

# The Effect of Psychological Disease Portrayals in TV Series on Internet Searches: A Google Trends-Based Analysis

## Televizyon Dizilerindeki Psikolojik Hastalık Tasvirlerinin İnternet Aramaları Üzerindeki Etkisi: Google Trends Verilerine Dayalı Bir Analiz

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### ABSTRACT

This study suggests that TV series about psychology will significantly trigger internet search interest in mental health. The study observed public interest in psychiatric disorders represented in TV series through Google Trends, a public database between 2019 and 2021. The present study explored the social impact of two TV series based on real stories and focused on psychological analysis. *Kırmızı Oda* (The Red Room, 2020-2022) exhibits the processes of psychotherapy, and *Masumlar Apartmanı* (The Innocents, 2020-2022) narrates the daily lives of individuals with psychiatric disorders. The terms searched in Google Trends, such as "paranoid personality disorder," "Cotard syndrome," "panic attack," "major depression," "obsessive-compulsive disorder," "enuresis," "disposophobia," and "borderline personality disorder," were peaked about the story of these TV series. The findings showed that TV shows spurred substantial increases in internet searches for various social problems, such as psychiatric disorders.

**Keywords:** Television Series, Internet Search Engines, Google Trends, Big Data Utilization, Psychiatric Disorders.

### ÖZ

Son yıllarda popüler televizyon dizilerinde psikolojik hastalık tasvirleri sıklıkla yer almaktadır. Medyanın akıl sağlığı ile bilgilendirici etkisi, izleyicilerin davranışları üzerinde potansiyel kültürel etkiye sahiptir. Bu çalışma, psikoloji temalı dizilerin ruh sağlığına yönelik internet arama ilgisini önemli oranda tetikleyebileceğini öne sürmektedir. Çalışmada herkese açık bir veri tabanı olan Google Trends aracılığıyla 2019-2021 yılları arasında dizilerde gösterilen psikolojik hastalıklara toplumun dijital ilgisi izlenmiştir. Çalışmanın örneklemi *Kırmızı Oda* (2020-2022) ve *Masumlar Apartmanı* (2020-2022) dizileridir. Çalışmada nicel ve tanımlayıcı bir yöntem kullanılmıştır. Analizler sonucunda "paranoid kişilik bozukluğu," "Cotard sendromu," "panik atak," "major depresyon," "obsesif kompulsif bozukluk," "enürezis," "dispozofobi" ve "borderline kişilik bozukluğu" gibi terimlerin her birinin dizilerin hikâyesiyle bağlantılı olarak bir arama zirvesine sahip olduğu gözlemlenmiştir. Bulgular, televizyon dizilerinin psikiyatrik bozukluklar gibi çeşitli sosyal sorunların internet aramalarında güçlü çıkışları teşvik edebileceğini göstermektedir.

**Anahtar Kelimeler:** Televizyon Dizileri, İnternet Arama Motoru, Google Trends, Big Data Kullanımı, Psikiyatrik Bozukluklar.



## Introduction

The representation of mental illness in written and visual narratives is not a new tendency. However, the representation of pathological characters in movies and TV series is insufficient, and pathological characters are excluded from storytelling (Calhoun & Gold, 2020: 237). In the Annenberg Inclusion Initiative's research, which analyzed 4598 films, only 1.7% of the characters in the films had mental health problems; only 7% of 1220 TV show characters had a psychiatric disorder. Depictions of the character with a psychiatric disorder are often stigmatizing or inaccurate. These characters are primarily associated with traits such as "crazy," "weird," "psycho," and "freak" (Smith et al., 2019). Otto Wahl has found that in TV dramas, video games, movies, and comics, mentally ill characters are prone to crime and violence, that there is often something "different" in their appearance, and that these features serve as visual indicators that show the characters as the "other" (1995). However, experts state that in recent years, harmful, stigmatizing and wrong portrayals in the media have been noticed, and efforts have been made to represent individuals with mental illness more humanely. For example, the main characters with bipolar disorder are Carrie Mathison from the TV series *Homeland* (2011-2020) and Pat Solitano from the movie *Silver Linings Playbook* (David O. Russell, 2012); Nobel Prize-winning economist John Nash, the protagonist of *A Beautiful Mind* (Ron Howard, 2001), can be cited as an example of schizophrenia (Fawcett, 2015). In addition, *Supernatural* (2005-2020), which is credited with accurately depicting the struggle with depression and anxiety; *BoJack Horseman* (2014-2020), which is about depression, and *Shameless* (2011-2021), which depicts bipolar disorder through the character of Ian, are among the popular dramas that show the mentioned change (Juliette V., 2017).

The portrayals in the TV series are essential indicators of what people with mental illness look like and how viewers see mental illness (Hoffner & Cohen, 2015: 1046). Research shows that the media is an effective and positive way to deal with mental health. In the research of Benjamin Greiner

et al. (2020), after watching *Jimmy Kimmel Live*, a rare disease called tetralogy of Fallot (Kimmel's son William Kimmel's character) was identified. In the study of Austin L. Johnson et al., it was found that the search interest in cleidocranial dysplasia (CCD) disease increased after the character of Dustin Henderson in *Stranger Things* (2016- ) dramas (2020). Undoubtedly, many new television programs realistically represent psychological diseases that significantly impact this condition.

