“EFFICACY OF ONLINE PRE-RECORDED PRACTICAL DEMONSTRATIONS AND LIVE STREAMED PRACTICAL DEMONSTRATIONS IN THIRD YEAR PHYSIOTHERAPY STUDENTS DURING THE COVID-19 PANDEMIC- A SURVEY”

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ABSTRACT

Aim: To study the efficacy of online pre-recorded practical demonstrations and live streamed practical demonstrations in Third year physiotherapy students during the COVID-19 pandemic- A survey

Objectives:

- To understand efficacy of online pre-recorded practical demonstrations
- To understand the live streamed practical demonstrations
- To compare live streamed practical demonstrations versus online pre-recorded practical demonstrations.

Study Design: Cross sectional Study

Sampling method: Complete enumeration

Sample size: All 44 Third B.P.Th students from TMV’s Lokmany Medical College of Physiotherapy, Navi Mumbai.

Methodology:

All 44 students of Third year B.P.Th from TMV’s Lokmany Medical college of Physiotherapy, Kharghar were enrolled for this study. Survey among students was done on pre-recorded videos and live demonstration conducted by the college as per the curriculum.

Since this study was done in the COVID-19 pandemic the consent forms were mailed to the students. The practical topics to be covered during complete lockdown were taught by posting online videos of the said topic on Google classroom. The theory part of the concerned topics was taught via Zoom platform. The students were expected to go through the videos and practise their techniques at home. In the partial lockdown phase, students were allowed to visit the campus in batches of 5. During this time the practical topics were covered via live streaming. Voluntary consent was taken from each student. They were asked to fill a questionnaire regarding aspects of class experience, learning effect and evaluation of the teachers.

Statistical Analysis: Data analysis done using Excel 2013
Results: Pre-recorded video is equally as effective as a live demonstration. However, students preferred live demonstration technique over pre-recorded videos. Each method has its own advantages and limitations, therefore both methods can be combined in teaching undergraduate physiotherapy courses in order to improve learning experiences and to match different learning preferences of students.

Key words: pre-recorded video's, live streamed practical demonstrations, third year physiotherapy students, COVID 19

I. INTRODUCTION

At the beginning of the New Year in 2020, the coronavirus disease (COVID-19) outbreak became a global public health incident and has constituted a public health emergency. This pandemic forced global physical closure of businesses, sport activities, schools and colleges by pushing all institutions to migrate to online platforms. Teaching methods across the world have become more organized to contribute improved and modernized results.

Universities worldwide have rapidly transitioned to a full e-learning approach during the COVID 19 pandemic due to social distancing protocols. Hrastinski (2008) stated that the two types of online learning, namely asynchronous and synchronous online learning, are majorly compared but for online learning to be effective and efficient, instructors, organizations and institutions must have comprehensive understanding of the benefits and limitations. A full or complete e-learning approach is defined as “learning with no face-to-face component, that relies entirely on the use of e-learning technology and techniques for the delivery of learning. Through recorded classes the student is able to see and hear the teacher, facilitating the dynamics and connection that occurs in a classroom. The epidemic increased not only the importance and urgency of online education, but also provided an opportunity for an in-depth discussion of online education.

Synchronous learning happens in real time. In this mode, students and instructor interact in a specific virtual place at a set time. In these courses, instructors commonly take attendance, same as they would in a lecture hall. Common methods of synchronous online learning include video conferencing, teleconferencing, live chatting, and live-streamed lectures that must be viewed in real time.

Asynchronous learning happens on schedule. While the course of study, instructor, or program will provide materials for reading, lectures for viewing, assignments for completing, and exams for evaluation, one can access and satisfy these requirements on own schedule, so long as you meet the expected deadlines. Common methods of asynchronous online learning include self-guided lesson modules, pre-recorded video content, virtual libraries, lecture notes, and online discussion boards or social media platforms.

