

# EVALUATING THE RELIABILITY AND ACCURACY OF SOCIAL MEDIA AS A SOURCE OF HEALTH INFORMATION: A CASE STUDY OF HYPERTENSION RELATED VIDEOS ON YOUTUBE

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## Abstract

Information about health problems and diseases given in the media has a crucial impact on preserving public health. The emerging developments in communication technologies as Web 2.0 have let many of different contents to show up on Internet and social media platforms right alongside the conventional media. However, information sharing on the causal claims and solutions of health issues by persons of no medical expertise may cause misinformation of individuals and harm their health. Individuals searching for solutions to their health problems most probably come across the content provided by YouTube. This study center upon YouTube videos that comprise content about health problems. The main purpose of this study is to investigate how many of the videos related to health issues on YouTube include content with scientific basis. Consequently, this study focuses on how Hypertension/High Blood Pressure problems are shown in the content of YouTube videos. Hypertension/High Blood Pressure is the most frequently encountered health problem in Turkey due to the “2018 Statistics of Diseases/Health Problems Declared by Individuals” of Turkish Statistical Institute with a ratio of %15,8. In this context, the set of research questions o the study is designed as: (1) Which typification (causal claims and solutions) have been made in videos on YouTube regarding the Hypertension/High Blood Pressure issue? (2) How do the causal claims and solutions differ between video types with and without scientific basis? (3) How does the qualifications (title, profession, etc.) of health experts vary between different types of videos? The study uses content analysis method to investigate the research questions.

**Key Words:** consumer health information, public health, social media, information dissemination.

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# **SOSYAL MEDYANIN SAĞLIK BİLGİSİ KAYNAĞI OLARAK GÜVENİLİRLİK VE DOĞRULUK DEĞERLENDİRMESİ: YOUTUBE'DAKI HIPERTANSİYONLA İLGİLİ VİDEOLAR ÜZERİNE BİR VAKA ÇALIŞMASI**

## **Özet**

Medyada sağlık sorunları ile ilgili verilen enformasyon halksağlığını korumada büyük önem taşımaktadır. Wen 2.0 teknolojileri sonrasında ortaya çıkan gelişmeler konvansiyonel medyanın yanı sıra sosyal media ve internet platformlarında pek çok farklı içeriğin ortaya çıkmasını sağlamıştır. Bununla birlikte, hastalıkların ve sağlık sorunlarının nedenleri ve sonuçları hakkında tıbbi uzmanlığı olmayan kişilerce verilen yanlış enformasyon bireylerin sağlığının bozulmasını da sağlayabilmektedir. Sağlık sorunları için İnternet üzerinde çözüm arayan bireylerin büyük bir kısmı YouTube'da bulunan içeriklerle karşı karşıya gelmektedir. Bu bağlamda, bu çalışma YouTube'da sağlık sorunları ile ilgili içerikler üzerine odaklanmaktadır. Çalışmanın esas amacı, YouTube'da paylaşılan sağlıkla ilgili içeriklerin bilimsel bir dayanağı olup olmadığını sorgulamaktır. Bu doğrultuda, bu çalışma YouTube videolarında Hipertansiyon/Yüksek Tansiyon'la ilgili içeriklerde ne gibi problemlerle karşılaşıldığını araştırmaktadır. TÜİK'in hekim tarafından teşhis edilen hastalık/sağlık sorunlarının cinsiyet ve yerleşim yerine göre dağılımı 2018 istatistiklerine göre bireylerde Hipertansiyon/Yüksek Tansiyon Türkiye'de en sık görülen hastalıktır (%15,8). Bu çerçevede, çalışmanın araştırma sorusu seti şu şekilde tasarlanmıştır: (1) Hipertansiyon/Yüksek Tansiyon konusuna ilişkin YouTube'daki videolarda hangi tiplendirmeler (nedensel iddialar ve çözümler) yapılmıştır? (2) Nedensel iddialar ve çözümler, bilimsel dayanağı olan ve olmayan video türleri arasında nasıl farklılık gösteriyor? (3) Sağlık uzmanlarının nitelikleri (unvan, meslek vb.) farklı video türleri arasında nasıl farklılık gösteriyor? Araştırmada nitel araştırma yöntemlerinden içerik analizi kullanılarak sorulara cevap aranmıştır. YouTube'da bulunan sağlıkla ilgili içeriklerin büyük bir bölümünün konu ile ilgili tıbbi uzmanlığı bulunmayan kişiler tarafından üretildiği sonucuna ulaşılmıştır.

