

Original Research Article

IMPACT OF HYBRID WORKSHOP ON OBSTETRICS/GYNECOLOGY TRAINING AT A PRIVATE UNIVERSITY: MIXED –METHOD STUDY

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ABSTRACT

Background: COVID-19 pandemic brought a major transition from traditional face-face teaching to distance-learning. This study has explored the impact of hybrid teaching method on residents' knowledge and perceptions.

Materials and Methods: This workshop was designed for Obstetrics and Gynecology residents, of a Private University in Karachi, based on small group, case-based learning format. Concurrent Mixed Methods approach was used. Participants were divided in groups in separate rooms, maintaining social distancing, and connected through zoom link. Quantitative data comprised of pre and post-test scores. Standardised Likert-scale based evaluation form was used to assess participants' opinion. Open-ended comments tailored prompts for feedback/interview. Questions were sent through WhatsApp and replies were transcribed and validated by two researchers. Field notes and written comments were used for triangulation of qualitative data. Results of pre and post-test were analysed through SPSS 19 using independent sample t-test for paired samples (p-value of 0.005). Unedited verbatim of qualitative data were coded and arranged in trends till saturation was reached. Emerging themes were finalized and conclusions derived.

Results: Mean score of pre and posttest were $9.04 \pm 3.574SD$ and $13.35 \pm 1.991SD$ respectively. Residents rated the activity as "Excellent" on evaluation. On qualitative analysis, three major themes evolved through sub-themes and codes, including "Impact of Hybrid Workshop on Residents' Professional and Academic Learning", "Strengths of Hybrid Workshop" and "Areas of Improvement".

Conclusion: Evaluation of participants, were not only encouraging but also provided flexible approaches and way forward for more such activities at national and international levels.

Keywords: Hybrid workshop, teaching-learning during COVID pandemic, teaching strategies for residents, post-graduate teaching, distance-learning.

INTRODUCTION

COVID-19 pandemic has significantly affected all social activities, including medical education. Educational community faced this challenge by transitioning from traditional face-face teaching to distance-learning. World-wide, educators modified their teaching approaches according to the new teaching/learning requirement. This change has continued to persist to various degrees, to date.^[1] Information technology made it possible to make distance-learning opportunities available to nearly all

students including postgraduates.^[2,3] Although popular, effectiveness of on-line learning is not yet clearly known. Results from several studies comparing learning between traditional methods and e-learning are inconsistent.^[1,4-7] Although on-line courses offer advantage of flexible timing and convenience of learning according to learners' pace, they lack the opportunity of interaction with teachers and peers. Face-face learning not only has direct interaction, but also encourages self-discipline and commitment to learning.^[8] Educators have developed

different hybrid methods to overcome these shortcoming and enhance learning.

In Gynecology, understanding causes and management of primary amenorrhea is challenging for postgraduate trainees, as it is infrequently seen in clinical practice.

Primary amenorrhea is failure of menstruation by 16 years of age in presence of normal secondary sexual characteristics or by 14 years with absence of secondary sexual characteristics. Its causes include genetic, endocrine, developmental abnormalities of reproductive tract or constitutional.^[9] Correct diagnosis is very important for right treatment in a timely manner. A hybrid workshop was designed on a small-group, case-based learning format; to teach these challenging concepts to the Obstetrics and Gynecology (OBGYN) residents, during the COVID pandemic at the Aga Khan University Hospital (AKUH).

This study aimed to explore the impact of hybrid workshop on OBGYN residents' knowledge and critical thinking in managing patients with primary amenorrhea. It also explored their perceptions regarding their learning experience using this model.

MATERIALS AND METHODS

A concurrent mixed-method approach was designed to evaluate the impact and efficacy of a hybrid workshop on the knowledge and learning experiences of Obstetrics and Gynecology (OBGYN) residents. The quantitative component assessed changes in participants' knowledge using pre- and post-test scores, while the qualitative component explored participants' perceptions of the workshop and its perceived impact on learning and professional practice.

