

Original Research Article

Undergraduate public health degree courses in India: selected overview

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Received: 25 August 2019

Revised: 10 September 2019

Accepted: 11 September 2019

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ABSTRACT

Background: Building the public health workforce in India along with strengthening the public health systems across the Nation are essential components necessary to achieve the sustainable development goals for India. In the Indian context, there is limited information available for undergraduate public health education. The central aim of this brief study is to elucidate the undergraduate public health education landscape at selected institutions in India.

Methods: A mixed methods approach was used in this brief study. First, cross-sectional, scoping review was used. Then, to describe student perceptions and attitude towards undergraduate public health curriculum, primary data were collected by using a questionnaire. A self-administered questionnaire was developed after extensive literature search. Descriptive statistics were used to summarize questionnaire results. Chi-square tests were used to help identify factors that may influence student perceptions and attitudes.

Results: Through scoping rapid review and internet search, eight institutions were identified that are offering undergraduate public health courses in India. Most institutes in India have 3 years duration for the undergraduate public health degree courses. Most of students (89%) believed that the undergraduate public health course increased their knowledge in the field of public health. We found an association between student perceptions about community benefits from trained undergraduate public health workforce.

Conclusions: The undergraduate public health education initiatives should be promoted and envisioned as a new strategy for public health capacity-building in public health in India.

Keywords: Public health workforce, Bachelor of science in public health, Review of undergraduate curriculum

INTRODUCTION

World Health Organization states that building and sustaining the capacity of a public health workforce is crucial for a robust public health workforce.¹ India has certain public health challenges that complicate the development of a public health workforce.² Building the

public health workforce in India along with strengthening the public health systems across the nation are essential components necessary to achieve the sustainable development goals (SDG) for India. In fact, the global strategy on human resources for health by WHO highlighted that building the human workforce (including the public health workforce) in developing countries

should contribute to improving population health outcomes and, thereby, help achieve SDG goals by 2030.³

After the formation of the Bhole committee in 1943, public health education was initiated in India. The report of this committee highlighted the need and importance of public health and suggested the incorporation of the public health education in medical courses.⁴ There was initiation of the department of preventive and community medicine in medical colleges after the suggestion of Medical Education Conference in 1955.⁵ Several steps were taken in the history of public health at the undergraduate medical level in order to fulfill the need of public health workforce. At the undergraduate level, public health education was given in India mostly as a part of undergraduate medical course and it was taught to the medical graduate only.⁶ This proved inadequate and not consistent with the study and practice of public health across the globe. Therefore, post-graduate courses in public health started in India in the mid-2000s (e.g., Master of Public Health (MPH)).⁷ Several institutes in India also started postgraduate diploma programs in public health to address the shortage of public health professionals especially in health management and administration.⁸

In the Indian context, there is limited information available for undergraduate public health education. There is a lack of studies that provide an overview and assessment of undergraduate public health courses in India. The central aim of this brief study is to elucidate the undergraduate public health education landscape at selected institutions in India.

The objectives of the study were:

- To describe the current undergraduate public health courses at selected institutions in India.
- To describe student perceptions and attitude towards undergraduate public health curriculum.

METHODS

A mixed methods approach was used in this brief study. First, a cross-sectional, scoping review was used. To describe the current state of undergraduate public health education at selected locations in India, secondary data were collected from June 2018 to December 2018. A detailed internet search, using the Google search engine and keywords including “undergraduate public health education”, “undergraduate public health courses in India”, “B.Sc in community health”, “Bachelor of public health” and “B.Sc in public health or BA in public health” yielded limited results on the undergraduate public health courses offered in India. Systematic search was done to identify institutes offering undergraduate public health course. This limited information about the undergraduate public health courses were collected from the institutes designated websites.

