Form 7

Abstract of Dissertation

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Title of Dissertation	The Role of Social Network Services in Sharing Patient Experiences with the Wearable Cyborg Hybrid Assistive Limb

Abstract

Introduction

Sharing patient experiences is one of the most essential support resources for those suffering from their illness. Learning about the treatment experiences of others who have had similar experiences to one's own will promote health promotion behaviors. Traditionally, face-to-face patient experience sharing has taken place, but in recent years, social networking services (SNS) have been used to share patient experiences. Patient experience sharing via social media and SNS is expected to become increasingly important in today's society, where direct patient interaction is complicated due to the global COVID-19 epidemic. Traditionally, information sharing has focused on text data. However, with the spread of video SNS, it is now possible to share patient experiences intended to convey changes in movement, such as rehabilitation, in a way that is easy for viewers to understand. Many rehabilitation and other medical information videos have been uploaded on YouTube, a video SNS. They are being used as an educational tool and a place to share information on patient experiences.

In Japan, rehabilitation and exercise programs using robotic technology are attracting attention to extend the healthy life expectancy of older adults and reduce the burden on workers. One such program is the Hybrid Assistive Limb (HAL), a wearable cyborg. Although past research has shown the usefulness of HAL, the features of this device are not widely known because it has yet to be widely used. How information about treatment with the new device can be made widely available to specialists and the general public, and how individuals can be given treatment options, is a significant challenge for the future of healthcare in Japan. Therefore, sharing patient experiences through video SNS such as YouTube, where anyone can obtain information free of charge, can be an essential source of information for patients wondering whether to undergo HAL treatment in the future. HAL-related videos have been uploaded to YouTube. However, the number of views varies from tens of thousands to almost none. It needs to be clarified what kind of videos viewers desire and how video SNSs such as YouTube are used to share patient experiences. This study aimed to analyze the content and quality of HAL-related videos viewed

by various people to clarify the content required by YouTube viewers. The study promotes the creation of videos based on the results of this study, increasing the number of HAL-related YouTube videos viewed. This will help satisfy the information needs of patients currently undergoing HAL treatment, those considering undergoing HAL treatment in the future, and their family members.

Method

We searched for YouTube videos using five keywords. The keywords "Robot suit HAL," "Cyberdyne HAL," "HAL walk," and "Rehabilitation HAL" were extracted from the Google Keyword Planner. "Wearable cyborg HAL" was also used as a keyword.

The top 100 most viewed videos were selected. The number of views, video length, upload date, contents, and uploaders of each video were recorded. The videos were categorized into four groups based on the contents: (1) training, defined as video recordings of patient experience during HAL training; (2) advertisement, defined as video recordings of advertisements on HAL-related initiatives; (3) lecture, defined as video recordings of lectures about HAL; and (4) review, defined as video recordings of patient experience after HAL training. The videos were categorized into five groups based on the uploader: (1) YouTuber, defined as HAL users with more than 1,000 subscribers on the YouTube channel; (2) regular creator, defined as HAL users with less than 1,000 subscribers on the YouTube channel; (3) company, defined as the video uploaded by the company; (4) hospital, defined as the video uploaded by the hospital; and (5) municipality, defined as the video uploaded by the municipality. DISCERN was used to evaluate the quality of videos, designed to help users of consumer health information judge the quality of written information related to treatment choices. One physical therapist and one physician independently rated the quality of each video, and the average of the two scores was used in the analysis.

Result

Of the 100 videos, the most shared content was the training videos on HAL (n=58). The most common uploaders of videos were users (YouTubers and regular creators) (n=68), followed by companies (n=25), hospitals (n=5), and municipalities (n=2). Of the 100 HAL videos, 76 were uploaded from 2016 to 2021 and 24 were uploaded from 2009 to 2015. The videos uploaded by YouTubers had a significantly higher number of views than those uploaded by other uploaders (YouTuber vs. Others: median 18,329 (range: 853–4,090,031) vs. 2,286 (range: 882–133,697); P <.001). Furthermore, they had significantly higher DISCERN16 scores, which serves as the basis for the overall evaluation of the publication's overall quality (YouTuber vs. others: median 3 (range: 1–5) vs. 1 (range: 1–4); P <.001).

Conclusion

  This study showed that the most popular HAL-related videos were primarily uploaded by users, and the most viewed content was videos of training situations. Information on training using HAL on YouTube is valuable to the general public; sharing patient experiences on YouTube may satisfy the public's information acquisition needs. Furthermore, it was found that YouTuber videos exert more influence than those created by hospitals or corporations. In the future study, we want to investigate how HAL-related YouTube videos influence patients' treatment choices.

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