The study was conducted at the Centre of Innovation in Medical Education, Aga Khan University Hospital (AKUH), among OBGYN trainees. There were 23 residents in the department, and the three-hour workshop was mandatory for all residents as part of the Pediatric and Adolescent Gynecology (PAG) module. Census sampling was used, with all eligible residents invited to participate. All eligible OBGYN residents enrolled in the PAG module and invited to participate in the mandatory workshop were included. Residents who did not participate in the workshop or did not provide consent for use of their evaluation and test data were excluded from the analysis.

As the workshop was conducted during the COVID-19 pandemic, measures were implemented to comply with COVID-19 standard operating procedures. Participants were divided into five groups, with each group placed in a separate room large enough to accommodate five to six participants while maintaining social distancing. The rooms were connected through an internet-based Zoom link. The workshop commenced with an online introduction followed by a pre-test consisting of multiple-choice

questions. A clinical scenario of primary amenorrhea was assigned to each group. A facilitator supervised each group while the residents discussed the assigned scenario and prepared a PowerPoint presentation. The group presentations were subsequently discussed through the central online link, followed by debriefing. The workshop concluded with a post-test. Quantitative data consisted of pre- and post-test scores. A standardized Likert-scale-based evaluation form was completed by each participant at the end of the workshop to assess the participants' evaluation of the activity. The quantitative component of the evaluation form included the options "Excellent," "Satisfactory," and "Unsatisfactory," while the qualitative component consisted of open-ended comments. The evaluation form was reviewed by the study team for relevance and clarity before use. The open-ended comments informed the prompts for subsequent feedback/interview questions. Feedback/interview questions were sent to participants through voice messages on WhatsApp. Participants' verbal responses were transcribed and validated by two researchers to enhance trustworthiness. Field notes and written comments were also used for triangulation of the qualitative findings.

Data from consenting residents were entered into SPSS version 19 for analysis. Pre- and post-test scores obtained from the same participants were compared using a paired-samples t-test. A p-value of <0.05 was considered statistically significant. The assumptions of the paired-samples t-test were considered before analysis. For the qualitative component, unedited responses were coded and organized into emerging trends, themes, and sub-themes. Coding continued until saturation was reached. The emerging themes were finalized following discussion and consensus among the authors. Field notes, written comments, and transcribed participant responses were used for triangulation of the qualitative findings.

The reporting of the mixed-methods study was guided by the principles of the Good Reporting of A Mixed Methods Study (GRAMMS) framework, with relevant qualitative reporting elements considered in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ). The qualitative component was reported with attention to the study context, data collection procedures, transcription and coding processes, triangulation, and consensus among the researchers.

Informed consent was obtained from participants before the workshop. The study was approved by the Institutional Ethical Review Committee (ERC Ref. No. 2020-5518-15044).

RESULTS

The research intended to explore the impact of hybrid teaching on residents' knowledge and critical-thinking skills. To assess impact on knowledge

pre/post-workshop tests were conducted. The mean of pre-test score was $9.04 \pm 3.574SD$ while the post-test score was $13.35 \pm 1.991SD$. [Table 1]

Quantitative Analysis: Based on the evaluation form, most of the participants rated 'Objectives of activity well-defined', 'Disclosure slide/statement made', 'Overall presentation were at participant level of understanding', 'Acquired new knowledge', 'Time-management', 'Queries responded', 'Overall assessment of activity' as excellent and satisfactory. [Table 2]

Similarly, answer was mostly 'Excellent' in response to the following questions; 'Relative to where you were prior to participating in this activity, please rate how this activity has affected your ability to understand the topic/subject?', and 'Based on your participation today, how will you rate this activity as a recommendation to your peer/colleagues?' [Table 2]

Qualitative Analysis: To explore impact of the training on knowledge and overall professional practice of trainees, we additionally conducted qualitative analysis. Three major themes evolved through sub-themes and codes; "Impact of Hybrid-Workshop on Residents' Professional and Academic Learning", "Strengths of Hybrid-Workshop" and "Areas of Improvement".

Theme 1: Impact of Hybrid Workshop on Residents' Professional and Academic Learning

Residents' responses were generally positive for the workshop and indicated that workshop was effective in enhancing their knowledge and repertoire. They felt that direct supervision of experts was particularly helpful and the case-studies helped in active learning and insightful discussion with other participants.