## **I. INTRODUCTION**

Developments Hypertension (HTN) or high blood pressure is a chronic medical condition in which the blood pressure in the arteries is elevated. HTN is a worldwide public health problem that affects nearly one billion people. The

2010 Global Burden of Disease Study identified HTN as the leading cause of death and disability adjusted life years (DALYs) worldwide (Kumar, Pandey, Venkatraman, & Garg, 2014). Untreated or uncontrolled HTN is health endangering because the illness may end with the death of the individual. Globally cardiovascular disease accounts for approximately 17 million deaths a year, nearly one third of the total. Of these, complications of hypertension account for 9.4 million deaths worldwide every year (WHO, 2013).

In the 2013 global brief of Hypertension report of World Health Organization (WHO, 2003), it is stated that HTN is already a highly prevalent cardiovascular risk factor worldwide because of increasing longevity and prevalence of contributing factors such as obesity (WHO, 2013). Not only is HTN more prevalent in low- and middle-income countries, there are also more people affected because more people live in those countries than in high-income countries (WHO, 2013). HTN has a share of 4.5% on total disease burden in developed and developing countries today. Hypertensive patients rate in US is 24% and %37 in Turkey. The 53% of patients continues medication and only the 27% of the patients' HTN could be controlled through compliance with medication (Öksüz, 2004).

HTN is the most frequently encountered health problem in Turkey due to the "2018 Statistics of Diseases/Health Problems Declared by Individuals" of Turkish Statistical Institute with a ratio of %16. This means that every 1 of 6 individuals over 15 years of age in Turkey has a Hypertension/High Blood Pressure problem (TÜİK, 2018). Having said that, medication for controlling HTN is crucial for individuals' health research on hypertensive patients showed that besides medication 63.9% of the patients in Turkey tend to choose supportive treatments when their blood pressure elevates (Efe, Akça, & others, 2012). These supportive treatments include yoga, Thai Chi, Qigong, acupuncture, aromatherapy, herbal and nutritional supplements. The reason behind the choices of these people may lie under the media's effect on health promotion and communication. Yüksel and Uçar (2011) asserts that a huge increase on health related content the in media brings along the issues about the reliability, validity, and accuracy of the health content. In their study dealing with the opinions about the people on the health content in Turkish Press, Yüksel and Uçar (2011) reveal that news about health can inform the public in wrong ways.

In this direction, issues concerning public health are a significant source of content creation for media in Turkey. Information about health problems and

diseases given in the media has a crucial impact on preserving public health (Shiavo, 2007). The emerging developments in communication technologies as Web 2.0 has let many of different contents to show up on Internet and social media platforms right along side conventional media. Researchers have increasingly recognized the Internet's importance as a promotional medium. Eysenbach and Köhler (2002) claims that Internet users found the health information they were looking for comparatively faster in Germany. The rise of the social media with developing Web 2.0 technologies has become one of the most influential media for content sharing. Individuals tend to share many of their daily life routine on social media. It is possible to say that there are sizeable amount of share of individuals' health concerns on social media. Payek, Kim and Hove (2010) suggest that YouTube is especially proven to be more effective in disseminating advertisement messages and, has gained enormous popularity among Internet users and business advertisers instantly in the past few years. A part of social media, YouTube is a popular video sharing site, that uses Web 2.0 technologies, enabling individuals and corporations to share distinct contents in videos. YouTube allows users to upload user-generated-contents (UGC) and let them to create their own videos. There are different types of videos uploaded in YouTube such as music clips, sections from television programs, commercials, documentaries, films, sports events and etc. Most of the Internet search engines show YouTube videos uppermost in search results of given key words.

