Introduction

A metered-dose inhaler (MDI) is commonly used medication delivery system for treatment and management of asthma, chronic obstructive pulmonary disease, and other respiratory diseases. When used appropriately, an MDI is highly efficacious in aiding patients with respiratory disease improve their quality of life. It is common for patients to use their MDIs incorrectly [1,2], so many doses of medication, per container, are often wasted. Furthermore, consumer medication information accompanying MDIs has shown to be suboptimal due to excessively high reading demands, out-of-order step-by-step instructions, and a variety of poor layout features [3].

Until recently, patients received the majority of their medical information and instructions directly from medical professionals, including physicians, nurses, and pharmacists. However, widespread Internet use has enabled patients to search relatively easily for and retrieve various health-related information. YouTube™, founded in 2005, is a free video-sharing site where anyone, regardless of background or expertise, can publish a video on any topic [4]. Currently, over 4 billion YouTube™ videos are viewed throughout the world on a daily basis [5]. Despite safety concerns related to content contained within health-related YouTube™ videos [6], individuals routinely use this platform to access health-related information [7].

To date, the content, comprehensiveness, and accuracy of YouTube™ videos covering a wide variety of topics have been mixed. Most studies have found that a YouTube™ search for medically related content typically produces both good quality videos and misleading ones. For example, 54.9% of videos were considered “good” and 30.4% of videos were considered “misleading” in a study of 102 relevant rheumatoid arthritis videos [11]. However, most of the studies have not explored MDI instructional videos available via the YouTube™ platform. Therefore, to address this gap in the literature, the purpose of this study was to evaluate English language MDI instructional videos available on YouTube™.
Methods

The YouTube™ platform (www.youtube.com) was searched over a 24-hour time period in May, 2014 from Solon, Ohio. In line with the study purpose, we sought to identify a comprehensive collection of videos depicting MDI instructions for use. The following 4 search terms were used to identify videos for inclusion within our study, including: (1) asthma inhaler use, (2) asthma inhaler, (3) metered dose inhaler how to use, and (4) metered dose inhaler technique. Selection criteria as follows were as follows: (1) English language, (2) demonstration of how to use an MDI, and (3) intended for a patient (lay) audience.

To begin, each search term was entered into the YouTube™ platform. Videos appearing on the first two pages (approximately 20 videos per page) of each search term were identified. A complete list of videos (n=154), generated across all search terms combined, were saved and printed. Next, each printed list was carefully reviewed and duplicate videos were identified. Of the 154 videos identified, there were 66 (42.9%) duplicates; therefore, the sample was composed of 88 unique videos. Each unique video was downloaded and saved, via SaveFrom.net (http://en.savefrom.net/) [13], in its entirety as an MP4 360P file. Additionally, screenshots were taken of each unique video’s title, username of the individual and/or organization uploading the video, number of “likes” and “dislikes,” number of views, date uploaded to YouTube™, and all posted comments.

We reviewed the 88 unique videos to verify that they met all established inclusion criteria. A total of 30 videos were excluded (non-English [n=4], demonstratron for human patients. Furthermore, only videos that came up in the first two pages of the results were used. Also, only the following search terms were included: (1) asthma inhaler use, (2) asthma inhaler, (3) metered dose inhaler how to use, and (4) metered dose inhaler technique. Therefore, once duplicates and irrelevant videos were excluded, only 58 unique videos composed the final sample. As a result, since the data are limited in number and by search term, language, and patient type, we are unable to make generalizations on the quality of all YouTubeTM videos as a source of patient information. Additionally, due to the fact that the data were collected in Solon, Ohio and limited to English language videos, there may be low external validity when comparing the results of this study to YouTubeTM videos of other cultures and languages.

Limitations

There are several limitations to consider when reviewing this study. The collected data only represents a snapshot of available materials on YouTubeTM. The data were collected over a 24-hour period and screened for videos that were in the English language and intended for human patients. Furthermore, only videos that came up in the first two pages of the results were used. Also, only the following search terms were included: (1) asthma inhaler use, (2) asthma inhaler, (3) metered dose inhaler how to use, and (4) metered dose inhaler technique. Therefore, once duplicates and irrelevant videos were excluded, only 58 unique videos composed the final sample. As a result, since the data are limited in number and by search term, language, and patient type, we are unable to make generalizations on the quality of all YouTubeTM videos as a source of patient information. Additionally, due to the fact that the data were collected in Solon, Ohio and limited to English language videos, there may be low external validity when comparing the results of this study to YouTubeTM videos of other cultures and languages.

Conclusion

Most clinicians in the United States could confidently refer asthma patients to YouTubeTM to find instructions on how to correctly use an MDI, especially if the video is affiliated with a credible medical organization. For example, physicians could provide patients with links to accurate and high-quality videos. This gives patients an opportunity to learn how to use their inhaler in the comfort of their own home rather than in the clinician’s office. This prevents patients from feeling rushed and it gives them the ability to replay the video as many times as needed. This study is specifically limited to MDIs, but could be used as a foundation for future studies on whether YouTubeTM and other social media sites can be considered reliable sources of patient information on various topics.
References


4. YouTube™. Available at: https://www.youtube.com/ [last accessed 10 Dec 2014].


12. Carpenter DM, Lee C, Blalock SJ, Weav-