Sub Theme 1: Confidence to apply knowledge in clinical practice

Residents felt that the workshop would help improving their clinical practice. Moreover, it would enable them to critically appraise the complexities involved in implementation of knowledge in clinical settings.

"Gynecology is perplexing compared to obstetrics, because it seems very difficult for me in terms of approach. With this workshop, I am more confident that if I ever encounter such a patient, I'll know what to do. My eyes will now see because my mind knows."

Through the different scenarios in the case-studies, residents had fruitful discussion and gained insightful practical knowledge under supervision of experts.

"My pre-AKU training experience in gynecology is limited but I can confidently say that AKU training program has made my practice more efficient and up to the mark with world-wide standards. This training has a positive impact on my practice."

Content and workshop delivery style were generally well-received and perceived as being impactful in enhancing clinical practice.

Sub Theme 2: Effectiveness of Case-Studies

Use of case-studies has proven to be effective in andragogy and professional development. Real-life scenarios help learners apply their knowledge.

"Strength of this workshop is that multiple topics could be covered in one day. They were all case scenarios, so interactive session was easier and informative for us residents."

Case-studies helped engage residents in problem-solving discussion. Residents with varying experience, could build on their prior knowledge through discussion, interaction and feedback.

"Stepwise approach to a case scenario sounds practical, it tells us how to deal with a case... I learnt a lot and feel confident to deal/diagnose such case scenarios in exams or clinics..."

Residents felt they could focus on the case since the case-study questions were geared towards problem-solving.

"Our group was supposed to focus on the scenario given to us. We had ideas, we knew how to do teamwork and focus on the topic. We knew that we are going to discuss it with other fellows, so we made sure to cover the basics. It was something that we understood and made sure that others understand as well."

Case-study method was beneficial in engaging all residents in meaningful learning.

"Because of the scenarios we got involved, the whole team was involved."

"Strength of the activity was that the task was divided into smaller groups. Scenarios were given, so it was very helpful, everyone was involved so everyone acquired a lot of knowledge."

The responses suggest, case-studies are also an effective method of conducting workshops as they help in developing understanding, activate prior knowledge and facilitate learning from other participants.

"...strengths of this activity..., I believe it taught us teamwork, time management and problem-solving skills. It was fun."

Sub Theme 3: Improved practice and knowledge

Residents felt they were able to understand multiple concepts in a reasonable amount of time.

"Very important workshop... These types of sessions or workshops will improve our knowledge."

"Very well-done group discussion ... In a very short time, multiple topics were discussed. New ideas were shared....increased communication skills....developed skills in online and multimedia. Such workshops should be continued."

Sub Theme 4: Learning from professionals

Residents felt they were learning from professional and competent teachers which is valuable for professional development.

"...very nice session. Strength ...under the direct supervision of consultants and interactive."

Residents opined that working in an environment with one-one feedback, enabled them to bridge gaps in their knowledge. "I came to know my weak areas. Working closely with highly professional and experienced faculty....opportunity to not only acquire knowledge to cover my weak areas but also to strengthen already established concepts."

"Good supervisors."

Quality of instruction and instructors are critical to ensure success of training, professional development of practitioners and overall quality of healthcare services offered to public. Feedback from this workshop suggests that in future, such workshops must continue. One resident praised how assessment tagged with workshop helped advance her knowledge:

“Pretest helped understand deficiencies in knowledge regarding the subject; Scenario based diagnosis & individual presentation regarding different causes helped better understanding. Brief & comprehensive discussion helped further understanding.”

Theme 2: Strengths of Hybrid-Workshop

Participants felt, content of the online workshop provided them with insight and points of reflection on their practice, creating more awareness regarding the topic.

“Didn't get opportunity to deal with such patients frequently....will help in evaluation of patients.”

Workshops must build on prior knowledge and provide opportunities for critical evaluation and self-reflection. Residents were able to recall, recollect and reinforce knowledge and concepts effectively in a short period of time.

“Active learning in a short time interval... easy way to recall such important topics.”

Online teaching/learning may not satisfy all learners, however, it is the best solution when physical distancing has to be ensured or where learners need to travel long distances to attend on-site sessions.