Along with the advantage of media to inform and raise the awareness of individuals, unreliable information about health issues and diseases carried by media that does not have a scientific base could gain acceptance by the public. Concordantly, health information on the Internet can dramatically improve consumers' health-care and lifestyle choices (Greenberg, D'Andrea, & Lorence, 2004). However, Web-based information access of the individuals is also concerning about the quality of information used for health issues. The impact of information gathered from Internet can be misleading people for undesired results for their health. Individuals tend to share many of their daily life routine on social media (Abroms & Maibach, 2008). It is possible to say that there is sizeable amount of share of individuals' health concerns on social media. Individuals searching for solutions to their health problems most probably come across the content provided by YouTube. Therefore, this study center upon YouTube videos that comprise content about health problems. Any individual searching a solution for his or her HTN problem has a potential to see the content provided by YouTube. The validity and reliability of some content

about HTN provided by YouTube is questionable. Therefore, the information gathered from YouTube videos may harm individuals' health when there is no scientific background.

In the previous studies Kaya et al. (2023) investigated the accuracy of the information for hypertension treatments on YouTube and conducted research over a total of 360 videos related to HTN. Nearly the half of the videos (%47) analyzed were not useful for HTN patients. Useful videos with quality content regarding HTN were uploaded by physicians and vast majority of the sources of misinformation about HTN on YouTube were uploads of herbalists and nutritionists. Similarly, in their studies AlRyalat et al. (2019) found out that content on blood pressure measurement on YouTube were weak in content and there is a need for quality content upladed by health professionals. In this direction, the quality of the content and identity of the content creators may have significant effect on the health information quality distributed by YouTube videos especially about HTN.

In this context, the set of research questions of the study is designed as: (1) what typification (causal claims and solutions) have been made in videos on YouTube regarding the Hypertension/High Blood Pressure issue? (2) How do the causal claims and solutions differ between video types with and without scientific basis? (3) How does the qualifications (title, profession, etc.) of health experts vary between different types of videos?

The main purpose of this study is to investigate how many of the videos related to health issues on YouTube include content with scientific basis. Consequently, this study focuses on how Hypertension/High Blood Pressure problems are shown in the content of YouTube videos.

## 2. METHODOLOGY

### Sample

As said above HTN is known as 'High Blood Pressure' and 'Hypertension' in the literature. In Turkish language HTN is called as 'Yüksek Tansiyon' or 'Hipertansiyon' so that the YouTube web site was searched with these two Turkish keywords (not key sensitive) in 9 March 2020. After searching with each key word, YouTube results of videos were filtered as the most relevant showed early in the list and were classified by their type. There were about 7,700 results shown for the 'yüksek tansiyon' and 5,060 results for the 'hipertansiyon' key

words in Turkish language setting. Although more than 12,000 results were shown after the search with the two key words, the results were filtered and sorted by relevance. At a later stage, the most relevant 25 videos for each key word search were selected through purposeful sampling. The videos with the same title and identical context were excluded from the sample. The final set of videos remained as 40. There was high incidence of videos overlapping on the results of YouTube. Therefore, the researcher concluded that the sample represented the YouTube videos related with HTN. The number of comments and views of the videos were excluded from analysis. Reaching the concepts and relationships with both keywords were crucial and necessary to explain the obtained data. Content analysis method was used for analysing the data set to show the relevance of scientific basis of the videos.

### **Coding**

Whole selected video's content was the unit of analysis. A coding form is created for collection of data needed. Two experienced coders watched the videos selected for each key word. The videos were categorized by their content and purpose. The categories were as (1) TV news (or excerpts from TV news), (2) public service announcements (PSA), (3) documentaries (or excerpts from documentaries), (4) entertainments, (5) Health themed TV shows, (6) Others (product advertisements, etc.). Videos, which do not include any ads and intended to inform public about health issues, were coded as a PSA. The coding form also included a section to specify the type of the videos by means of ownership if an independent user or a media or health related corporate uploaded them.

