



YOUTUBE AS A SOURCE OF INFORMATION ON HAND WASHING.

Medical Science

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ABSTRACT

This study aims to examine the accuracy of information on YouTube related to method of hand washing in accordance to the WHO guidelines. A search was conducted using the key word 'hand washing'. From the first 100 videos, 29 were selected for analysis. An 11-point content score was used to examine the content of videos. Source of videos, total views, days since upload, likes, dislikes were noted. Out of 29, 15 videos (52%) were uploaded by health organizations, health care institutes and hospitals, while 14 videos (48%) were uploaded by other sources. The mean content score was 8.73 for videos uploaded by health organizations, health care institutes and hospitals, while for other sources it was 8. The difference was not statistically significant. There are relatively few videos on hand washing on YouTube. Most of them are not in compliance with the WHO guidelines regarding the correct method of hand washing.

KEYWORDS

Hand Washing, YouTube, Internet.

INTRODUCTION:

The world is again confronting the risk of a fatal disease. Emerging and reemerging pathogens are global challenges for public health. In late December 2019, several local health facilities reported cluster of patients with pneumonia of unknown cause that were epidemiologically linked to a seafood and wet animal market in Wuhan, Hubei Province, China.¹ On January 3, 2020 the 2019 novel coronavirus (2019-nCoV) was identified in samples of bronchoalveolar lavage fluid from a patient and was confirmed as the cause.² On 11 March 2020, the WHO (World Health Organization) declared the COVID-19 outbreak a global pandemic and all countries were urged to undertake effective measures for reducing transmission.³ In this context, public health actions to prevent transmission are crucial in slowing the spread of the pandemic. One of the essential recommendations that the WHO has issued for the populous is to wash their hands frequently and correctly.⁴

Recognition of the importance of hand hygiene in control of spread of infectious diseases is reflected in the increased number of publications in the medical literature during the last few years. Using 'hand washing' as a keyword in PubMed showed that between 1960 and 1979 there were 268 citations, between 1980 and 1999 there were 1869 citations, compared with 6494 citations between 2000 and 2019.

By acquiring pathogens from surfaces in the environment and transferring them to the mouth or nose, hands constitute a key route for the transmission of infectious diseases.⁵ Hand washing with soap has been shown to decontaminate hands and reduce the risk of ingesting pathogens and acquiring diarrhea.⁶ Performing the hand washing technique correctly is crucial to effectively decontaminate hands in health care,⁷ as well as household settings.⁸

Recent advances in information technology have made the Internet an attractive source for health providers and searches for health information by the population.⁹ More than 80% of internet searches are related to medical affairs.¹⁰ Patients usually prefer using YouTube when searching for health information because this medium provides visual and audio information.¹¹ More than 2 billion users visit YouTube each month, and people watch more than 1 billion hours of videos, which are viewed billions of times.¹² Ease of uploading videos, constant improvement, and quick access to content are the factors that facilitate the growth and appeal of the YouTube.¹³

However, it is important to point out that the content available on the internet is not properly reviewed and may be inaccurate. This emphasizes the importance of analysis and verification of information

posted and available on YouTube. In the past, YouTube had been evaluated as a source of information on vaccination,¹⁴ tobacco use,¹⁵ breast feeding,¹⁶ H1N1,¹⁷ kidney stones,¹⁸ rhinosinusitis,¹⁹ Multivitamins²⁰ and recently leukoplakia,²¹ cardiopulmonary resuscitation.²² To our knowledge, no prior study has examined the availability of hand washing education videos on YouTube. Therefore, the objective of this study was to investigate accuracy of information on YouTube videos related to method of hand washing according to the WHO guidelines.