“...great learning experience. This online workshop was different from previous face-face workshops. It required one to be an active learner, to be more independent, needed better time management skills, improved virtual communication and helped develop new technical skills. At times, I felt it created a sense of isolation. This may be a drawback...”

Sub-theme 1: Time efficiency

The hybrid-workshop was effective, allowing residents to attend it apart from their work-hours, understand difficult concepts and improve critical-thinking skills.

“Strength of this workshop is that multiple topics could be covered in just one day.....”

Residents commented on the effective time management via online platform. Besides, as online model is centered towards remote learning, time spent on physical transition is saved.

“In a very short time, multiple topics were discussed. New ideas shared... increased communication-skills...developed skills in on-line and multimedia.”

“....time-saving, you can attend from your home.”

Sub-theme 2: Opportunity to communicate via social media platforms

Participants used online communication technology for learning; including Zoom and WhatsApp.

WhatsApp proved to be an effective method to collate feedback regarding effectiveness of the workshop, at a time convenient for the residents.

“WhatsApp was a good way to ask about participants' opinion.”

“.....WhatsApp interviews it's a good idea. Because when you are writing something you just write whatever comes to your mind.... You just fill it for the sake of formality.”

Messaging applications like WhatsApp have the potential to be used to improve communication between hospital-doctors and students. Good use was made of this application to gather feedback from the residents.

“WhatsApp interview is a good way to take feedback from every member which is not possible because of time constraint at the time of presentation.”

“WhatsApp interview is a good idea. We can reply at any time. If I am busy doing my work and I get these messages in the morning, I can reply at night also.”

Sub-theme 3: Effective and timely feedback

Professional training is reliant on feedback among learners and trainers. Feedback was built into the hybrid-workshop model. Residents could receive timely feedback for their problem-solving and related learning activities.

“Working with feedback mechanism, I came to know my weak areas....I got the opportunity to not only acquire knowledge to cover my weak areas but also to strengthen already established concepts.”

Future workshops must also include ample opportunities for learners to get feedback for their learning. Feedback is essential to maintain interest, focus and attain learning objectives.

Theme 3: Areas of Improvement

Major sub-themes included lack of time for elaborate discussion; varying levels of prior knowledge and experience of participants in group discussions; and, technological impediments.

Hybrid workshop proved to be effective for most learners. However, few, faced technical difficulties, felt the workshop lacked face-to-face interaction and made concentrating on the subject-matter challenging.

“Interaction is less in on-line workshop compared to face-to-face. Due to long screen time, there is eventually loss of interest”

Sub-theme 1: Lack of time

Most common strand was lack of time to delve into more discussion. Participants felt they needed more time to understand the topic and discuss the problems for greater retention and enhanced skills in practice.

“Short time....more detailed scenarios..., or real cases should be discussed.”

“... should have been more interactive....also include visual presentations...”

Future workshops should include ample time for participants to move at a comfortable pace between concepts. Series of workshops on related concepts may be helpful.

Sub-theme 2: Differentiated group

An interesting feedback suggested that a differentiated approach may help participants learn concepts effectively. Each learner may have a different background aptitude and style of learning. Workshops should be able to cater to multiple learners' needs.

“...residents with different intellectual levels... weak point for me was that residents were at different levels (of training)..., I was a little confused...”

Different needs of learners could be addressed with a varied modality of content delivery, such as videos, discussion of real-life cases etc.

“Weakness ..., workshop was long... lot of knowledge to absorb....should be divided into different sessions”.

Sub-theme 3: Technological impediments

“Zoom link sometimes gets hanged and, mobile battery drained. Very difficult to take the session online.”

Online workshops should be preceded by basic training on the usage of technology for best experience and outcomes. While most participants seemed to manage on-line learning platforms, technical assistance and training should be available to ensure that every participant can concentrate on the learning content without being bothered by how to use the tools.

“....convenience of course.....easy access to immediate and on-the-spot data search....with loss of connection we can face some time management issues.”

