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# Content Analysis of YouTube as Source of Toxicological Information

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## Abstract

Background: YouTube is a popular video-sharing website. Many people use video-sharing websites, such as YouTube, for self-education. Unfortunately, there is currently no regulation of information content for veracity. Methods: We conducted a systematic search using the keywords poison and toxicity and poison control center on YouTube. We viewed all videos in their entirety and data were collected including a summary of content, source, type of video, length, view counts, and viewer-based review ratings. Results: The keyword search identified 321 videos. Of these, 45 met the inclusion criteria, of which 95.5% reported about a single poison or toxin. 27% of the videos contained validated information, 73% were controversial. No videos on this search were created nor supported by poison control centers. Conclusions: Poison control centers currently have no videos posted on YouTube. Ignoring it will simply facilitate domination by information not supported by evidence-based medical opinion.

## BACKGROUND

YouTube is a popular video-sharing website where users select and view content on a range of topics. (1) Many people use video-sharing websites, such as YouTube, for self-education. (2) Unfortunately, there is currently no regulation of information content for veracity. We conducted this study to analyze the content on YouTube as it relates to medical toxicology.

## METHODS

We conducted a search on YouTube using the keywords poison and toxicity and poison control center. Inclusion criteria were: English language and a claim about a potentially toxic material. We viewed all videos in their entirety and data were collected on a standardized form including a summary of content, source, type of video, length, view counts, and viewer-based review ratings. Videos were designated as "controversial" if the information presented was contrary to standard teachings. We measured the percentage of information that was accurate and valid, based on the consensus of an EM-trained physician and board-certified toxicologist. We also measured what percent were supported by the poison control center.

## RESULTS

The keyword search identified 321 videos. Of these, 45 met

the inclusion criteria, of which 43 reported on a single poison or toxin. Videos included information on the following: Poly vinyl chloride, mercury, aspartame, fluoride, lithium, benzene, chlorine, pesticides, cane toad, 1080, vaccines, carbon monoxide, riboflavin, citric acid, methyl iodide, phosphorous, lead, aluminum, and paraquat. 73 % of the videos were designated as "controversial" and only 27% contained validated information. No videos on this search were created nor supported by poison control centers.

## DISCUSSION

We found that the vast majority of videos contained unproven or false information regarding poisons. This is concerning, given the potential for rapid and widespread dissemination of information with such sites as YouTube. In fact, the median number of viewers of the videos we studied was 1129 with some videos receiving over 10,000. Of concern, adolescents are the most common age group for suicidal attempt with toxic ingestion and arguably use the internet more than any other age group as well.

Mercury was amongst the most common controversial topics found on YouTube, specifically as a component of the dental filling amalgam. The content credited amalgam as a cause for many diseases. Those videos lacked credible references to organizations such as the American Dental

Association(ADA). In a 2007 position statement, the ADA cited studies that demonstrated amalgam's safety for public use. (3)

The second most common controversial topic was the fluoridation of public water supplies. Videos linked fluoride to fibromyalgia, central nervous system diseases, lung cancer amongst many others. This is in contrast to information published by the Centers for Disease Control, illustrating the benefits and safety of its use in the general public. (4)

Of particular concern were the videos about body detoxification. Although only one video on detoxification was identified through our search criteria, hundreds can be found throughout the video library. Many of these videos include specific regimens of minerals, vitamins, etc. to "cleanse" the body. There was a lack of information on the risks involved from mega doses.

No videos were submitted or endorsed by a poison control center, the standard for toxicology public education in the United States. Even when a separate keyword search was performed on "poison control center", there were again no videos identified.

One potential limitation of our study was the small sample size. Our keyword search identified 45 videos that met the inclusion criteria. Notably, many more videos could have been identified if we used additional key words or used the YouTube option to search for videos with similar content. Future studies should analyze additional videos; however we felt that these 45 were representative of those available in the video library.

We believe that our findings illustrate a gap between valid toxicological information and those who seek resources. As

YouTube becomes increasingly popular, the distribution of content related to poisons and toxins will continue to grow. Due to the "free-speech" format of YouTube there is a large potential for misinterpretation and dangerous recommendations provided to the general public. Medical toxicology educators should recognize the potential for impact in video-sharing sites and promote non-traditional tools for the dissemination of information.

## **CONCLUSION**

Poison control centers currently have no videos posted on YouTube. Ignoring it will simply facilitate domination by information not supported by evidence-based medical opinion. Further studies should identify how to increase public education on topics related to toxicology through video-sharing websites.

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