MATERIAL AND METHOD:

The Google Trends website (<http://trends.google.com>) was used to find the most frequently used search term. Comparative searches were conducted with defined key words that included 'hand washing', 'hand-washing', 'hand cleaning', 'hand-cleaning', 'hand hygiene', 'hand-hygiene', 'hand scrubbing', 'hand-scrubbing', 'hand sanitization', 'hand-sanitization', 'hand disinfection', 'hand-disinfection'. The search parameters were adjusted to 'Worldwide', '2008-present' and 'YouTube Search'. Based on the comparative search results, it was found that the most commonly used search term was 'hand washing'.

A search was conducted on May 16, 2020 on the YouTube website (<https://www.youtube.com>), for videos using the keyword "hand washing". Before searching on YouTube, cookies and previous search results were deleted. Default sorting option was, "relevance", which is the most commonly used option in the algorithms for YouTube sorting (relevance, upload date, view count, rating).

First 100 videos were included in our study. As search results may change at different times, a document with titles of all the selected videos and uniform resource locators (URLs) was saved. All the advertisements in the search results and in the beginning of videos were ignored.

Exclusion criteria comprise videos that were not in English and did not address the primary topic. Repeated videos were viewed as one.

Video characteristics including total number of views, days online, likes, dislikes and uploading sources were reviewed. A Google search was performed for each YouTube ID to find the upload source, which were grouped into:

Group 1- uploaded by health organizations, health care institutes and hospitals.

Group 2- uploaded by other sources.

All the videos meeting the inclusion criteria were viewed and given scores. Each step of hand washing was given score as 0 (if step not included) or 1 (if step included), and total score between 0 to 11 was assigned for each video. Content scoring criteria are shown in Table 1 in accord with WHO guidelines.

All videos were viewed and analyzed by two independent researchers. Disagreements between the researchers about the scoring criteria of a particular video were resolved by discussing the issue until a consensus was reached.

Statistical analyses were conducted using the IBM SPSS 20 statistical software (IBM, Armonk, NY, USA). Mean, standard deviation was calculated for all the variables. An independent *t*-test was done to compare the means. A *p*-value <0.05 was considered significant.

Table 1: Content Score In Accord With WHO Guidelines

Steps of hand washing	Score
Wet hands with water	1
Apply enough soap to cover all hand surfaces	1
Rub hands palm to palm	1
Right palm over left dorsum with interlaced fingers and vice versa	1
Palm to palm with fingers interlaced	1
Back of fingers to opposing palm with fingers interlocked	1
Rotational rubbing of left thumb clasped in right palm and vice versa	1
Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa	1
Rinse hands with water	1
Dry thoroughly with a single use towel	1
Use towel to turn off faucet	1
Total	11

RESULTS:

Of the 100 videos, 71 were excluded from the study because they were repeated (*n*=1), not in English (*n*=5), or did not address the primary topic (*n*=65). Descriptive statistics for the evaluated videos are shown in Table 2.

Table 2: Descriptive Statistics Of Evaluated Videos

Variable	Mean	Standard deviation
No. of views	366769.24	774934.39
Days since upload	1043.86	1324.81
Views per day	1077.40	2303.26
No. of likes	2136.93	4455.87
No. of dislikes	179.52	437.27
Content score	8.38	2.18

Out of 29, 15 videos (52%) were uploaded by health organizations, health care institutes and hospitals, while 14 videos (48%) were uploaded by other sources. Analysis of videos with respect to sources of upload is shown in Table 3.

Table 3: Descriptive Statistics Of Evaluated Videos With Respect To Sources Of Upload

Variable	Group 1		Group 2		<i>P</i> Value
	Mean	Standard deviation	Mean	Standard deviation	
No. of views	445132.27	1036297.24	282808.86	349624.30	0.58
Days since upload	809.47	1134	1295	1504.69	0.33
Views per day	1352.55	2760.11	765.67	1747.87	0.50
No. of likes	2218.60	5749.63	1793.86	2721.39	0.80
No. of dislikes	231.13	591.62	124.21	168.86	0.52
Content score	8.73	2.15	8	2.22	0.38

Statistical analysis showed that there was no statistical significant difference for all the measured variables between the videos uploaded by health organizations, health care institutes and hospitals, and that of other sources.