Similar to the transformation in the world, it has been observed that representations of psychological illness on television have changed in Turkey in recent years. The serials, whose protagonists are pathological characters, have reached a large audience quickly. Most of the TV series are adapted from the novels of psychiatrist and author Gülseren Budayıcıoğlu, inspired by her patients. First of all, *İstanbul Gelin* (2017-2019) from the novel *Hayata Dön* (2011); From the novel *Camdaki Kız* (2019), *Doğduğun Ev Kaderindir* (2019-2021) and *Camdaki Kız* (2021-2023); *Kırmızı Oda* (2020-2022) and *Masumlar Apartmanı* (2020-2022) TV series were adapted from the book *Madalyonun İçi* (2004). The most important feature of these dramas with high ratings is that they create their stories by focusing on psychological diseases. In this way, some strong reactions can be awakened in the audience, which sees that problems in themselves or around them are correctly represented on the screen. As is known, TV series (Green & Dill, 2013) are powerful mechanisms that enable the audience to identify with the characters and experience their emotions. Thus, an adequately characterized popular TV series character can significantly affect the public's attention to mental illness.

Denis McQuail explains that all mass communication is based on the assumption that the media have significant influence (2005). According to the media effects theories, which have been discussed for more than sixty years, the messages received from the media can influence people (Klapper, 1960; Rubin, 2009). This study presents a contemporary version of the psychological effects of television on individual

behavior (Comstock et al., 1975; 1978). It focuses on the effect of behavior shown on television in the digital field. The present study aims to determine whether the psychology-themed TV series increases interest in psychological diseases. Google Trends data was used to investigate society's interest and digital trends. Today, the Internet is an essential source of information. Internet search engines provide instant access to large and varied amounts of information online for billions of people globally. This archive of search records is the largest dataset in human history and an outstanding field of study for scientific researchers in many disciplines (Jansen et al., 2009: 2). As it is known, since the beginning of the 2000s, Turkey has shown a rapid increase in internet usage. According to the We Are Social 2023 Digital Report, internet users in Turkey constitute 83.4% of the population. Google is the most popular search engine (Digital 2023 Global Overview Report, 2022). Analyzing Google search engine data is one of the most critical application areas for big data uses. With its volume and complexity, big data (Khoury & Ioannidis, 2014) may be the most practical and transparent way to identify population-level trends (Ding et al., 2020: 1). The study is planned to evaluate the effects of TV series on health information searches through web search query data. The interaction between television and the Internet is thought to be a new information provider for the public's interest. Accordingly, diseases, which are more prominent in the TV series and thought to have the potential to increase search efficiency, were chosen as keywords. Diverse commonly used terms were chosen as search keywords by using Google Trends. These terms are "Paranoid personality disorder," "Cotard syndrome," "panic attack," "major depression," "obsessive-compulsive disorder," "enuresis," "disposophobia," and "borderline personality disorder." A correlation was observed between the interest in search terms and the diseases shown in TV series. The findings have proven that Google Trends data is a valuable resource for understanding what drives the public's attention online. Moreover, it is argued that television serials are a significant predictor of the increase in interest in psychological diseases.

## Literature Review

One of the ways society can obtain information about mental illnesses is through newspapers, television programs and films. In a 1991 survey, the Robert Wood Johnson Foundation and the Daniel Yankelovich Survey Organization asked 1,300 adults in the United States where they got their information on mental illness. The sources most cited by the respondents are mass media such as television (news programs broadcast on TV, etc.). The research reported that society received its information about mental health from the mass media (Wahl, 1995). Similarly, Fawcett has found that mass media is one of the main sources of information about disorders such as bipolar, schizophrenia, and depression (Fawcett, 2015).

Although awareness of this issue has increased today, previous research reveals that media portrayals of mental illness are inaccurate and negative (Gerbner, 1980; Berlin & Malin, 1991). Mentally ill characters are often portrayed as aggressive and dangerous on film and television. Psychiatrists, psychologists, and other mental health professionals who treat these patients are often insolent, distant, cold, callous, authoritarian, passive, indifferent, and manipulative (Wedding & Niemiec, 2003). Characters with antisocial personality disorder are portrayed as violent and dangerous. *No Country for Old Men* (Ethan Coen, Joel Coen, 2007), *Monster* (Patty Jenkins, 2003), *Psycho* (Gus Van Sant, 1998), *The Talented Mr. Ripley* (Anthony Minghella, 1999), *Training Day* (Antoine Fuqua, 2001), *Natural Born Killers* (Oliver Stone, 1994), *A Clockwork Orange* (Stanley Kubrick, 1971) and *American Psycho* (Mary Harron, 2000) and *Law and Order* (1990-2010), *Criminal Minds* (2005-2020), *CSI: Crime Scene Investigation* (2000-2015), *Dexter* (2006-2013), and *Bosch* (2014-2021) present characters about crime. However, according to official health institutions, the tendency of mentally ill people to resort to violence is not greater than that of ordinary people, and the probability of being a victim of violent crimes is ten times greater than that of ordinary individuals (Heath, 2019). This information once again establishes that the widespread portrayals in the media are unrealistic.

Stephen Hinshaw argues that the negative stereotypes engendered by such depictions serve to distance “them” from the rest of “us” (Fawcett, 2015). Thus, constructing a mentally challenged character as a blocker makes it bear little resemblance to real-life people. Alternatively, presenting a mentally ill character as a comedy element distracts the audience from realism (Johnson, 2012). Therefore, depictions of psychological illness in cinema and television narratives are significant.

It should be noted that cinema and television affect perception the most among the mass media. It is an essential intersection that laboratory psychology and clinical psychoanalysis emerged almost at the same time -at the end of the 19th century- as motion pictures. Cinematic narratives interact with the discipline of psychology (Young, 2012). Aleksandar Damjanović et al. underlined that no other art form other than cinema could capture the audience, attract attention, and influence human consciousness and experience. Moreover, this rule applies to audiences of all ages, genders, nationalities, and cultures. In this respect, movies are critical in influencing viewers' perception of social problems such as psychological disorders (2009). According to Steven E. Hyler (1988), there are three dominant themes related to the etiology of mental illness in films. The first and most important of these is the assumption of a traumatic etiology. It is claimed that a traumatic event that occurs mainly in childhood can profoundly predict the psychological illness that occurs in adulthood in films dominated by this theme. When today's narratives are evaluated with Hyler's determination, it is frequently observed that the story is strengthened through flashbacks in film and TV series narratives and that childhood is functionalized as a larval period for the past.