The study questions about the qualifications of the health experts in the videos. Accordingly, the coding for included a section questioning the occupation and the title (M.D., Professor, etc.) of the experts present an opinion in the videos. The coders also carefully coded about the causal claims and solutions of HTN asserted by the experts in the videos. The recommended cure about HTN is coded in two categories, (1) medical/scientific, and (2) non-medical/herbal.

In the pre-test stage of coding coders practiced 10 videos that were not included in the sample. The reliability of the coders was measured by Cohen's kappa coefficient, which resulted 0.81.

### 3. FINDINGS and INTERPRETATION

40 videos were analysed for the data collection process of the study. The majority of the video formats were PSA (18 videos, 43.90%). The second most frequent format was Health Themed TV Shows (14 videos, 34.15%). The other video formats following were Entertainments (5 videos, 12.20%) and, TV news & excerpts (3 videos, 7.32%). Corporates and Institutions uploaded more than half of the videos analysed (26 videos, 63.42%), 14 videos were uploaded by independent user accounts (34.15%). The Frequencies and percentages of the video categories are shown in Table 1. The statistics referring the accounts uploaded the videos are shown in Table 2.

**Table 1. Video Categories**

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
TV News & Excerpts	1,00	3	7,32	7,5	7,50
PSA	2,00	18	43,90	45,00	52,50
Entertainments	4,00	5	12,20	12,50	65,00
Health Themed TV Shows	5,00	14	34,15	35,00	100,0
	<b>Total</b>	40	100	100	

**Table 2. Ownership**

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Independent User	1,00	14	34,15	35,00	35,00
Corporates & Institutions	2,00	26	63,41	65,00	100,00
	<b>Total</b>	40	100	100	

The minimum video length of the videos was 54 seconds and, the maximum video length was 1 hour 41 minutes (00:01:41:16) and 16 seconds. The total sum of the video length of 40 videos analysed were 7 hours 49 minutes and 1 second (00:07:49:01).

The first research question of the study was aiming to investigate the typification (causal claims and solutions) of videos on YouTube regarding the Hypertension/High Blood Pressure issue. The data showed that causal claims of the HTN were systematic failures in 11 videos (26.83%), genetic/biological

reasons in 10 videos (24.39%), malnutrition in 5 videos (12.20%) and other like obesity, pregnancy, immobility and etc. (14 videos, 34.15%). The percentages and frequencies of Causes of HTN claimed in the videos selected are shown in Table 3.

<b>Table 3. Causes of HTN</b>					
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Genetic / Biological	1,00	10	24,39	25,00	25,00
Systematic	2,00	11	26,83	27,50	52,00
Malnutrition	3,00	5	12,20	12,50	65,00
Other	4,00	14	34,25	35,00	100,0
	<b>Total</b>	40	100	100	

The solutions claimed for HTN in the videos were (1) Medication (n=18, 43.90%), (2) herbal cure (n=8, 19.51%), (3) diet (n=8, 19.51%) and, other like exercise, avoiding stress, alcohol, smoking and drugs (n=7, 17.07%). The statistical data for claimed HTN solutions are shown in Table 4.

<b>Table 4. Solutions of HTN</b>					
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Medication	1,00	18	43,90	45,00	45,00
Diet	2,00	7	17,07	17,50	62,50
Herbal cure	3,00	8	19,51	20,00	82,50
Other	4,00	7	17,07	17,50	100,0
	<b>Total</b>	40	100	100	

Second research question of the study intend to clarify the difference of causal claims and solutions between video types with and without scientific basis. The videos offering medication for the solution of HTN are classified as the ones with the scientific basis. In the 27 of 40 videos causes of the HTN was claimed with in medical/scientific basis (67.5%). Among this group of videos the causes of HTN was claimed as genetic/biological factors (n=8, 29.63%), systematic failures (n=8, 29.63%), malnutrition (n=4, 14.81%) and other factors (n=7, 25,93%). Videos with non-medical basis (n=13, 32.50%) present that the causes for HTN as genetic/biological factors (n=2, 15.38%), systematic failures (n=3, 23.08%), malnutrition (n=1, 7.69%) and other factors (n=7, 53.85%).