DISCUSSION:

YouTube is increasingly becoming accessible and viewed for health information retrieval by general population. Care providers from across disciplines and field of medicine should understand how people might consult misleading or limited source of information. This study has identified, analyzed, and evaluated the most relevant videos on YouTube on hand washing.

Considering that 95% of users performing a search on YouTube do not watch more than first 60 videos provided,²³ the first 100 videos were selected for preliminary analysis. Out of 100 videos, 71 were excluded as they did not meet the inclusion criteria. Similarly, previous studies examining the reliability of YouTube videos reported exclusion of 72%-88% of videos.^{21,22} As in the previous studies, we found that the high exclusion rate made it difficult to find the required content on YouTube. Despite the huge volume of information available on the Internet, the unstructured format often makes it difficult to obtain required information.

The study found that the mean number of views per video on topic hand washing was over 3 lacks with more than one thousand view per day. It indicates that large number of people access YouTube in search of information related to hand washing. Because YouTube provides audiovisual information, people often prefer this medium to other social media platform to seek health information.²⁴ There was no statistical difference in number of views, days since upload, views per day, likes and dislikes between the videos uploaded by health organizations, health care institutes and hospitals, and other sources. Indicating that, the videos uploaded by other sources are as popular as those uploaded by health organizations, health care institutes and hospitals, which is similar to previous review of information regarding multivitamins.²⁰

Regarding content analysis, it was concerning to find that only 6 videos could achieve a perfect 11 score. Mean content score of videos assessed was 8.38. This suggests that YouTube was insufficient as a source of information about hand washing. The mean content score was 8.73 for videos uploaded by health organizations, health care institutes and hospitals, while that for other sources it was 8. However there was no statistically significant difference. A number of studies have examined YouTube as a source of health information for the lay general public, but no such study has been reported in relation to hand washing, therefore the result of this study cannot be compared directly with other studies.

One of the most significant commitments we can make to hindering transmission of COVID-19 and protecting ourselves and our locale is to wash our hands. Performing the hand washing method accurately is essential. All things considered, YouTube could comprise a valuable source of information if a mechanism existed whereby lay people were directed to verifiable and credible sources, and by improving the ease of use of online health care information. Recently YouTube has started showing all the videos related to COVID-19 in a dedicated shelf on the home page of itself, so that everyone has access to authoritative content during this trying time.²⁵

These kinds of video that are significant to human life ought to be directed and verified by scholarly directors before being distributed on YouTube. Official health organization, health care institutes and hospitals should disperse hand washing related and in addition different sorts of health related information on Internet which is accurate.

This study has some limitations. First, YouTube search results are dynamic, and will change when new videos are uploaded or old videos are removed. So, this cross-sectional study demonstrates the accuracy of information on hand washing at that time. The use of a prolong study period, however, can often generate an overwhelmingly large volume of social media data, which becomes unmanageable and difficult to analyze. Second, our study was limited to English videos. Third, the videos were sorted by relevance, which is the YouTube default. Searching results may be affected by sorting upload date, view count or by rating. Third, although the key word was selected using the Google Trends application to determine the single most frequently used term, it should be kept in mind that different videos may be accessed by using different key words. Finally our study does not consider the correctness of information on hand washing available in other Internet formats.

Further studies should be conducted in order to evaluate the quality of videos involving other aspects of hand hygiene.

CONCLUSION:

There are relatively few videos on hand washing in English published on YouTube. Most of them are not in compliance with the WHO guidelines regarding the correct method of hand washing. Nevertheless YouTube could be a very useful source of information if people were educated on the location and availability of quality online content. Specialist professionals, universities, health related organizations, and other knowledge holders should be more engaged in the production of videos to disseminate knowledge about this topic.

CONFLICTS OF INTEREST:

The authors declare that they have no conflicts of interest.

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