Studies on media effects first emerged under the umbrella of “mass communication theories.” In the late 1950s, with the work of Elihu Katz and Paul F. Lazarsfeld (1955), studies that first emerged in the 1920s and 1930s became a major center. Based on

these studies, studies investigating the cognitive, emotional, attitudinal, and behavioral effects of the media increased in the 1980s (Valkenburg, Peter & Walther, 2016: 315). Joseph T. Klapper (1960) argued that media messages could influence people. George Gerbner (1982) explained how people's surrogate experience with television affects their beliefs, attitudes, and thoughts in the long run with his “Cultivation theory.” George Comstock and Georg Lindsey (1975) place a common framework on the effects of watching television on behavior, concentrating mainly on the impact of dramatic narratives. Comstock's psychological model treats television viewing as a “functional alternative” and explores situations where TV teaches and encourages behavior. He discovers that the possibility of performing a behavior seen on television depends on the salience of the action and its psychological significance (Mcquail & Windahl, 2013: 67). With the development of media and communication technologies, the object of study has also changed.

In studies on the effects of television, melodramas come to the fore. Linda Williams (1998: 51-52) says that the pathos and action contained in melodrama attract the audience's attention more and have the power to manipulate the audience. According to Christine Gledhill, melodramas are a kind of “sensitivity” mode (1987: 5). Also, dramas serve as powerful mechanisms that increase the empathic experience of the audience with the fictional character (Green & Dill, 2013). Based on these theorists, it can be thought that TV series with emotional content are more successful in persuading the audience empathetically.

Films and dramas are based on the audience's ability to experience what they watch by transporting themselves to the world of the actors (Jamieson & Romer, 2014: 33). This is related to the adaptability of our brain to the states of perception and response. Our brain cannot distinguish between a person in the media (Siri apps on a smartphone, etc.) and a natural person. The critical point here is that we think of the

characters and stories to which we respond with emotional realism as if they were real. Only after a certain age does our awareness of consciously distinguishing between fact and fiction increase (Dill, 2009). For example, identification affects implicit or unconscious attitudes. It has been observed that the audience, who is identified with a smoking character in a movie, associates himself with cigarettes and that the smoking intentions of smokers in particular increase (Dal Cin et al., 2007). Similarly, it was found that celebrity suicides (Robin Williams, Chester Bennington, and Alexander McQueen), which are heavily covered in the media, increase the risk of suicidal behavior and that terms related to suicide change internet search volumes (Ortiz et al., 2019: 379). In another study on suicidal behavior presented in the media, the hypothesis that identifying the character might increase imitative behavior was indirectly supported (Niederkrötenenthaler et al., 2009).

The effect of written as well as visual narratives on individuals' mental state and changing their thoughts and attitudes has a long history before contemporary media. The phenomenon known as the Werther Effect is based on Goethe's novel *The Sorrows of Young Werther* (1774) (Jack, 2014). The novel tells of the anguish of a young artist named Werther who is caught in a love triangle and has to choose between two options. Werther has to kill his opponent or himself. Werther eventually chooses the second option, tragically shooting himself. A fictional character, Werther quickly became a cultural phenomenon among the public. Driven by Werther's attitudes and character, suicides spread like a contagious disease (Scalvini, 2020). The concept of the Papageno Effect, as the opposite of Werther's phenomenon, was inspired by a character in Mozart's *The Magic Flute*. This phenomenon has the effect of preventing suicide by modeling coping with difficulties. Both concepts allow us to recognize the media power and understand how people's suicides can affect the community. Moreover, it proves how the media can reduce the number of suicides by encouraging empathy (Keen, 2006). Today, essential studies show that the media plays a vital role in shaping

public attitudes, beliefs, and behaviors on health issues, including suicide (Anastasio et al., 1999).

The media can serve as a powerful tool in raising awareness about mental health and psychiatric diseases (Calhoun & Gold, 2020: 240). Existing studies show that it is essential and feasible to achieve the desired media influence on health-related issues (Lebo et al., 2015). Health messages embedded in television shows, soap operas, and cartoons are known to encourage various behaviors, especially in developing countries. In a study conducted in the USA, it was found that the media increased awareness of subjects such as drunk driving and cancer screening (Green & Dill, 2013: 449). It has also been proven that the media can encourage society to seek help and change cultural beliefs about mental illness (Smith et al., 2019). Case studies in which the health statements of celebrities are widely published support this idea. Katie Couric's colon cancer awareness campaign was instrumental in changing attitudes towards the disease (Cram et al., 2003: 1601). Beck et al. (2014), in their research on celebrities, found that celebrity statements helped increase public knowledge about the disease and encouraged those with the same illness to seek help. Wong et al., who analyzed attitudes towards bipolar disorder after Demi Lovato announced her illness, found that people who were more attached to celebrities had fewer negative judgments about those with bipolar disorder. The studies above show that stigma would decrease significantly if the community knew someone with a mental illness. He also emphasizes that by explaining the illness of famous people, members of society will explain themselves more efficiently, and thus, it will have a positive effect on the normalization of mental health in society (2017: 16-17). People who admire famous people may think, "If they get help, I can get help," or they may not feel alone because they are going through the same processes (Calhoun & Gold, 2020: 238). In other words, sharing illness narratives by stigmatized individuals can help to lessen stigma and stereotypes as well as stop the formation of unfavorable opinions. Therefore, they could be used as an educational strategy in

terms of public health (Wong et al., 2017: 16-17). For example, *Taxi Driver* (1976), which tells the story of Travis, who has a personality disorder, is still frequently used by experts and universities in cinema to provide information on topics such as mental illness and the nature of paranoid thinking, even more than 30 years later.