Then, to describe student perceptions and attitude towards undergraduate public health curriculum, primary data were collected using a questionnaire. A self-administered questionnaire was developed after extensive literature search. The questionnaire, in addition to gathered demographic data, was used to describe the public health curriculum as a whole. The data were collected to find out the student’s perception on specified components of the stream, their interest towards public health and also evaluate the career pathway of undergraduate public health students. 4-point Likert scale questionnaire has cover general opinion on public healthcare and perceptions about the curriculum. Best practices were identified and documented. A convenience sample of students in final year and alumni were participated in the study. The permission for this study was obtained from relevant authorities.

Descriptive statistics were used to summarize questionnaire results. Chi-square tests were used to help identify factors that may influence student perceptions and attitudes. Epi info 7.2 was the software package used to analyze questionnaire data.

RESULTS

Through scoping rapid review and internet search, eight institutions were identified that are offering undergraduate public health courses in India. The list of institutes included the following: Lachoo Memorial College of Science and Technology, Jodhpur, Rajasthan; Jodhpur School of Public Health at Maulana Azad University, Jodhpur, Rajasthan; Padmashree Group of Institutions, Bengaluru, Karnataka; Career Point university, Kota, Rajasthan; University of Lucknow Lucknow, UP; Mahatma Jyoti Rao Phoole University, Jaipur, Rajasthan; IEC university, Baddi, Himachal Pradesh and Poornima University, Jaipur, Rajasthan.

We found that Lachoo Memorial College of Science and Technology and the Jodhpur School of Public Health at Maulana Azad University provided the “B.Sc with public health” degree program where they taught public health as a subject. Institutes like Padmashree Group of Institutions, Bengaluru; Dr. Giri Lal Gupta Institute of Public Health (GLGIOPH), University of Lucknow, U.P and IEC University, Baddi, Himachal Pradesh offered the “Bachelor in Public Health (BPH)” degree and only one institute Mahatma Jyoti Rao Phoole University, in Jaipur is offering the “Bachelor of Public Health Science (BPHS)” degree. A few institutes offer the “B.Sc in Community Health” degree; these institutes were Martin Luther Christian University, Shillong, Meghalaya and Singhania University, Jhunjhunu, Rajasthan.

History and evolution university

We tried to extract the information about the origin of undergraduate public health courses in India from various sources. On investigation, we found that Lachoo

Memorial College of Science and Technology in Jodhpur (2013) was one of the first institutes offered undergraduate B.Sc. in public health degree course in India. Thereafter, undergraduate public health courses were launched by Dr. Giri Lal Gupta Institute of Public Health (GLGIOPH) and Jodhpur School of Public Health (JSPH) at Maulana Azad University (MAU). Initially, Lachoo Memorial College of Science and Technology and JSPH/MAU started public health as an additional subject of Bachelor of Science (B.Sc.) with chemistry, physics, zoology/ botany but later on they included public health in the mainstream of B.Sc. (i.e. chemistry, botany and public health or chemistry, zoology and public health). Dr. Giri Lal Gupta Institute of Public Health (GLGIOPH) had started the course named as BPH in year 2014. Poornima University in Jaipur and Career Point University, Kota has recently started the course "B.Sc. in public health" with academic support from Jodhpur School of public health (JSPH). There was paucity of information related to course evolution and current status of the remaining institutes mentioned in the study. We were not able to find out any information regarding evolution of BA in public health in India.

Eligibility

Most of the institutes in India providing the undergraduate public health degree courses have eligibility criteria higher secondary (10+2) students with physics, chemistry and biology/maths as subjects. Additionally, Padmashree Group of Institutions, Bengaluru also considers candidates completing a 3-year Diploma in Allied Health Sciences after 10th as eligible for admission in BPH course. Through internet search, some the institutes claimed to offered BA in public health but there was limited information available on documentation about their eligibility criteria.

