ORIGINAL ARTICLE

Evaluation of skill-based training program on Integrated Management of Neonatal and Childhood Illnesses (IMNCI)

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ABSTRACT

Objectives: To assess student reactions to the skill-based training program on IMNCI. To assess student learning in the skill-based training program on IMNCI by OSCE and retro-pre feedback. To assess the reaction of students to OSCE as an assessment tool. **Material and Methods**: It was a mixed method interventional educational research. Students were assessed by using OSCE stations, retro pre feedback, and open ended questions about the training program and OSCE. **Results**: Retro-pre feedback of self-assessment of the 75 students shows that, after the training program, there is a significant increase in the self perceived post-test scores of Knowledge of Importance of IMNCI (2–4), Chart booklet (1.5–3.9), Skills of assessing the child for danger signs (1.7–3.9), cough (1.9–3.9), diarrhoea (2.1–4.2), anemia (2.2 –4.1), malnutrition (2.2 –4.2), counseling the care giver of the child (2-4.2). The students liked the skills taught interactively through videos, case scenarios, and role plays. Student liked the OSCE because of the clinical scenarios, photos, diverse cases were evaluated. **Conclusions**: Overall, the training program was taken well by the students and their IMNCI skills were improved.

KEYWORDS

Medical Students; Training; Evaluation; Educational Assessment; Medical Education; IMNCI; OSCE

INTRODUCTION

Competency Based Undergraduate Curriculum for the Indian Medical Graduate requires teaching and assessment of skills in Community Medicine as per National Medical Commission.(1) As there is no clarity on which skills to be taught in Community Medicine. So different skills which are thought important by the faculties are taught.

Under five children and Neonates are vulnerable population. Integrated Management of Neonatal and Childhood Illnesses(IMNCI) skills are an integral component of Community Medicine curriculum and are essential for working as a primary care physician.(2)Presently in many institutes IMNCI skills are taught by long case during clinical postings but lacks standardisation.(3) OSCE (objective structured clinical examination) is an skill assessment tool based on the principles of objectivity and standardisation, in which the candidate moves through a series of time-limited stations in a simulated environment.(3) OSCE has been used successfully in community medicine in some studies.(4,5)

The objectives of the study were:

- To assess student reactions to skill-based training program on IMNCI
- To assess student learning in the skill-based training program on IMNCI by OSCE, and retro-pre feedback.
- To assess reaction of students to OSCE as an assessment tool.

MATERIAL & METHODS

Study settings: The present evaluation of the educational project was undertaken at the Department of Community Medicine, of a Medical college in a metropolitan city.

Study participants: 3rd year part 1 MBBS students.
Study period: Jully to December 2023

Study Design: Mixed method study which included post-then-pre rating feedback and response to open-ended questions from the students exposed to this program. Evaluation of the training program was done at Kirkpatrick level-1 (learner's reaction).

Sampling: During this period 2 batches of 45 phase 3 MBBS students were posted for Clinical rotation in Community Medicine Department who were included in the study.

Training program: During clinical rotation the students were taught the IMNCI skills like assessment of dehydration, cough, chart booklet use, counselling of mother by use of videos, photographs, small group discussions, OSCE and role-plays. Five sessions one hour each on five days were taken for teaching. The training program was prepared with the help of resources from World Health Organisation(WHO), Ministry of health and Family welfare(MOHFW) and United Nation Chidren Emergency Fund(UNICEF). The resources were Student's Handbook for IMNCI by WHO,(6,7) IMNCI photographs for physician by MOHFW,(8) IMNCI Chart Booklet for Medical Officers by MOHFW.(9)Teacher's Guide for IMNCI Training of Students.(10) These study materials and videos were also shared with the students.

Data collection: Quantitative outcome measures were OSCE score, retro prefeedback & satisfaction of students about the training program and OSCE. Qualitative outcome measures were feedback from the students about the Training program and OSCE in the form of open ended questions. Students were assessed by retro-pre feedback, OSCE stations and open-ended questions. Retro-pre feedback on self-assessment of students's IMNCI knowledge and skills was taken using a 6-point Likert type scale and open-ended feedback addressing the questions (1) what was good about it and (2) how it can be improved, about the training program and OSCE were collected at the end of the training program.

Analysis: Collected data was entered in Excel and analysed using SPSS. Percentages, Mean±SD , Paired t test was used. Open ended questions were analysed by content analysis.
Ethical issues: Permissions from Ethics committee of HBTMC & Dr. RNCH was taken prior to the study with No. HBTMC/IEC/122-2023/O/RP/158/091123/2024

RESULTS

Out of 90 students, 80 gave consent, 75 attended atleast 3 out of 5 sessions and final examination so their data is presented here. The mean OSCE score of students was 76% (range 60 to 94%). Satisfaction of the students about the Training program was as follows: 25(33%) extremely satisfied, 47(63%) satisfied, 3(4%) neutral. Retro pre feedback of self-assessment of students's IMNCI knowledge and skill shows that, after the training program, there is a significant increase in the scores of Knowledge of importance of IMNCI(4.1), Chartbooklet (3.9), assessing for malnutrition, immunization in every under 5 child(4.4), Danger signs(4) of IMNCI. There was also significant increase in the scores of skills of assessing a child for Danger signs(3.9), cough(3.9), diarrhoea(4.2), anemia(4.1), malnutrition(4.2), counselling of the care giver(4.2) as shown in Table 1.