The features above of the media allow it to act as a catalyst for correcting misperceptions in society and accurately portraying rare disorders. For this purpose, it is known that screenwriters and producers have developed guidelines for the correct portrayal of characters with mental health problems (Johnson et al., 2020: 328). In that case, the following suggestions can be made regarding the media mental-health relationship: Although the media is harmful and stigmatizing, the information it spreads can be preventive if planned correctly. Social benefit can be achieved by producing positive, inclusive, and realistic images of mental illness. In particular, psychiatrists may partner with the media and celebrities to raise public awareness of mental health and encourage individuals to open up. Thus, mental health diagnoses and treatment are normalized, and experts in the field can take realistic steps towards patients (such as signs and symptoms) (Calhoun & Gold, 2020: 240).

### Google Trends Data

Launched in 2006, Google Trends is an anonymous information provider that displays interest in a particular topic from around the world or a geographic area at temporal intervals based on search statistics from Google (About Google Trends Data, 2021). The query index here is based on search terms. The total query volume for the search term in a given geographic region is obtained by dividing the total number of queries in that region during the specified period. In this time interval, the highest query share was normalized as 100, and the query share on the first date was normalized to 0 (Choi & Varian, 2012: 3).

Through the widespread use of smartphones and increasing internet accessibility, obtaining

information by searching the internet is common today. The ubiquity of internet use has made high curiosity about internet data inevitable. Several studies explore the link between Internet use and emotional well-being. Users who want to satisfy their curiosity and meet their information needs trust Google (Banerjee, 2018). With real-time data, ease of internet access, and Google's dominance in online search engines, Google Trends is positioned as an unmatched big data source for evaluating social trends (Mavragani & Ochoa, 2019). Knowing how the level of interest in the topics determined using Google search volume changes over time helps support the possibilities of communication (Nghiem et al., 2016: 1). Google Trends is the primary tool that shows the possibilities and limits of big data usage. Moreover, trends in research using Google Trends are an essential source of information for developing big data use and applications (Jun et al., 2018: 85). The first reason Google Trends has become such a popular resource for big data research is that the Google search engine is a convenient platform for observing information search activities. In this way, the user's needs, wishes, and interests can be observed instantly. Second, Google Trends is easy to use and access (Jun et al., 2014). On the other hand, Google's service in local languages has made it the first source to search for information, enabling it to be a measurable tool for assessing interest. The fact that Google is a free tool and that Google Trends provides real-time and archived evaluation is one of the essential advantages (Kaleem et al., 2019: 2).

Many studies to date have shown that Google Trends can be accepted as a reliable data source for examining human behaviors and interests (Wang et al., 2021: 2). As the use of the Google search engine increased, empirical studies using this data increased (Jun et al., 2018: 71). Google Trends uses new publicly available data and uses the power of many independent variables to be considered a relatively new statistical technique (Parker et al., 2016: 4). However, Google Trends data has some limitations. One of them is that younger users are more likely to use Google Search than older users,

as the frequency of internet use changes with age (Brodeur et al., 2020: 3). Because Google Trends does not provide data on which population was sampled, the problems above may hinder making more precise predictions, but Google Statistics offers several tools to overcome missing data (Jurić, 2021).

The research published in Nature in 2009 by Jeremy Ginsberg et al. brought about Google Trends in the scientific field. This study showed that Google Trends predicted the spread of influenza earlier than the US Centers for Disease Control and Prevention (2009). Google Trends has become widely used in a short time as a popular data provider in scientific research. In 2018, Seung-Pyo Jun et al. investigated the effects of Google Trends on 657 research papers using Google Trends. In this study, it has been revealed that Google Trends is used in various disciplines, including informatics, communication, medicine, health, business, and economics. Another critical piece of data the study obtained is that research using Google Trends has increased significantly over the past decade, focusing on predicting changes. While the first studies on Google Trends only identified, monitored, and diagnosed research trends, predictive analytics came to the fore over time (Jun et al., 2018: 69). For example, Google Trends monitors the spread of infectious diseases and flu outbreaks (Polgreen et al., 2008; Ginsberg et al., 2009; Kang et al., 2013), while newer models are used to predict future infections (Prasanth et al., 2020: 1). Alternatively, it can be used as an early indicator of current economic trends by including predicting unemployment statistics (Varian & Choi, 2009; Askitas & Zimmermann, 2009; Choi & Varian, 2012) for car and home sales. For example, it can show the impact of the economic crisis, which took effect worldwide in 2008, on some critical social events such as depression and suicide (De Vogli et al., 2013; Economou et al., 2013). Studies have also shown that Internet search data has been associated with mental health problems such as depression (Yang et al., 2010), addiction (Moreno et al., 2012), drug use (Yin & Ho, 2012), and non-suicidal self-harm (Bragazzi, 2013). There are many studies

on mental health, especially suicide prevention. A growing body of research has supported an association between specific terms related to suicide, the number of suicides, and Google Trends (Arendt & Scherr, 2017; 2015; Gunn & Lester, 2013; Ma-Kellams et al., 2016; Yang et al., 2011). Millions of internet users tend to Google to understand their health, describe their symptoms, and self-diagnose their illness (Eysenbach, 2011; Ricketts & Silva, 2017). Many online health information searches leave digital footprints with great accuracy. Knowing these temporal changes is an essential public health advantage (Abedi et al., 2015).

