

planning the study, participated in data collection, and statistical analysis; DM: assisted in planning, outcome assessment, manuscript finalization and data analysis. All authors approved the final manuscript.

Funding: None; *Competing interest:* None stated.

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Audience Response System Technology for Pediatric Postgraduate Training

We report our experience of using Audience Response System among 21 pediatric postgraduate residents in pediatrics as a mode of teaching. Apart from significant improvement in test scores, three-fourth of the participants felt it was an interesting way to learn actively and was better than the traditional audio-visual presentation during lectures.

Traditional methods of postgraduate residents teaching program include seminars, didactic lectures, journal club, mortality meet, and clinical case conferences. Most of them have a drawback of passive learning. With the advancement in technology, there is a need to develop new teaching methods that involve active participation of students. Audience response system (ARS) enables learners to answer multiple-choice questions anonymously during the lecture. Result of responses by learners is displayed instantly in form of a histogram that allows the lecturer to assess learners’ understanding of the subject, and also promotes the learners’ engagement with the study material, thereby increasing comprehension and retention of material.

The study participants included 21 second-and third-year pediatric residents who consented to participate in this study. The study was conducted in a tertiary-care teaching hospital of Northern India. A WhatsApp group of participating residents was created prior to the intervention. ARS was administered using website www.polltab.com and the link for the questions were posted in the WhatsApp group.

A 10-minute pretest in the form of video-based multiple-choice questions was administered to establish baseline knowledge of movement disorders in children. It consisted of 10 questions with 10 marks each with a maximum of 100 Marks. Subsequently, a powerpoint presentation on basic principles and tips for recognizing movement disorders were delivered, followed by a case-based discussion with videos depicting each movement.

At the end of each video, ARS was used to assess residents ability to identify the type of movement disorders depicted in the video. The response of residents was displayed simultaneously when they voted, and the lecturer discussed the points concerning that video. At the end of the lecture, all residents completed a post-test evaluation to reassess their knowledge of the topic. In addition, they also completed a feedback form to assess their opinion regarding the usefulness of the ARS.

There was a significant improvement in the mean (SD) post-test scores compared to pretest scores [60 (19.4) vs 18.8 (23.5), $P < 0.001$]. Majority of the residents (16, 76.2%) 'strongly' felt that it was an interesting way to learn, involves active learning, it ensured participation of all residents, avoided embarrassment for giving a wrong response, and were overall satisfied with this mode of teaching. Fifteen of them (71.4%) strongly felt more confident about identifying a movement disorder. Seventeen (81%) found it to be better than traditional video lectures and suggested its incorporation into pediatric postgraduate teaching program.

In the open comments, students expressed following additional comments: "I could understand the video better and had time to think about each video", "I was happy to see when others were also wrong!", "It is exciting to see that poll opinion does not necessarily translate into correct response as we could all think in wrong direction", "we were motivated to read it further", "it was a good way to teach complex topics like movement disorder", "For the first time I was not checking my whatsapp for one hour despite being on smartphone!" One of the faculty member who attended the session conveyed that "it is an exciting and novel method to teach the postgraduate students"

Various studies on the use of ARS in medical students demonstrated benefits in form of enhanced attention with long-term retention of knowledge [1,2]. ARS is known to improve engagement of students and their attendance in large group lectures [3]. The present study was conducted among a small group of postgraduate students where video-based teaching was adopted. Video-based lectures have their own strength and it is rather difficult to attribute improved post-test scores to use of the ARS system alone. However, we believe when used in conjunction, this becomes an effective mode of teaching.

The present study demonstrates ARS to be an effective mode of increasing interaction with learners when adopted in a small groups of postgraduate students. In this era of smartphones and ease of internet access, ARS is useful adjunct to lectures and seminars [4]. There are large number of ARS systems available which

have their own merits and demerits including cost, ease of use, and limit of number of participants. ARS has also been used for developing consensus statements [5], to verify attendance in lectures [6], and as a modality for course evaluation [7]. The present study intends to sensitize the readers about this simple, low-cost and uncomplicated technology of audience response system in their didactic lectures and seminars to make the class more interactive.

Acknowledgment: Dr Mahima Rajan, Senior resident in execution of this teaching method.

Contributors: JSK: conceptualized the idea; AM, JSK: drafted the manuscript; JSK: provided intellectual inputs; all the authors approved the final version of the manuscript.

Funding: None; *Competing interest:* None stated.

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