Table 1: Retro pre feedback of self-assessment of IMNCI knowledge and skills (n=75)

Questions	Pre (Mean±SD)	Post* (Mean±SD)
I know the Importance of IMNCI	2±1	4.1±0.7
I know the Danger signs of IMNCI	1.7±0.9	4±0.8
I know the importance of Chart booklet of IMNCI	1.5±0.8	3.9±0.8
I know the Importance of assessing for malnutrition, immunization in every under 5 child	2.5±1.1	4.4±0.8
I can assess a child for Danger signs	1.8±0.9	3.9±0.9
I can assess a child with cough	2 ±0.9	3.9 ±0.9
I can assess a child with diarrhea	2.1 ±0.9	4.2 ±0.8
I can assess a child for anemia	2.2±0.9	4.1 ±0.8
I can assess a child for malnutrition	2 ±0.99	4.2 ±0.8
I can counsel the care giver	2.1 ±0.89	4.2 ±0.7

*P< 0.05%, SD Standard Deviation, Paired T test used

Table 2: Content analysis of the qualitative data obtained from the students

Categories	Codes	Statements
Knowledge improvement	Knowledge about danger signs, need for referral	we got to learn about how to access for danger signs and when to refer for further treatment
	Common illnesses of neonate and under 5 children	It provided me the basic knowledge to handle neonate and under 5 children presenting with common illness
Examination Skills improvement	Assessment for common illnesses	IMNCI skills help in assessment of child for common diseases like anaemia, malnutrition, measles, diarrhoea, cough
	Assessment by signs	It is vital for us as medical students to know the basic signs we need to lookout in children. It is hard to diagnose as they cannot communicate properly.
Counseling Skills improvement	Role plays for counseling were interesting	clear explanation about various aspects, detailed information given, counselling made interesting by role plays
Method of teaching	Teaching by images, videos and Roleplays	It is based on images, video and Roleplays which helps to understand topic better
		The audiovisual explanation of each and every sign was very helpful
	Case scenarios	the way they presented clinical questions are fantastic
	Interaction	The sessions were very interactive
Future	Future help in practice	Important knowledge was conveyed to us which will benefit us as we practice in future
Suggestions	Hands on practice on actual patient	If the skills are demonstrated on actual patient that would be very helpful

Table 2 shows the perception of the students about the training program. Students perceived that their knowledge about danger signs, need for referral, under 5 child illness improved, their examination and counseling skills improved. The students liked the interactive teaching by various methods and felt the program will be useful for their future practice.

Table 3: Content analysis of the qualitative data about OSCE

Categories	Codes	Statements
OSCE aspects liked by students	Clinical scenarios	Counselling session, Clinical scenarios & pics were interesting
		Clinical scenario were given with proper data and also IMNCI charts were provided for evaluation
		Practical and real life questions were asked
	Many aspects, skills covered	Most aspects of IMNCI assessed
		Many skills were tested
	Feedback	Feedback provided was very useful
	Thinking improved	OSCE Improved our thinking
OSCE improvement suggested by students	More time	More time should be allotted

Table 3 shows the perception of the students about OSCE. Students liked the feedback for improvement given to them after OSCE. Unlike in long case where only single case knowledge is tested OSCE covers various aspects. Satisfaction of the students about the OSCE was as follows: 20(27%) extremely satisfied, 47 (63%) satisfied, 8 (10%) neutral

DISCUSSION

Overall, there was a significant improvement in the knowledge and skills for IMNCI of Medical students due to the training program as evaluated by retro-pre assessment and OSCE score. Most of the students were satisfied about the training program. Students gave positive feedback to training and OSCE. Learner's reaction to the training program(Kirkpatrick Level 1) was obtained.

We used study material from WHO, MOHFW and UNICEF. There was significant improvement in the knowledge and skills for IMNCI of the Medical students. A study done in India for training of under graduate medical students in IMCI showed similar results.(11) The IMNCI is the Indian adaptation of the WHO-UNICEF generic IMCI strategy.(12)

In our study the students felt that the IMNCI knowledge and skills will help them in future practice. It will lead to improved patient outcome of the children attended by them especially at Rural Health Training Center and Primary Health Centers where paediatricians are not available. The students will also guide Field staff in IMNCI in the future. Diagnosing, treating, referring of under five children, use of chart booklet, assessing immunisation and nutrition in under five children

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was learnt by the medical students. Under five children are vulnerable population and IMNCI is an important tool for developing primary care physician who can manage under five children in India. The students like the interactive teaching by using various methods like roleplays, case scenarios, videos, pictures. There were similar findings in Gujarat for teaching IMNCI to III/Ist MBBS students.(13)

In our study the students liked the Clinical scenarios covering various aspects, skills and the feedback provided to them. Another study in the Department of Community Medicine on III/Ist MBBS students concluded that OSCE/OSPE can provide a valid and reliable means of assessing the clinical skills of students.(5)The Community Medicine education can be improved by use of different teaching learning methodologies like OSCE.(4)A study implemented OSCE in Community medicine for 3rd year MBBS students on pilot basis and most of the teachers and students favoured OSCE use.(5) We have used triangulation of data from retro-pre assessment, OSCE score, satisfaction of students on five point Likert scale and qualitative feedback about the training program and OSCE.

Conclusion & Recommendation

Overall, the training program and OSCE was received well by the students and their IMNCI skills were improved. IMNCI skill training and OSCE evaluation should be done for IMGs

Authors Contribution

All authors have contributed equally

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Conflict of Interest

There is no conflict of interest

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Declaration of Generative AI and AI Assisted Technologies in the Writing Process

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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