Duration

Most Institutes in India have 3 years duration for the undergraduate public health degree courses. Mostly, they have 6-semester system. Padmashree Group of Institutions, Bengaluru, has duration of 4-year (or 8-semester system) for BPH degree course. On search, we also found that Mahatma Jyoti Rao Phoole University in Jaipur has a degree course named BPHS that requires 3-years and 6 months to complete, in which last 6 months was dedicated to an appropriate internship.

Curriculum

We found no standard curriculum for undergraduate public health degree courses in India. Therefore, the curriculum provided by institutions for these courses are different in terms of uniformity of subject taught semester wise/year wise though they all have more or less similar core subjects. Mainly, the core subject for undergraduate public health courses in these institutes includes foundations of public health, human biology,

epidemiology, biostatistics, health education and promotion, social and behavioral sciences, research methodology, public health management. There was paucity of detailed information on internet related to curriculum of the most institutes mentioned in the study.

Pedagogy

Mostly, the undergraduate public health courses are taught on campus and syllabus also includes practical or field experience. We have done inquiry about pedagogical methods from institutes (especially Jodhpur School of Public Health at Maulana Azad University and Lachoo Memorial College of Science and Technology in Jodhpur). On investigation, we found that they have provided an array of educational approaches for teaching the undergraduate public health courses. They encouraged the students to participate in the lectures, seminars, workshops, and group discussions. In addition, they encouraged the students for community-engaged learning including field experience, projects. Most institutes provide the short-term internship/ field based observership programs for undergraduate students to provide practical knowledge in public health.

Table 1 provides the summary of key findings from a comparison of selected public health academic institutions offering undergraduate public health courses in India.

Perception of students and their career readiness

One hundred seventy-seven students (n=177) who were in final year and who had completed the undergraduate public health degree course agreed to complete the questionnaire. Since, there are very limited number of undergraduate schools, we conducted survey in two colleges which has maximum number of students enrolled in B.Sc. Public Health. Among total study participants, 53.6% (n=95) were boys and 46.3% (n=82) were girls. Around 31% (n=55) students were from rural and 68% (n=122) were from urban background. Most of students took admission in the undergraduate public health course because of motivation provided by public health workers who were acquainted to them. A larger percentage (87.5%) believed that public health subject is personally beneficial to them. Table 2 shows perception of students about public health, its curriculum and future scope.

The students reported that public health subject pedagogical approach is interesting and stimulating. Most of students (89%) believed that the undergraduate public health course increased their knowledge in the field of public health.

To explore the factors that may be linked to study perceptions, we found an association between student perception about community benefits from trained undergraduate public health workforce and the following:

the students who had exposure to somebody doing well in the field of public health; students who considered the public health lectures are interesting. Table 3 illustrates

the factors determining perception of students about personal benefit and community benefiting from undergraduate public health course.

Table 1: Summary of key findings from a comparison of selected public health academic institutions in India, 2019.

Institute	Course offered	Department	Eligibility	Duration (years)	Pedagogy
Lachoo Memorial College of Science and Technology	B.Sc. with public health	Department of Public Health	10+2 with physics, biology and chemistry	3	On campus teaching divided in six semester including field and practical work
Maulana Azad University	B.Sc. with public health	Department of Public Health- with knowledge partner Jodhpur School of Public Health	10+2 with physics, biology and chemistry	3	On campus teaching divided in six semester including field and practical work
Career Point University	B.Sc. with public health	School of Health and Allied Sciences with knowledge partner Jodhpur School of Public Health	10+2 with physics, biology and chemistry	3	On campus teaching divided in six semester including field and practical work
Poornima University	B.Sc. with public health	School of public health with knowledge partner Jodhpur School of Public Health	10+2 with physics, biology and chemistry	3	On campus teaching divided in six semester including field and practical work
Padmashree Group of Institutions, Bengaluru	Bachelor in public health	Padmashree School of Public Health	(10 +2) in science stream with physics, chemistry and biology as basic courses or candidates completing a 3 year Diploma in allied health sciences after 10th or SSLC or candidates completing 2 years Diploma in allied health sciences after pre-university college (10+2)	4	On campus teaching divided in eight semesters
IEC University Baddi, Himachal Pradesh	Bachelor in public health	NA	10+2 from a recognized Board with physics, chemistry, biology/math	3	On campus teaching including theory and practical work
Mahatma Jyoti Rao Phole University, Jaipur	Bachelor in public health science [BPHS]	Healthcare & Allied Sciences	10+2 from a recognized Board with physics, chemistry, biology/math	3.6	On campus teaching and 6-month internship
University of Lucknow	Bachelor of public health (BPH)	Dr. Giri Lal Gupta Institute of Public Health(GLGIOPH)	10+2 from a recognized Board	3	On campus teaching divided in six semesters