Google Trends may also reveal the influence of other media tools. One of them is television. The development of digital media especially encouraged television, which is an indispensable part of daily life, together with the internet. The previously passive viewers are transformed into active participants, and participation in television programs from various digital channels occurs. As Ramon Lobato stated, television content now circulates over the same infrastructure as other digital media tools (2019). Viewers watch television by interacting with social media. Considering the media's effect on mental health, it seems quite plausible that the interest in media portrayals of mental health is also observed in internet searches. Therefore, it can be expected that television content will lead to a large number of online searches. Based on these approaches, in the next part of the study, how television has changed the search interests related to psychological diseases will be discussed through examples.

### **Methodology**

In recent years, there has been a tremendous public interest in Turkish television serials whose protagonists are pathological characters in recent years. Aiming to follow up on this effect, the study will focus on the potential digital impact of representing psychological disorders in the media. How exposure to media images affects viewer behavior is a longstanding question. Based on Comstock's theory mentioned in the literature review, this study will explore how TV

series influence and trigger viewers' behavior as a social impact model. The study was designed as an updated version of the theory based on data mining. Using Google Trends data, the weekly disease theme of TV series was compared with internet searches. The study is essential in proving the role of the media in developing public interest through the production of content about psychological diseases. The present study tested the following hypotheses:

RQ1: Is there a difference in the number of searches related to psychological diseases in Turkey compared to previous weeks?

RQ2: Are the theme of illness in TV series and the search for psychological illnesses temporally related?

The literature demonstrating how closely the media affects the degree of interest in and awareness of diseases influenced the research design of the current study. How popular television narratives can trigger internet search interest in mental illnesses is tested through Google Trends (Google Trends, 2021). Retrieval of disease-related search information from Google Trends, a public website, is related, as Gunther Eysenbach points out, because this significant data source enables large population-based conclusions to be drawn from units of information rather than at the individual level (2011). Because it is unlikely that mass internet search behavior is deliberately manipulated by a only user, meaningful and realistic information about human behavior or disease patterns can be accessed through Google Trends (Yang et al., 2010: 5).

The broadcast date of the selected TV series is September 2020, and the season finale date is June 2021. The present study reviewed the online search interest of the Turkish population through the keywords created by the disease themes in the TV series from September 2019 (for two

years), owing to the advantage of Google Trends to access retrospective data. The reason for the retrospective analysis of the keywords is that a one-year follow-up does not detect varying relevance between years. The study is not a product of cross-country comparison, and it only includes Turkey and Turkish keywords. The selection criteria for the search terms are the psychological disorders of the main characters of the TV series presented on the screen. From two TV series, a total of eight diseases, four from each, were chosen as keywords. The diseases chosen as keywords are "paranoid personality disorder," "Cotard syndrome," "panic attack," "major depression," "obsessive-compulsive disorder," "enuresis," "dispozophobia," and "borderline personality disorder." One thing to note about search terms is that since searchers are not directly interviewed in questions and answers, a disease seeker may apply to Google for various reasons. For example, a person searching for "obsessive-compulsive disorder" does not need to have the disease symptoms, or there is no information that has the disease. The focus of the study is to establish a relationship based on temporal data on how the representations of illness in the TV series affect the internet searching behavior of the audience. According to the hypothesis of this study, the peaks in searches are associated with characters diagnosed with the disease in the sequences. The entire study was conducted on August 18, 2021. In addition, Google's terms of service regarding the use of data and privacy rules have been complied with (About Google Trends Data, 2021).

SPSS Version 22.0 (Chicago, IL; SPSS Inc.) software was used for statistical analysis. Descriptive statistics were made for average search volumes. The weekly search volumes before and after the TV series were examined, and the relationship between them was compared. In the months following the TV series release, changes in internet interest in psychological diseases were tested using regression analysis.



## Materials

The universe of the study is a TV series with the theme of psychological illness. The present study, TV series *Kırmızı Oda* and *Masumlar Apartmanı*, were chosen as application materials in the context of the purpose of the research. In the sample selection, it was taken into account that TV series created their stories with a focus of psychological diseases and that they dealt with the diseases and their causes. *Kırmızı Oda* built its story through psychotherapy processes. The behavior of the characters in *The Innocent Apartment* is based on psychological disorders.

The analysis unit of study consists of the sections in which character and the disease come to the fore and thus arouse the most interest in the public. These are the sections where the diseases selected as keywords are learned about or highlighted first. Mehmet, one of the patients who applied to the clinic, has paranoid personality disorder; Boncuk has Cotard syndrome; Sadi has panic attacks; Meliha and Vahit have major depression; Selvi has agoraphobia; and Akif has disposophobia disorders. Safiye, one of the characters in *Masumlar Apartmanı*, has obsessive-compulsive disorder and is depressed. Safiye's sister Gülben wets the bed at night (enuresis) and has an obsessive-compulsive disorder like her older sister. Han, who grew up without love in a boarding school, has an obsessive-compulsive disorder, or disozophobia a disease. At night, everyone collects garbage after everybody goes to sleep. The youngest sibling, Neriman, also has a skin-picking disorder.

## Findings

In the Google Trends data analysis section, *Kırmızı Oda* and *Masumlar Apartmanı* started in September 2020 and made the season finale in June 2021. In this direction, searches in the previous year of the start year were included, and data between 2019 and 2021 August were analyzed by comparing analyses. Figure 1 shows *Kırmızı Oda*, and Figure 2 shows the four search terms selected from the psychiatric disorders in *Masumlar Apartmanı* TV series.