Regardless of the program delivery modality, physical therapist professional education programs require a combination of effective communication skills, theoretical and conceptual knowledge, and clinical skills including manual and instrumental skills. Pre-recorded video can provide a valued teaching tool that allows better visualisation of technique, offer media-rich audio and visual stimulation covering a wider spectrum of the learning styles or preferences. It also allows students to review technical procedures before, during, or after the practical sessions, and overcomes shortage of faculty.

On the other hand, Background Live demonstration to a group of students may be a useful teaching tool in undergraduate physiotherapy courses.

Several studies have investigated the efficacy of pre-recorded video and live demonstration for teaching clinical skills. Rosa et al. found that visual pre-recorded methodologies is appropriate to develop and support students learning experiences. Tracey et al. conducted a study on students' perception on online instructional videos, which showed adapting the videos into interactive tutorials provide opportunity for feedback and helps in development of student's self-evaluation. Mirkarimi et al. found that videotaped and live demonstrations were equally effective and can be used in combination or as an alternative for each other. Packer et al. tested the effectiveness of videotaped demonstrations as opposed to live demonstrations for the teaching of removable partial denture procedures. They concluded that both teaching methods developed a similar level of understanding of the principles behind the exercise, although students preferred the live demonstrations. Further, live demonstration enhances communication skills and increases student confidence. However, teacher dependency of students, inadequate field of view, and non-repeatability of sessions are the main problems with this type of demonstration.
This study aims to understand the efficacy of online pre-recorded video and live streamed practical demonstration in third year undergraduate physiotherapy students.

**OBJECTIVE:**
- To understand efficacy of online pre-recorded practical demonstrations
- To understand the efficacy of live streamed practical demonstrations
- To compare live streamed practical demonstrations versus online pre-recorded practical demonstrations.

**METHODOLOGY:**

The current study was conducted at the TMV’s Lokmanya Medical college of Physiotherapy, Kharghar, Navi Mumbai. Forty-four third year physiotherapy students voluntarily agreed to participate in the research study. The practical sessions were scheduled as per MUHS curriculum. The consent forms regarding the survey were mailed to the students on their individual mail ids.

During the first phase of lockdown, students were attended the theory part on zoom platform and subsequent practical demonstration was conducted by posting pre-recorded videos on Google classroom platform. The students were asked to view the videos and practise the technique at home.

In the partial lockdown phase, the government allowed opening of colleges with 50% of occupancy. Hence, students were allowed to visit the campus for practising the practical topics in batches of 5. During this period, practical sessions were conducted with the help of live streaming demonstration technique. Queries from the students were addressed at the end of the session.

A 10- item questionnaire was developed for the purpose of this study in order to measure the student’s perception towards the two teaching methods by using a Likert scale with four response options (0-2 = Disappointed, 3-5= Fair, 6-8= Good, 9-10= Excellent). Some Questions were polar having ‘Yes’ and ‘No’ options.

Voluntary consent was taken from each student. Students were asked to fill the online questionnaire. The questionnaire aimed to understand the class experience of the students and the learning effect in both the methods.

The students completed the survey and the results were collected anonymously on google forms. The data was extracted and analysed in Excel 2013.

II. RESULTS:

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-recorded Yes</th>
<th>Pre-recorded No</th>
<th>Live streamed Yes</th>
<th>Live streamed No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>35</td>
<td>9</td>
<td>44</td>
<td>0</td>
</tr>
<tr>
<td>Q2</td>
<td>44</td>
<td>7</td>
<td>44</td>
<td>0</td>
</tr>
<tr>
<td>Q5</td>
<td>29</td>
<td>15</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>Q8</td>
<td>36</td>
<td>8</td>
<td>44</td>
<td>0</td>
</tr>
</tbody>
</table>

Q1. Were adequate course material and references given?
Q2. Whether the content matched with the directives of the curriculum?
Q5. Was there any interference of external environment during the session?
Q8. Whether clarification of doubts was done after session?
According to the responses of the students, majority of them gave a position response in live streaming session as compared to pre-recorded video.

In Pre Recorded practical sessions, majority of students selected, 3-5 (fair) on the Likert scale, and very few responses were for 0-2 (disappointed).