Table 2: Perception of students about public health, its curriculum and future scope (n=177).

Perception	N	Percentage (%)
Student perception about the public health		
Consider public health as an important subject in undergraduate.		
Yes	174	98.31
No	3	1.69
Consider public health as an important field in career.		
Yes	129	72.88
No	48	27.12
Prepared to work in community after completion of course		
Yes	127	71.75
No	50	28.25
Realize the relevance of public health to real health issues.		
Yes	148	83.62
No	29	16.38
Student perception about the undergraduate public health curriculum		
Enjoy subject /modules of public health course.		
Yes	170	96.05
No	7	3.95
After joining developed understanding for the public health course.		
Yes	147	83.05
No	30	16.95
Consider public health curriculum is lengthy.		
Yes	68	38.42
No	109	61.58
Consider the sequence of topic in public health curriculum logical.		
Yes	154	87.01
No	23	12.99
Consider reading/teaching materials sufficient for curriculum		
Yes	125	70.63
No	52	29.37
Student perception regarding the undergraduate public health career pathway and future scope.		
Future preference after completion of course		
Higher studies	84	47.45
Change the subjects	9	5.08
Government jobs	60	33.89
Private jobs	9	5.09
Corporate jobs	1	0.56
NGO's jobs	10	5.64
Others	4	2.25
Career in public health recognized as a prestigious in society.		
Yes	137	77.41
No	40	22.59
Achieve fame in public health as compared to other disciplines		
Yes	122	68.93
No	55	31.07
Public health could provide good salary in comparison to other profession.		
Yes	93	52.55
No	84	47.45

Table 3: Factors determining perception of students about personal benefit and community benefiting from undergraduate public health course.

Factors	Perception regarding benefits from trained UG public health students in community.		Perception regarding considering the public health subjects personally beneficial	
	χ^2	P value	χ^2	P value
Understood the concept public health after joining.				
Yes (n=147)	4.496	0.04	3.94	0.06
No (n=30)				
Public health lectures are interesting/ stimulating.				
Yes (n=147)	17.3	0.00	1.9	0.22
No (n=30)				
Know somebody doing well in the field of public health?				
Yes (n=126)	11.8	0.001	8.11	0.01
No (n=51)				
Grades achieve in the last exam.				
First division (n=152)	6.94	0.01	0.34	0.5
Second division and below (n=25)				

DISCUSSION

Undergraduate public health education is a new concept in India, so it was challenging for us to gather the required information for this study. Postgraduate degree, diploma, and certificate programs in public health are offered by established and new public health institutions in India. In recent past few institutes pioneered for starting the baccalaureate degree in public health by the naming them as of B.Sc. with public health as a subject and BPH.

In this study, we found little variation between currently running public health undergraduate B.Sc. programs in terms of curricular contents, teaching methods, and resources but there was difference in curriculum content between BSc PH, BPH and BPHS degree courses.

Public health educational career in India have traditionally been the province of preventive and community medicine stream but in past decade Master of Public Health (MPH) degree is being recognized as the flagship professional entry program for public health aspirants in India. Public health is slowly now coming out of the domain for medical curriculum and role of non-medical undergraduates in contributing to public health is being recognized.

