases with google search terms related to the drug using statistics analysis need to be explored.

ACKNOWLEDGMENT

Thanks to Health Science Faculty, University of Muhammadiyah Malang.

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