

Primary health care teaching to postgraduate public health students, comparison of two models: A natural experiment

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ABSTRACT

Background: Primary health care as an approach forms an integral part of any public health curricula. The knowledge regarding primary health care can be delivered to public health trainee through conventional or the modular teaching models. **Objectives:** We aimed to observe whether there was any difference in the summative assessment scores between two different modalities of teaching primary health care to public health trainee at School of Public Health, Post Graduate Institute of Medical Education and Research, Chandigarh, India. **Methods:** The present study was a natural experiment. Students of Masters of Public Health (MPH) and MD (Community Medicine) formed two natural groups. They were taught by modular and conventional methods of teaching respectively. A total of seven MPH students and nine MD students, participated in the study. **Results:** Overall summative assessment score among MPH students was 63.9 ± 10.0 in comparison to 61.1 ± 10.9 among MD students. The difference in total scores was not statistically significant. **Conclusion:** We conclude that approaching a complex topic such as primary health care requires a mix of both modular and non-modular teaching to maximize outputs.

Keywords: India, models of teaching, primary health care

Introduction

We need trained public health professionals to solve public health problems. Effective public health actions demand competency in epidemiology, biostatistics, social and behavioral science, environmental health sciences, health policy, and management.^[1]

The Alma Ata conference of 1978 reaffirmed the critical role of public health in attaining health for all. The outcome of the conference laid the foundation for primary health care (PHC) as an approach in achieving health for all with particular emphasis on equity, community participation, intersectoral coordination,

and appropriate technology.^[2] PHC as an approach forms an integral part of any public health curricula.

Public health training in developing countries like India is at crossroads.^[3] The training environment follows two different models. In the conventional model, public health training is imparted alongside of clinical medicine within medical schools. In newer institutions, public health training is imparted in standalone public health schools or within large universities as one of the master disciplines.^[4]

The School of Public Health (SPH), Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh awards degrees in Doctor of Medicine (MD) in Community Medicine and Masters of Public Health (MPH) for meeting the human resources needs of public health professionals in India.

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While the MD in Community Medicine is of 3 years duration, the MPH is of 2 years duration. In addition, the syllabi of both courses are different with some overlapping.

PHC forms an integral part of the syllabus of both MD in Community Medicine and MPH courses. However, the mode of delivery of both the course differs. The present study aimed to observe whether there was any difference in the summative assessment scores between two different modalities of teaching PHC to public health trainees in the institution.

Methods

The present study was a natural experiment which took place at SPH, PGIMER, Chandigarh. The summative assessment scores of two groups of students were compared. Students of MPH and MD (Community Medicine) formed two natural groups. PHC module was delivered to both the groups in different modes. Students in Group A (MPH students) participated in modular/linear teaching and students in Group B (MD Community Medicine) participated in conventional/nonlinear teaching modality. A total of seven MPH students and nine MD students participated in the study.

The syllabus, of course, covered the topics from the evolution of PHC to current challenges of PHC including principles and values of PHC, elements of PHC, models of PHC, resources of PHC, and revitalization of PHC.

The curriculum of PHC delivered to Group A through modular mode comprised of eight lecture sessions each of 1 h duration. The 8 h schedule was spread over 4 days. Each lecture sessions were followed by 1 h hands-on activities. The activities were based on the topic covered. The activities were designed with the aim of providing hands-on experience of different subtopic of PHC and improving their critical thinking and problem-solving skills. The curriculum also included exposure visit to sub center, primary health center, and community health center to have practical exposure to different PHC resources.

The curriculum for PHC module delivered to Group B consisted of posting of MD Community Medicine students at PHC institutions for a minimum period of 6 months and relied on the principle of learning by doing. Assignments were given on different subtopics of PHC on a weekly basis to improve their understanding on the concepts PHC.

The difference between both modes of teaching is summarized in Table 1.

The summative assessment was done for both the groups to measure the effectiveness of different modalities of delivery of PHC module. Multiple choice questions (MCQs) were prepared to assess the knowledge of PHC among the study participants. The question was developed by two faculty members of the school. A total of forty MCQs were prepared. The scoring was

converted to “one hundred points” where each correct answer was scored “two and a half points” and each wrong answer was scored “zero points.” There was no negative scoring. The question was based on the course curriculum of PHC.

All study participants were informed about the purpose of the study and their verbal informed consent were taken.

Statistical analysis

The overall mean score and subtopic wise mean score of participants in both groups were calculated. Independent *t*-test was performed to compare means. $P < 0.05$ was considered statistically significant. All statistical analysis were done with the help of SPSS for Windows, Version 16.0. Chicago, SPSS Inc.

Results

A total of 16 students were included in the study. Of 16 students, seven and nine had undergone modular teaching method and conventional teaching methods, respectively. Ten students were females and rest six were males. There was statistically significant difference between two groups in terms of mean age and mean experience of working with the health care delivery system [Table 2].