The framework for inter-professional and inter-sector collaboration and a new system of network between the public health professionals are needed to develop in India for creation of new trained public health workforce. The new network of coordination between professionals from different department can be helpful in strengthening the public health system in India.⁹ The Rajya Sabha Standing Committee 65th report in 2013 gave proposal of developing under-graduation course in community health for health delivery among rural populations but it was not accepted.¹⁰ National Health Policy 2017 suggested that

the course “B.Sc. in community health” is helpful in development of the public health workforce who can work as a mid-level assistant in primary health care centers.¹¹ In a recent study, the investigators proposed that the course “BPH” will be helpful in creating the public health workforce, and also suggested that BPH graduates can work as a health assistant in primary health centre.¹²

For developing effective public health system in India, it is important to focus on chronic shortage of health workers. Literature suggests that the introduction of new public health courses at undergraduate level could be an effective long-term solution to the chronic shortage of public health workers in India.¹³ Researchers quoted in their study that creation of new public health workforce requires to design career pathways and new job opportunities for trained public professionals.¹⁴ In recent studies, the inadequate numbers of public health workforce in India considered as a barrier for creating job opportunities and structured career pathways and also there is lack of new policy formation especially for non-medical graduates.¹⁵

In India till date there is no defined position in the health sector for bachelor degree graduates in public health, so current students and potential candidates had concern about their future prospects in public health. In the survey most of the students were of aiming for master in public health after and it seems that they are quite enthusiastic about public health have lots of hope associated with it. Though student and faculty motivation and satisfaction are high but non availability of standard public health books at undergraduate level especially in Hindi pose a challenge in teaching and learning.

For being a good and responsible citizen who can contribute towards building the healthy society, understanding of public health is essential. Multi-

disciplinary field of public health equips undergraduate students with civic knowledge, critical thinking, good communication and problem-solving skills which could contribute towards developing well trained public health or other discipline workforce. Association of American Colleges and Universities launched an initiative titled “Educated citizen and public health” which quoted that the study of public health models are capacious vision of liberal education.¹⁶ The undergraduate programs in public health have been described as a pathway for several alternatives, liberal education for an informed citizenry, undergraduate education for professional programs including law or medicine, preparation for master’s degrees in the discipline, and preparation for entry level positions in the profession.¹⁷

Upon reflection of the findings in this report, the model of B.Sc. public health which offers public health as a subject in addition to regular B.Sc. subject like chemistry/botany/zoology seems to be a rationale course. It provides a pathway for candidates who wish to pursue higher studies or training in public health and also to those who want to switch their career for other disciplines. Even if student changes their career pathway after completing undergraduate public health course it will elevate their awareness and general knowledge of issues that affects individual, families and communities and will contribute for social gain in terms of promoting health literacy and developing vibrant civil societies in field of health. There is, also, a need of creating new defined entry level public health jobs opportunities for this cadre of public health which will helps in reducing youth unemployment and will further helps in achieving UHC.¹⁸

CONCLUSION

Many developed and developing countries have recognized the importance of undergraduate training and are successfully implementing these programs. In developing countries undergraduate public health education is crucial for training of the public health workforce to address longstanding and emerging public health problems. The undergraduate public health education initiatives should be promoted and should be envisaged as a new strategy for public health education for capacity building in public health in India. Based on our selected overview, we believe that in India undergraduate education in public health can be an important model for public health education. It could provide competent public health workforce for entry level positions in public health agencies and will contribute in developing trained public health “workforce” to meet the nation’s needs in 2020 and beyond.

ACKNOWLEDGEMENTS

We like to acknowledge all the students who agreed to provide consent and participated in this study. We are also thankful to the undergraduate public health institutes

as this study would not have been possible without their support and assistance.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Joshi V, Joshi NK, Bajaj K, Suthar P, Fant G, Purohit A. Undergraduate public health degree courses in India: selected overview. *Int J Community Med Public Health* 2019;6:4224-31.