



IMPACT OF A HANDS-ON WORKSHOP ON KNOWLEDGE AND SKILLS OF PARTICIPANTS

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ABSTRACT **Introduction:** Medical workshops play a pivotal role in facilitating knowledge exchange and skill enhancement among healthcare professionals. This study aims to assess the effectiveness of a hands-on workshop on Genetics for Early Career Anatomists organized in the Department of Anatomy, which hoped to equip participants with the latest evidence-based knowledge and practical skills in genetics. **Methodology:** A diverse cohort of 18 participants, including postgraduate trainees, medical faculties, and allied medical professionals, attended the workshop. To assess effectiveness, pre-tests and post-tests were administered to measure participants' understanding of key concepts and proficiency in practical skills. Additionally, structured feedback forms were used to gather participants' perspectives on various aspects of the workshop. Quantitative analysis of test results focused on mean scores and statistical significance, while qualitative analysis of feedback provided insights into participants' subjective experiences. **Results:** Statistically significant improvement was seen in the mean scores of pre-test and post-test, proving the workshop was effective in imparting desired knowledge and skill-set to its participants. **Conclusion:** The study highlights the effectiveness of organizing and attending workshops to facilitate lifelong learning of medical professionals about the ever evolving dynamics of healthcare.

KEYWORDS : Medical workshop, Effectiveness, Feedback, Skill-enhancement

INTRODUCTION:

Medical workshops serve as invaluable platforms for healthcare professionals to update their knowledge, refine their skills, and exchange best practices; bringing together a diverse group of participants, including medical students, faculties, and allied medical professionals.[1]

Realizing that the field of medicine is dynamic, with constantly reshaping clinical practice; healthcare providers must remain well-versed to these advancements to uphold the standard of care and adapt to evolving patient needs.[1,2]

In alignment to this thought, a hands-on workshop on Genetic for Early Career Anatomists was organized in the Department of Anatomy, to gain insights to the rapidly evolving and advancing genre of genetics, aiming to equip participants with the latest evidence-based knowledge and practical skills and by facilitating robust sharing of knowledge and experience from stalwarts in this field; the workshop aspired to provide a rich learning environment for its participants and enhance their practical knowledge.

Research Question for the study :

How effective was the workshop in enhancing the knowledge of the participants?

Objectives of the study:

- To assess the effectiveness of the study by comparison of pre-test and post-test scores
- To assess participants' feedback of their experience in the entire workshop

Methodology:

• Study Area :

Genetics Laboratory, Department of Anatomy, Assam Medical College and Hospital, Dibrugarh

• Participants:

The workshop convened a diverse cohort of 18 participants-comprising of postgraduate trainees, medical faculties, and allied medical professionals

• Effectiveness assessment and Feedback collection

Before the commencement of the workshop, participants were

administered a comprehensively designed pre-test to establish a baseline assessment of their knowledge of understanding key concepts and skills and an initial assessment. Similarly, at the end of the workshop, participants were given a post-test to measure the extent of knowledge and skills acquired resulting from their participation. The post-test mirrored the format and content of the pre-test, enabling a direct comparison.

The participants were also asked to provide feedback on their workshop experience through structured feedback forms; soliciting their perspective on administrative aspects of the workshop; such as objectives, course materials, facilitator effectiveness, workshop organization, and overall impact.

• Data Analysis:

Quantitative analysis was done to assess the effectiveness of the workshop by analyzing the pre-test and post-test results. Mean scores obtained by participants in different sections of the assessments was analyzed. To assess significance of difference between both scores; Student t-test was done to compare the means of pre test and post test.

Qualitative analysis of participant feedback was undertaken and the results were represented graphically as bar diagrams to gain insights into participants' subjective experiences and perceptions of the workshop.

By synthesizing quantitative and qualitative data, a comprehensive understanding of the workshop's impact was achieved.

RESULTS:

All 18 participants of the workshop filled and submitted both the test answer scripts. The 18 participants were a mixed crowd of faculties, students and allied medical professionals. Table 1 shows the distribution of the background of the participants.

Table 1: Distribution of the professional background of the participants.

Professional Background	Number (%)
Post graduate Trainees	3(16.6)
Medical Faculties	14(77.9)
Allied Medical Professionals	1(5.5)

The answer scripts of both Pre-test and Post-test were evaluated at the

end of the workshop. Table 2 depicts the mean scores obtained by the participants in the various sections of the pre and post tests

Table 2: Mean ± SD of marks of all participants in both pre test and post test

	Mean ± SD Marks	
	Pre-Test	Post-Test
Knowledge (Total marks =)	4.94 ± 1.26	7.39 ± 2.72
Skill (Total marks =)	4.89 ± 3.41	11.45 ± 2.99
Grand Total (Total marks =)	9.8 ± 4.09	18.83± 5.25

The results show an improvement in the scores of knowledge as well as of the skill section, where the participants were scored based on the practical demonstration of the skills in question.