**Figure 1**

Trends in the Google search engine on psychiatric disorders portrayed in *Kırmızı Oda* (2019-2021)

A: Paranoid Personality Disorder; B: Cotard Syndrome; C: Panic Attack; D: Major Depression

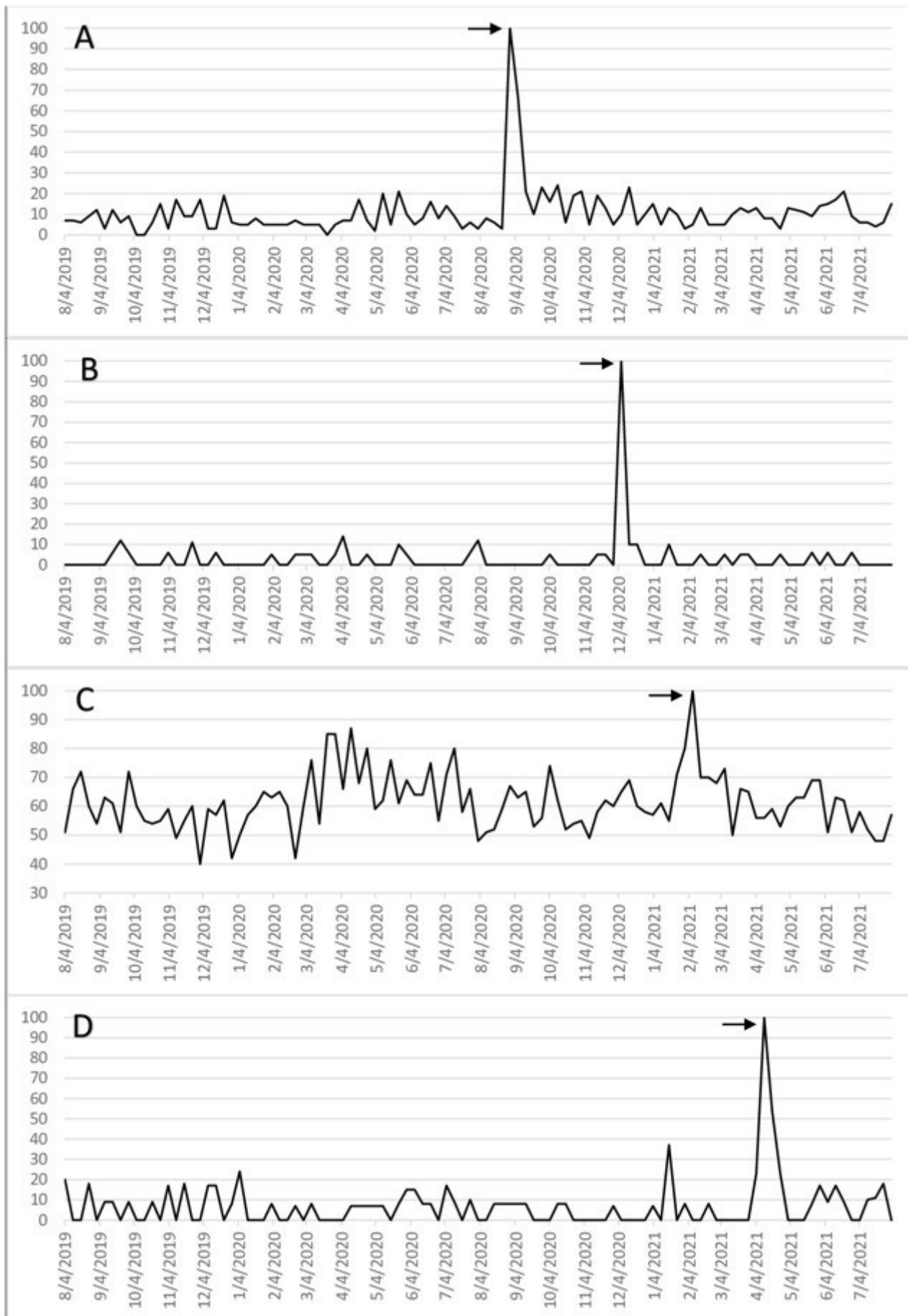


Figure 1. A. shows the two-year search volume of the term “paranoid personality disorder” in the Google search engine. The average search volume for the keyword paranoid personality disorder is 10.7 (0-100). The highest search volume for this keyword was 20 before the TV series started, while the highest search volume was 100 in the period after the TV series started. *Kırmızı Oda* released on September 4, 2020. The first episode of it is about the story of Mehmet, who comes to the psychiatry clinic. Mehmet has a paranoid personality disorder. When the first episode of *Kırmızı Oda* was broadcast (September 6, 2020), a 10-fold jump was seen.

Figure 1. B. displays the two-year search volume of the term “Cotard syndrome” in the Google search engine. The average search volume for the Cotard syndrome search term is 3 (0-100). In the 14th episode of *Kırmızı Oda* (December 4, 2020), Boncuk character, included in the story, has Cotard syndrome. The peak in the figure indicates the part where the disease of the Boncuk begins to be understood (6.12.2020). For the search term Cotard, the highest search volume was 14 before *Kırmızı Oda* started, while the highest search volume was 100 after the TV series started. With the Boncuk, the expected search interest has increased approximately 33 times.

Figure 1. C. shows the search volume for the term “panic attack” in the Google search engine. The average search volume for the panic attack search term is 61.5 (40-100) over two years. For the panic attack search term, the highest search volume before the start of *Kırmızı Oda* is 88, and the highest search volume after it is 100. Sadi, who has a panic attack, appeared in the TV series 22nd episode (January 29, 2021). In the episode aired on February 5, 2021, he had a panic attack and described his panic attacks during therapy. In the period dated January 31, 2021, the search volume increased to 84. In the week after this date, it is seen that the search volume was 100 (February 7, 2021). It has been observed that there has been a significant increase in the search volume for the

Sadi character. On the other hand, the peaks in the range of March-May 2020 coincide with a period when Turkey is in quarantine due to COVID-19. In this period, when there is not enough information about the COVID-19 disease yet, there is a dissemination of information that the Coronavirus increases the panic attack crisis and is confused with the panic attack crisis (Acar Gündüz, 2020).