Overall summative assessment score among Group A students was 63.9 ± 10.0 in comparison to 61.1 ± 10.9 in Group B students. The difference in total scores was not statistically significant. However, there was statistically significant difference between the mean score of two groups of students on topics evolution of PHC: Global prospective and elements of PHC [Table 3].

The Group A performed better on the topic, evolution of PHC: Global prospective compared to Group B, whereas Group B had a better score on elements of primary health care. Both the groups had the highest score on the topic, evolution of PHC:

Table 1: Difference in modality of teaching

Variables	Group A	Group B
Teaching mode	Modular/linear	Nonmodular/nonlinear
Assessment	Formative and summative	Formative and summative
Formative assessment	Daily exercises	Weekly assignments
Summative assessment	MCQs	MCQs
Faculty	Faculty and senior residents	Faculty and senior residents

MCQs: Multiple choice questions

Table 2: Characteristics of public health trainee by type of teaching modality

Variable	Modular (n=7)	Conventional (n=9)	P
Age (mean±SD)	25.3±1.3	28.4±3.4	0.03*
Years of professional experience (mean±SD)	4±0.5	7.5±1.3	0.000*
Sex: Male: female	2:5	4:5	0.51

*Statistically significant. SD: Standard deviation

Table 3: Comparison of mean scores of the students in modular (n=7) and conventional teaching methods (n=9) by different topics covered in teaching

Topics	Mean score±SD		P
	MPH scholars	Resident doctors	
Evolution of PHC: Global perspective	11.0±3.2	7.8±2.6	0.04*
Evolution of PHC: India	7.5±2.8	5.0±2.8	0.1
Principles and values PHC	8.6±4.3	7.8±1.9	0.3
Elements of PHC	7.1±2.2	9.7±1.9	0.02*
Models of PHC	6.1±2.4	5.5±2.7	0.7
Resources of PHC	7.8±2.7	8.9±1.3	0.3
Revitalization of PHC	7.1±2.7	7.5±1.8	0.7
Challenges of PHC	8.6±1.9	8.9±1.3	0.7

*Statistically significant. PHC: Primary health care; SD: Standard deviation; MPH: Masters of Public Health

Global prospective and lowest on models of PHC. On an average, each student in Group A did not attempt two questions out forty questions, whereas in Group B average three questions were left unattempted by each student. The overall lowest knowledge score achieved by study participants was 45 (45%) in both the groups, whereas the highest obtained score in group one and two was 75 (75%) and 80 (80%), respectively. Total three students obtained <50% marks.

Discussion

PGIMER admits around five MD Community Medicine and 14 MPH scholar every year on the basis of all India entrance test. The eligibility for MD Community Medicine course being Bachelor of Medicine and Bachelor of Surgery (MBBS) degree, the eligibility for MPH course is quite varied. Graduates of MBBS, dental surgeons, veterinary surgeons, Bachelor of Engineering, and Masters of Social Sciences and Science are eligible for MPH course.

As a part of training, students perusing both the masters' courses are exposed to PHC. The residents of MD (Community Medicine) are exposed to certain concepts of PHC during their undergraduation (MBBS) course. The prior exposures during the undergraduate period might have helped them in appreciating the PHC concept.

The effectiveness of modular teaching method has been reported for undergraduate teaching in India and elsewhere.^[5] In our study, despite the different profile of the two groups, we did not find statistically significant difference in overall mean assessment scores between two groups. However, the difference between mean scores of the groups was statistically significant on topics evolution of PHC: Global perspective and elements of PHC.

Group A students scored higher points on the topic evolution of PHC: Global perspective compared to Group B. The reason for higher score among Group A students may be due to nature

of the topic and the activities assigned to the topic. Evolution of PHC being largely a theoretical perspective and the assignments were self-reading on classical articles related to origins of PHC published in peer-reviewed journal.

Group B performed better on the topic on elements of PHC compared to Group A. This could be due the fact that they had more opportunity to gain knowledge on this topic due to practical exposure during serving as a primary care physician.

The major limitation of the study is that it has relied on the MCQs in the assessment methods. MCQs have been criticized as an assessment tool in medical education. However, we used MCQs for the ease of administration and evaluation. The second limitation of the present study was the assessment focused on the gain in knowledge rather than gain in the skills and attitudes. Current trends in medical education focus on competency-based education and evaluation which addresses updation in knowledge, skill, and attitudes.^[6]

Conclusion

We conclude that approaching a complex topic such as PHC requires a mix of both modular and nonmodular teaching to maximize outputs. A sandwich model having hands-on practice spaced between two smaller modular training may serve the purpose.

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Conflicts of interest

There are no conflicts of interest.

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