Table 3 : Comparison of the mean scores of the knowledge and skill sections as well as of the overall scores of the pre-test and post-test using Student t-test.

	Diff	SE	t-statistics	95% CI	dof	p-value
Knowledge section	2.45	0.70	3.47	1.01 to 3.89	34	0.0014
Skill section	6.56	1.07	6.14	4.39 to 8.73	34	<0.0001
Grand Total (Total marks =)	9.03	1.57	5.76	5.84 to 12.22	34	<0.0001

Diff= Difference, SE = Standard Error, CI = Confidence Interval, dof = Degree of Freedom

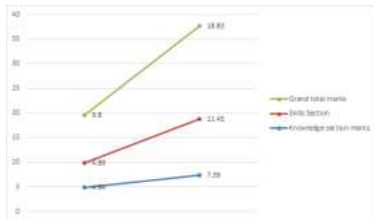


Figure 1 – Line diagram showing the trend of improvement of marks between pre-test and post-test

The results of the Student t-test confirmed that there is improvement in the scores which is statistically significant, suggesting that the workshop has been effective in imparting knowledge as well as enhancing skills of the participants; which was the primary objective behind conducting the workshop.

We also asked the participants to fill up a feedback form regarding their personal experience of the workshop, where the options of expressing their feedback was graded as Strongly disagree, Disagree, Agree and strongly Agree. The feedback form was divided into five headings, each containing different questions, namely Workshop Objectives, Course materials, Facilitator feedback, Organization of the workshop and Impact of the workshop (as enlisted in Table 4). A comprehensive graphical result of the analysis is shown in Figure 2.

Table 4: Questions regarding feedback of workshop

Q Number	Questions
Feedback regarding Workshop Objectives	
1	The objectives were clearly described and outlined
2	The objectives stated were covered and adhered to during the workshop
3	The materials covered were the right level of complexity for my understanding
Feedback regarding Course materials	
4	The course materials were well organized
5	The course materials complemented the course context
6	The materials were relevant to my needs and adhered to why I chose to attend the workshop
Feedback regarding Facilitator	
7	The overall organization was good
8	Time allocation was appropriate and adhered to
9	Communication was two-way throughout the workshop
Feedback regarding Organization of the workshop	
10	The overall organization was good
11	Time allocation was appropriate and adhered to
12	Communication was two-way throughout the workshop

	Feedback regarding Impact of the workshop
13	Attending the workshop helped enhance your knowledge and skills
14	Hands-on experience was provided under guidance
15	Information of practical value was shared
16	Presentations were apt and useful
17	Questions were satisfactorily answered and doubts were cleared
18	Attending the workshop was worth your time and a good experience

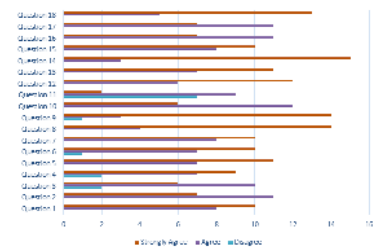


Figure 2: Comprehensive representation of participants' feedback:

DISCUSSION:

The workshop's positive impact on participants knowledge and skills has broader implications for medical education and professional development initiatives and by providing a structured learning environment that integrates didactic instruction with hands-on practical exercises, workshops offer a dynamic platform for engaging participants and fostering active learning.[3]

Furthermore, the workshop's emphasis on interactive learning and peer collaboration reflects contemporary trends in medical education, which prioritise learner-centered approaches and experiential learning methodologies, promoting critical thinking, problem-solving and skill application.[1,4]

Constructive feedback received by participants offers valuable opportunities for refining future iterations of the workshop which shall further enhance its relevance and effectiveness; ensuring continued success and sustainability of similar workshops in the future.[4]

Future research endeavors could explore larger participant cohorts and employ more robust study designs to further validate the findings and enhance the generalisability of the results regarding similar medical workshops.[5]

CONCLUSION:

The outcomes of the workshop evaluation presented in this study provide compelling evidence of the positive impact of targeted educational interventions on participants' knowledge acquisition, skill development, closing knowledge gaps and overall learning experience. This emphasizes the importance of learner-centered approaches, experiential learning methodologies, and continuous quality improvement; by embracing innovative pedagogical strategies, leveraging technology-enhanced learning tools, and fostering a culture of lifelong learning.

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