Figure 1. D. displays two years of search results for the term “major depression” on the Google search engine. The average search volume for the search term major depression is 10 (0-100). For the major depression search term, the highest search volume was 27 before *Kırmızı Oda* started, while the highest was 100 after it started. In the 32nd episode (April 9, 2021), the character Vahit appeared in TV the series and the psychiatrist diagnosed Vahit with depression, which brought the search volume to its peak about ten times (April 11, 2021).

**Figure 2**

Trends in the Google search engine on psychiatric disorders portrayed in Masumlar Apartmanı (2019-2021)  
 A: Obsessive-Compulsive Disorder; B: Enuresis; C: Disposophobia; D: Borderline Personality Disorder

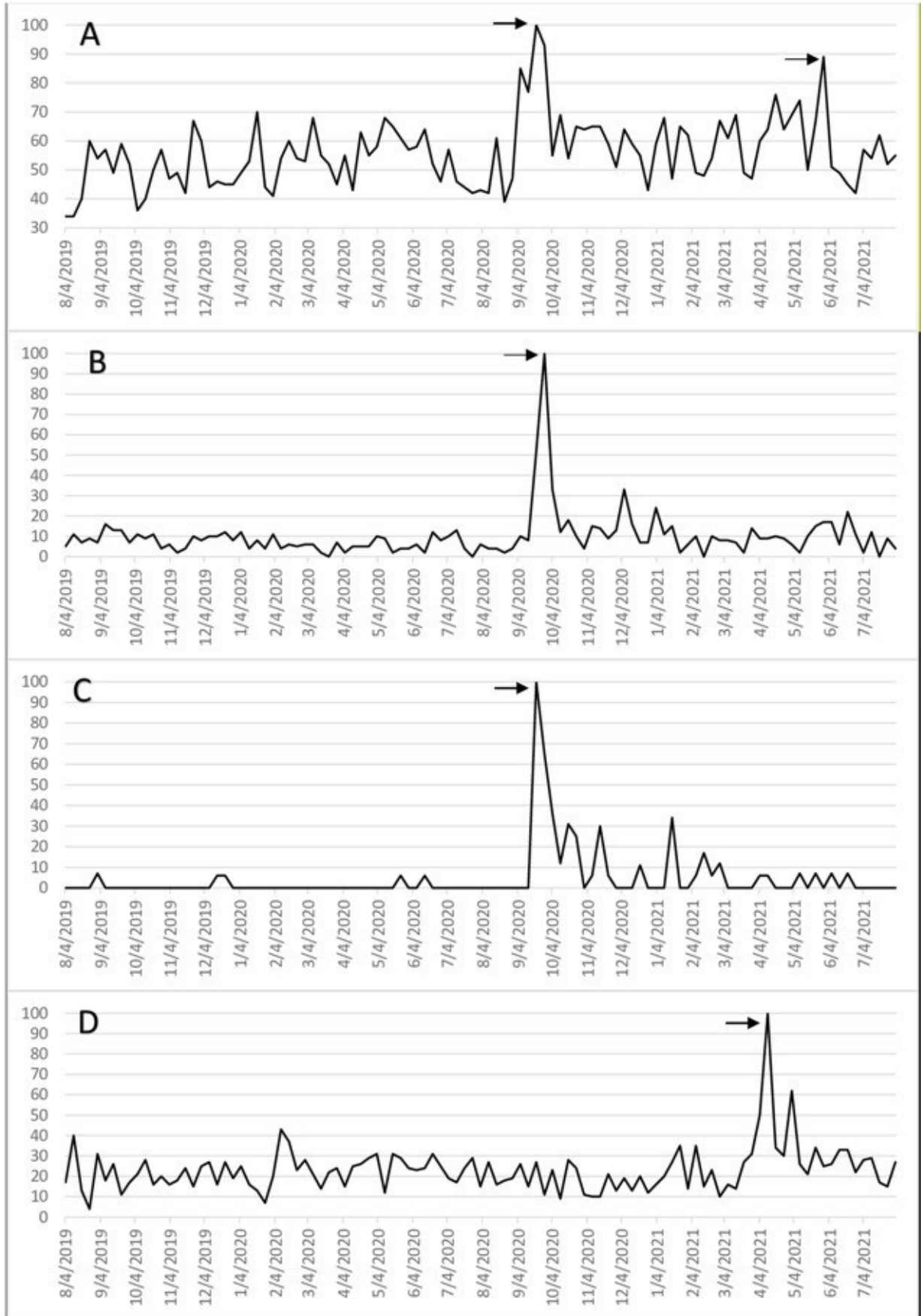


Figure 2. A. displays two years of search results for “obsessive-compulsive disorder” in the Google search engine. *Masumlar Apartmanı* was released on September 15, 2020. Before the TV series started, the average search volume for the OCD search term was 59 (27-100), and the peak search volume was 79. After *Masumlar Apartmanı* started, the highest search volume was 100 (20.09.2020). The figure shows that the volume of OCD queries has increased significantly compared to the expected search interest volume after September 2020. The fact that the main characters of *Masumlar Apartmanı* have OCD and that their illnesses are frequently highlighted in the story can be shown as primary triggers for the search interest.