Therefore, the videos referring non-medical cures substantially associate HTN with non-medical reasons. The cross table of statistics about recommended cure and HTN causes are shown in Table 5.

**Table 5. HTN Causes\*Recommended Cure (Count, row %, column %, total %)**

HTN Causes	Recommended Cure		Total
	Medical / Scientific	Nonmedical / Herbal	
Genetic / Biological	8,00	2,00	10,00
	80,00%	20,00%	100,00%
	29,63%	15,38%	25,00%
	20,00%	5,00%	25,00%
Systematic	8,00	3,00	11,00
	72,73%	27,27%	100,00%
	29,63%	23,08%	27,50%
	20,00%	7,50%	27,50%
Malnutrition	4,00	1,00	5,00
	80,00%	20,00%	100,00%
	14,81%	7,69%	12,50%
	10,00%	2,50%	12,50%
Other	7,00	7,00	14,00
	50,00%	50,00%	100,00%
	25,93%	53,85%	35,00%
	17,50%	17,50%	35,00%
Total	27,00	13,00	40,00
	67,50%	32,50%	100,00%
	10,00%	100,00%	100,00%
	67,50%	32,50%	100,00%

The correlation between solutions claimed and recommended cure for HTN in the videos are shown in Table 6. According to the statistics given in Table 6, videos recommending a medical a medical/scientific solution to HTN substantially offer medication (in 18 of 40 videos, 66.67%) as a cure. At the same time, 4 of the videos recommending medical/scientific cure for HTN suggest

diet (14.81%) and other solutions (n=5, 18.52) such as exercise, yoga and, avoiding alcohol. None of the videos recommending a medical/scientific cure for HTN solution suggests using herbal cures.

**Table 6. HTN Solution\* Recommended Cure (Count, row %, column %, total %)**

HTN Solutions	Recommended Cure		Total
	Medical / Scientific	Nonmedical / Herbal	
Medication	18,00	,00	18,00
	100,00%	,00%	100,00%
	66,67%	,00%	45,00%
	45,00%	,00%	45,00%
Diet	4,00	3,00	7,00
	57,14%	42,86%	100,00%
	14,81%	23,08%	17,50%
	10,00%	7,50%	17,50%
Herbal Cure	,00	8,00	8,00
	,00%	100,00%	100,00%
	,00%	61,54%	20,00%
	,00%	20,00%	20,00%
Other	5,00	2,00	7,00
	70,43%	28,57%	100,00%
	18,52%	15,38%	17,50%
	12,50%	5,00%	17,50%
Total	27,00	13,00	40,00
	67,50%	32,50%	100,00%
	100,00%	100,00%	100,00%
	67,50%	32,50%	100,00%

The third and the last research question of the study aims to determine the variation of the qualifications (title, profession, etc.) of health between different types of videos. The statistics of video categories hosting health experts are shown in Table 7. The qualifications of the health experts hosted in the videos are categorized in four groups, (1) medical doctors (M.D.), (2) specialist

M.D.s (cardiologists, surgeons, internal diseases specialists and, etc.), and (3) academics (with a title of asst. prof, assoc. prof, and full prof.). Health experts with the M.D. title were the most frequently hosted figures in the videos (n=19, 47.5%). 14 specialist M.D.s (35%) and 7 academics (17.5%) were hosted in the selected videos. However, some of the health experts with the academic titles did not have a medicine education or relevant study at a college degree. Some “experts” who showed up in the videos with an academic title have doctoral degrees in the field of political science or chemistry.

