

OBJECTIVES

- YouTube has become a visual library that is growing at an incredible pace, especially with the rise of COVID-19 pandemic.¹
- Pulmonary rehabilitation refers to the individualized rehabilitation treatment of patients with chronic pulmonary diseases.
- The use of YouTube, has made it possible to practice remote rehabilitation for patients, the effectiveness and safety of which have been proven non-inferior to those of traditional approaches².
- In addition, people have been reluctant to engage in activities such as pulmonary rehabilitation publicly due to risk of obtaining the infection.
- This project aims to potentially identify this problem and to assess the current content on pulmonary rehabilitation retrieved on YouTube specific keyword searches.
- The quality, educational quality, and accuracy of the source of information were measured using the Journal of American Medical Association (JAMA) score (**Table 1**), Global Quality Score (GQS) (**Table 2**), and Pulmonary Rehabilitation Score (PRS)
- JAMA score appoints 1 point for each of 5 criteria, the GQS score is rate on a 5-point scale (1 being poor quality, and 5 being excellent quality)
- A YouTube-based pulmonary rehabilitation score (PRS) system was designed based on the joint guidelines of the American College of Chest Physicians (ACCP) and the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR).
- PRS score (**Table 3**) is on a 13-point scale with higher numbers indicating better quality of information specific to pulmonary rehabilitation.
- One point was assigned to each criterion, if present in the video.. The videos are grouped as excellent (10–13 points), good (7–10), average (4-6), and poor (1–3).

DESIGN

- YouTube will be queried for the keywords “pulmonary rehabilitation”, “respiratory rehabilitation”, “pulmonary physical therapy”, and “respiratory physical therapy”.
- The running time, number of views, time since upload, the view ratio (number of views/days), number of comments, number of likes and dislikes, and the like ratio (like 100/ [like + dislike]) will be determined
- The popularity of the videos was evaluated with a new index called the video power index (VPI) calculated by the following formula: like ratio view ratio/100.

Pulmonary Rehabilitation Score (PRS) for Informational Value

| | | | |
|------------------------------------------------|---------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------|
| Training muscles of ambulation/lower extremity | Unsupported endurance training of the upper extremities | Dyspnea control in activities of daily living (ADLs) | Strength training <u>and</u> Inspiratory muscle training |
| Routine use of nutritional supplementation | Low and high intensity exercise | Individualized treatment | Psychosocial interventions |
| Weight management | Duration of program | Supplemental oxygen | Devices and software applications (gadgets) |

Table 3. Pulmonary Rehabilitation Score (PRS)⁵

| | The Journal of American Medical Association (JAMA) Benchmark Criteria |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Authorship | Authors and contributors, their affiliations, and relevant credentials should be provided. |
| Attribution | References and sources for all content should be listed clearly, and all relevant copyright information noted. |
| Disclosure | Website “ownership” should be prominently and fully disclosed, as should any sponsorship, advertising, underwriting, commercial funding arrangements or support, or potential conflicts of interest. |
| Currency | Dates that content was posted and updated should be indicated. |

Table 1. Journal of American Medical Association (JAMA) score³

| | Global Quality Score (GQS) for Educational Value |
|---|-----------------------------------------------------------------------------------------------------|
| 1 | Poor quality; very unlikely to be of any use to patients |
| 2 | Poor quality but some information present; of very limited use to patients |
| 3 | Suboptimal flow, some information covered but important topics missing; somewhat useful to patients |
| 4 | Good quality and flow, most important topics covered; useful to patients |
| 5 | Excellent quality and flow; highly useful to patients |

Table 2. Global Quality Score (GQS)⁴

RESULTS

- The mean view ratio was 174.3. The videos had 1073.1, likes versus 29.6 dislikes. The mean like ratio was 97.3. The mean VPI was calculated as 169.6.
- The videos had a mean JAMAS of 1.29, GQS of 1.63, and PRS of 2.97. Academic videos had significantly higher JAMAS, GQS, and PRS compared to other sources (P<0.05), yet VPI was significantly lower than the others (P < 0.05). A positive correlation of 31.9% between PRS and JAMAS, of 56% between GQS and JAMAS were detected. A positive correlation of 73% was observed between number of views and VPI.

CONCLUSION

- The results showed that quality of the information on pulmonary rehabilitation acquired from YouTube is poor according to the results of standardized assessment tools. Physicians should possess the knowledge about the type of information the patients can acquire before presentation, in order to get themselves ready for the negative effects due to poor or inadequate information.
- Another important point is the growing need of users for the preparation of optimum medical videos by health care organizations.

CITATIONS

1. Desai T, Shariff A, Dhingra V, et al. Is content really king? An objective analysis of the public's response to medical videos on YouTube. *PLoS One* 2013;8:e82469
2. Cinelli M, Quattrocchi W, Galeazzi A, et al. The COVID-19 social media infodemic. *Sci Rep.* 2020;10(1):16598. Published 2020 Oct 6. doi:10.1038/s41598-020-73510-5
3. Silberg WM, Lundberg GD, Musacchio RA. Assessing, control- ling, and assuring the quality of medical information on the Internet: Caveant lector et viewor: let the reader and viewer beware. *JAMA* 1997;277:1244 – 5.
4. Singh AG, Singh S, Singh PP. YouTube for information on rheu- matoid arthritis. A wake up call?. *J Rheumatol* 2012;39:899 – 903.
5. Ries AL, Bauldoff GS, Carlin BW, et al. Pulmonary rehabilitation: Joint ACCP/AACVPR Evidence-Based Clinical Practice Guidelines. *Chest.* 2007;131(5). doi:10.1378/chest.06-2418