Figure 2. B. shows the search results for the keyword “enuresis” in the Google search engine. The average search volume for enuresis was 10 (0-100) over the two-year timeframe. While the highest search volume for the search term enuresis was 16 before *Masumlar Apartmanı* started, it increased to 100 after the TV series started (September 27, 2020). The top point corresponds to the section where Gülben is wetting the bed and collecting dirty sheets. With the appearance of this disorder in the TV series, the search volume increased tenfold.

Figure 2. C. displays the search results for “disposophobia” in the Google search engine. The average search volume for the search term disposophobia over the two-year timeframe was 4.5 (0-100). While the highest search volume for the search term disposophobia was seven before *Masumlar Apartmanı* started, it increased to 100 in the period after the TV series started (September 20, 2020). There has been a more than 20-fold increase in search volume. In the first episode (September 15, 2020), they see the apartment where Safiye and Gülben sisters collect garbage on the top floor of their house, and Han’s garbage collection at night triggers the search interest. The second peak can be associated with the character Akif, who has disposophobia in *Kırmızı Oda*. A correlation is observed with the episodes broadcast on October 9, 2020, and October 16,

2020, in which Akif is a guest.

Figure 2. D. shows the search results for “borderline personality disorder” in the Google search engine. The average search volume for the borderline search term over a two-year period is 23.2 (4-100). While the highest search volume for the borderline personality disorder search term was 40 before the TV series started, the highest search volume was 100 after it started (April 11, 2021). The search query shows a jump of more than four times. The peak of the search coincides with the episode where Han went to a psychiatrist, which was broadcast on April 13, 2021. During therapy, Han encounters Anıl, who applied to the clinic like himself. Han sees the borderline personality disorder note that the doctor wrote about Anıl and thinks this is his diagnosis. The second-highest search volume is 62, and it started on May 2, 2021. This peak may be related to the fact that Anıl, who has a real borderline personality disorder, comes to the fore in the story.

## Conclusion

The present study analyzes the tendency of popular TV series (*Kırmızı Oda* and *Masumlar Apartmanı*) to predict public interest through Google search engine data, which is one of the pioneers of big data applications. The results show that the themes of psychological illness in TV series trigger internet search interest. Findings significantly supported the theories that television viewing directly impacted behavior and that TV drama predicted Internet searches. Investigating media influences in the technology-driven multimedia environments of the 21st century also clarifies the changing nature of forms of communication. It was observed that disease-seeking rates increased significantly during the weeks when certain psychological disorders were prominent in the story. The study confirmed that there might be temporal correlations between illness themes in TV series and search interest in psychological illness with weekly data. This relationship supports the view that the media can influence societal attitudes, awareness, and attention to diverse social and individual issues.

This study compared the publication date of the TV series with mostly pathological characters to the previous year and supported the hypothesis that the number of searches for psychological disorders in Turkey increased compared to the previous year. Moreover, this evidence may indicate that TV series can lead to information-seeking behavior and improve dialogue. In light of the information in the literature, it can be interpreted that the media is an important ally that can increase knowledge and interest in the critical public health issues that constitute the keywords of this study. Nowadays, audiences are active and can instantly access more information about the dramas or movies they watch by searching for information on the internet. As Dan Zigmond and Horst Stipp have stated, many viewers today are the protagonists of the multimedia medium, owing to their internet connection. So much so that individuals can use television, a computer, a tablet, or a smartphone simultaneously (2010: 167). The data also show that the simultaneous use of different media tools increases the effect of television on information-seeking behavior.

According to Stacy L. Smith et al., the media uniquely depicts the impact of mental health on the daily lives of individuals and, in this way, can bring new ways of thinking to the audience. It can teach people with mental illness ways to seek help and ultimately correct common misconceptions in our cultural beliefs about mental health (2019). Because it is possible to read the increase in internet searches as an indicator of interest in seeking solutions to diseases and an indicator of social improvement, the times when search interest decreased can be evaluated in line with the opinions of Jun et al., who examined the change in Google searches over the years. According to Jun et al., information-seeking activities can also change with changes in consumers knowledge. The correlation is valid only up to a point, as the user who thinks they have accessed enough information does not need to search further. Therefore, it is expected to observe a decrease in call rates after a certain point (2018: 70). This is why the search rates are low some weeks, even though

the audience watches the character with the disease every week. At the same time, depending on the development of the story, it can be said that the first learning of or exacerbation of the characters's illness in some weeks is also effective in the search activities.

The present study guides future research examining the contribution of media portrayals of mental illness to public awareness. The study revealed an innovative and valuable mechanism for assessing how TV series affect viewers and gaining new insights into media behavior. Moreover, evaluating a mass media phenomenon such as television with relatively new big data technology opens the door for new interdisciplinary discoveries in the scientific field. On the other hand, there are some limitations to the study. First of all, as Eysenbach (2011) points out, the real purpose of search queries related to psychological diseases is not clear. Search queries may not reflect the true mood of the user. So much so that the individual performing the search action or his/her relative may have experienced these symptoms (Yang et al., 2010). Another possibility is that the audience may have wondered about character's mental disorder they see on television. In this case, the purpose of the search is unclear, and Google Trends data may reflect irrational trends (Jun et al., 2018). Second, the study fails to measure the persistence of interest in mental illness. Although Google is the most common search engine in Turkey (Digital 2021 Global Overview Report, 2021), it is not the only one. It is therefore questionable whether Google Trends accurately represents public interest. As a solution to this shortcoming, collecting big data from more diverse sources can be suggested. Also, the fact that Google is a commercial algorithm causes commercial sensitivities, and complete transparency is questionable in this case. Despite all these limitations, the study contributes to understanding how the media impacts the level of interest in psychological diseases among the public. Finally, this study exemplifies how internet search terms can be used as a big data tool to conduct further research to assess television community relevance.

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