Table 1: Pre and post- test scores (N=23)

	Pre-test	Post test	P value
Mean (SD)	9.04 (3.574)	13.35 (1.991)	< 0.001
Median	08	14	
Range	12	08	
Minimum	04	09	
Maximum	16	17	

Table 2: Participants' rating of the workshop components (N=23)

Characteristics	Excellent (%)	Satisfactory (%)	Unsatisfactory (%)	Missing (%)
Objectives of activity well-defined	21 (91.3)	02 (8.7)	--	--
Disclosure slide/statement made	17 (73.9)	5 (21.7)	--	1 (4.3)
Overall presentation were at participant level of understanding	20 (87)	3 (13)	--	--
Acquired new knowledge	22 (95.7)	1 (4.3)	--	--
Time management	20 (87)	3 (13)	--	--
Queries responded	19 (82.6)	04 (17.4)	--	--
Overall assessment of activity	22 (95.7)	1 (4.3)	--	--
Relative to where you were prior to participating in this activity, please rate how this activity has affected your ability to understand the topic/subject?	19 (82.6)	3 (13.0)	--	1 (4.3)
Based on your participation today, how will you rate this activity as a recommendation to your peer/colleagues?	22 (95.7)	1 (4.3)	--	--

DISCUSSION

The successful implementation of this hybrid teaching approach positively impacted the knowledge and learning experience of OBGYN residents. In the present study, the mean post-test score was higher than the pre-test score, indicating improvement in knowledge following the workshop. Residents also reported positive experiences regarding case-based learning, faculty supervision, teamwork, feedback, and online interaction. These findings suggest that a structured hybrid approach can be a useful strategy for postgraduate medical education.^[8]

Primary amenorrhea is an uncommon but clinically important condition that may be challenging for postgraduate trainees because of its complex differential diagnosis and relatively infrequent presentation in routine clinical practice.^[9] The use of clinical scenarios in the present workshop provided residents with an opportunity to apply theoretical knowledge to a structured clinical problem. Similar benefits of case-based and simulation-based approaches have been reported in medical education, where clinical scenarios can improve learners' confidence, engagement, and understanding of clinical concepts.^[10,11]

The present findings also support the importance of active and self-directed learning. Residents reported that group discussion and case-based problem-solving helped them understand difficult concepts and identify gaps in their knowledge. Previous studies have demonstrated that interactive educational strategies can promote self-directed learning and learner motivation.^[12,13] The opportunity to discuss cases with peers and receive feedback from faculty may therefore have contributed to the positive learning experience observed in our study.

The hybrid format provided additional flexibility during the COVID-19 pandemic. Residents appreciated the convenience of online participation and the ability to communicate through digital platforms. Previous studies have highlighted the usefulness of online learning and academic emotions in supporting learner engagement and self-regulated learning.^[14] Online and physically distant educational approaches also became increasingly important during the pandemic, allowing educational activities to continue despite restrictions on conventional face-to-face teaching.^[15]

An important strength of the present workshop was the combination of small-group face-to-face interaction with a central online platform. This allowed residents to receive direct supervision while

maintaining physical distancing. Similar approaches have demonstrated the potential of interactive conferencing and hybrid educational models to maintain educational connectivity during periods when conventional teaching is restricted.^[15] The use of WhatsApp for obtaining participant feedback also provided a convenient communication mechanism. Despite these advantages, participants identified several limitations, including reduced face-to-face interaction, technological difficulties, limited time for discussion, and differences in participants' levels of prior knowledge. Similar challenges with online medical education during the COVID-19 pandemic have been reported, including technological barriers, reduced interaction, and difficulties maintaining effective engagement.^[16-18] The variation in residents' educational levels may also have influenced group learning, consistent with evidence that learner characteristics and group dynamics can affect educational experiences.^[19] The study was conducted at a single institution and involved a relatively small number of residents participating in one module, which may limit generalizability. Nevertheless, the combined quantitative and qualitative findings suggest that a carefully structured hybrid workshop can support knowledge acquisition, active participation, teamwork, and learner engagement in postgraduate OBGYN education.

CONCLUSION

Apart from its challenges, COVID-19 pandemic, has provided a wide of range of opportunities for innovation in curricular transformation. We successfully experimented a hybrid-model of face-face and online teaching in this study. Assessment of participants and evaluation of activity by the learners, were not only encouraging but also provided a flexible approach and way forward for more such activities at national and international levels.

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