**Table 7. Expert Qualifications\*Video Categories (count, row %, column %, total %)**

Expert Qualifications	Video categories				Total
	<i>TV News &amp; Excerpts</i>	<i>PSA</i>	<i>Entertainment</i>	<i>Health Themed TV Shows</i>	
M.D.	2,00	8,00	1,00	8,00	19,00
	10,53%	42,11%	5,26%	42,11%	100,00%
	66,67%	44,44%	20,00%	57,14%	47,50%
	5,00%		2,50%	20,00%	47,50%
Specialist M.D.	1,00	5,00	4,00	4,00	14,00
	7,14%	35,71%	28,57%	28,57%	100,00%
	33,33%	27,78%	80,00%	28,57%	35,00%
	2,50%	12,50%	10,00%	10,00%	35,00%
Academic	,00	5,00	,00	2,00	7,00
	,00%	71,43%	,00%	28,57%	100,00%
	,00%	27,78%	,00%	14,29%	17,50%
	,00%	12,50%	,00%	5,00%	17,50%
Total	3,00	18,00	5,00	14,00	40,00
	7,50%		12,50%	35,00%	100,00%
	100,00%		100,00%	100,00%	100,00%
	7,50%		12,50%	35,00%	100,00%

As shown in the table above, most of the PSAs and health themed TV shows hosted a M.D. The health experts are mostly hosted in the videos owned by corporations and institutions. 26 of 40 videos, which are uploaded by corporates and institutions, host M.D.s (n=10, 38.46%), specialist M.D.s (n=9, %34.62) and

academics (n=7, 26.92%).

#### 4. CONCLUSION

This study focuses on how Hypertension/High Blood Pressure problems are shown in the content of YouTube videos. 40 videos were selected and analysed through purposeful sampling in the study. After coding process, the data showed that the majority of the videos were public service announcements and health themed television shows. Corporations and institutions mainly uploaded the videos that were selected to analyse in the study. The data indicates that health experts with a background of medical school study were hosted in the shows. However, there are experts with an academic title who do not have any relevant study of medicine. The most interesting finding of the study is, as M.D.s hosted in the videos strongly recommend medication and diet as a solution to HTN, people with academic titles of irrelevant academic background offers herbal cures as treatments of HTN without showing any scientific evidence. This situation may cause many problems in the public's health. Persuasiveness of the academic titles such as "Dr" or "Prof. Dr." on people may lead public to consider about the recommended herbal cures by these people hosted in the videos.

In most of the videos health experts having a medical doctor title claim that the causes of HTN is related with genetic/biological factors, systematic failures and mal nutrition. When causal claims are compared with the solutions recommended in the videos, most of the videos have consistency of a medical/scientific approach. Predominantly medical treatments are recommended to the viewers in the videos. On the other hand, when the videos selected through the key word "hipertansiyon" and "yüksek tansiyon" is compared by the means of recommended cure for HTN, there is a statistically significant difference come in sight. The videos selected with the key word "yüksek tansiyon" recommend more herbal cures compared to videos selected by "hipertansiyon" key word as they also mainly host medical doctors. Furthermore, videos referring non-medical cures substantially associate HTN with non-medical reasons.

Consequently, as discussed before media has a crucial impact on people's attitude of seeking a cure for health problems. YouTube is one of the emerging media channels through its unique characteristics differing from mass media (Yoo and Kim, 2012). In this study a very limited number of videos were selected and analyzed to do groundwork for further research on health related content on social media. The number of viewers and comments made for the videos were excluded from the analysis on purpose. The entire data set collected

from data gathering process showed that content to harm public health is found even on the small group of videos on YouTube. Wider research on the content of YouTube videos could bring the content profile into open for Turkey. Miracle cures for any health problems recommended by people on Internet and other media platforms could harm public health. Media professionals and corporations should undertake responsibilities for informing public about the health issues in the correct way. Professional journalists and producers should produce any media content regarding health issues, scientific evidence must be include in the context, preventive medicine should be taken in to account and patient-specific discussions should be avoided in these contents (Yüksel, Kaya, Koçak and Aydın, 2014).

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