In Live demonstration practical sessions, majority of students selected, 6-8 (good) on the Likert scale, and only 1 response was for 0-2 (disappointed).
According to the responses of the students, majority of them preferred live streaming better than Pre-recorded.

III. DISCUSSION:

New technology has broadened the teaching methods available for learners. Several studies have tested the pre-recorded video approach to educate physiotherapy students and has been shown to be as effective as live demonstration.\(^6,11\) Therefore, the current study was undertaken to assess the efficacy of online pre-recorded practical demonstrations and live streamed practical demonstrations in Third year physiotherapy students during the COVID-19 pandemic, to overcome some of the common problems faced during traditional teaching methods.\(^9\)

Online Teaching Method

With the development of online education today, a variety of online learning models have been formed, such as massive online open course (MOOC) and other massive course sharing or trading platforms, which have also attracted the attention of medical educators.\(^1\) Pei and other scholars conducted a metanalysis of the literature in 2000–2017, systematically reviewed 3700 articles, selected 16 articles that met the research standards, and discussed the degree of knowledge and skills mastered by online and offline learning in medical undergraduates.\(^14\) Compared with offline learning, online learning has advantages in promoting knowledge and skills of medical undergraduates and is a feasible method. Some studies reported, the temporary introduction of a full e-learning approach in this physical therapist education program appeared to heighten the level of negative emotions in response to the COVID-19 pandemic.\(^1\) In addition to experiencing rapid changes in learning activities and uncertainty within the program, many students had experienced changes in other aspects of their life including loss of employment or their social support network (e.g., social gatherings, amateur sports).\(^1\) Changes in other aspects of their lives is likely to have impacted the psychosocial wellbeing of students.\(^1\)

The significance of different online teaching methods

Early online education generally adopts the recording and broadcasting class model. Traditional forms of teaching around the world are changing rapidly with the advancement of technology.\(^2\) Some of the tools which are nowadays attracting the attention in online education include Flipped classroom, online pre-recorded videos, Live online demonstrations, Game based teaching, discussion boards and forum, etc. In our study we used pre-recorded lectures and live demonstration as these methods showed different advantages.\(^16\)

Flipped Classroom showed different problems like reduced opportunity for self-directed critical thinking, decentering the role of the student, encouraging a lecture-driven march through curriculum, and in general simply streamlining an already industrialized approach to learning.\(^11\) And just like in a regular classroom, success depends
greatly on the quality of the teacher, the clarity of communication, and the quality of given curriculum, assessment, and instruction.\textsuperscript{15}

The benefit of pre-recorded lectures, as opposed to the live ones, is that the former allows the students to learn at their own pace at any time without the presence of the teacher. It also gives them material to go over during revision.\textsuperscript{1} Nowadays, the best online method, teachers use a combination of both synchronous and asynchronous activities, creating a blend of traditional online learning styles with newer, more collaborative audio and visual tools.\textsuperscript{1} Compared with recording and broadcasting, live teaching is more interactive, can create a learning atmosphere, and can solve the problem of mandatory learning to a certain extent. The combination of live broadcast technology and online education has a stronger appeal and freshness for the Internet generation, and can more flexibly compensate the lack of online teaching interaction. This brings opportunities for the online education industry, and live broadcast education has gradually begun to rise.\textsuperscript{3}

This study will help the teachers as well to gain the true knowledge in this kind of practice to study the basic laws of scientific cognition and to actively think and explore teaching methods that will be more suitable for themselves and will be more enlightening for the students.\textsuperscript{1}

\textbf{IV. CONCLUSION:}

Pre-recorded video is equally as effective as a live demonstration. However students preferred live demonstration technique as a preferred mode of teaching. Each method has its own advantages and limitations, therefore both methods can be combined in teaching undergraduate physiotherapy courses in order to improve learning experiences and to match different learning preferences of students.

\textbf{FUTURE SCOPE:}

These methods can be used for teaching other physiotherapy undergraduate classes as well. Also, it can be effectively used for teaching theoretical topics of their curriculum.

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