ORIGINAL ARTICLE

Public Health Proficiency, Social Responsibility, and Applied Learning of Medical Students and Fresh Graduates: A Cross-Sectional Study

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Abstract

Background: The relevance of public health proficiency, social responsibility, and applied learning about the subject, particularly concerning treating, preventing, and managing chronic illness, has increased globally.

Objective: The objective of the current study was to assess the public health proficiency, social responsibility, and applied learning of medical students and Fresh Graduates.

Methods: A cross-sectional study was conducted among 300 medical students and house officers at a private teaching hospital in Rawalpindi from July to December 2022, selected *via* convenience sampling technique. A pre-validated questionnaire was used to assess public health proficiency, social responsibility, and applied learning among study participants.

Results: Out of the total (n = 300) participants, 234 (78%) were medical students, 66 (22%) were house officers, and the majority were female, with 192 (64%) among student respondents. 53 (18%) of the respondents had adequate scores regarding PH proficiency, social responsibility, and applied learning, while 247 (82%) had poor scores. The majority had poor public health proficiency. An independent t-test shows no statistically significant differences between the group scores (p = 0.333). A chi-squared analysis was used to determine the relationship between PH proficiency, a personal or family history of NCDs, and a family member working in the public health domain; the results revealed insignificant differences between these variables and proficiency scores.

Conclusion: The study has shown that a significant number of medical students and graduates do not have much knowledge about public health skills, social responsibility, and applied learning about the subject.

Keywords: *Medical students, Public health proficiency, Community medicine.*

INTRODUCTION

Over the years, the nature of illnesses has evolved significantly in both developing and developed countries. There is a shift in mortality rates and hospitalization for communicable and acute illnesses as the prevalence of non-communicable or chronic diseases has increased manyfold [1]. Non-communicable diseases (NCDs) are the primary causes of the global illness burden, as roughly 41 million people die yearly from non-communicable diseases [2]. The World Health Organization (WHO) estimates that non-communicable diseases account for above 70% of all fatalities worldwide [3, 4]. Roughly 86% of premature deaths from NCDs occur in developing countries [5]. This epidemiologic change can be attributed to behavioral risk factors such as smoking, poor nutrition, and a lack of physical exercise, as well as biological risk factors such as high blood pressure (BP), blood glucose, and cholesterol levels, as well as being overweight or obese [6-9]. As a result, health promotion is more important than ever in tackling these major public health issues [10].

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The National Health Vision, 2016–2025, for universal health coverage [11] and the National Action Plan for NCD Prevention and Control [12] in Pakistan are contingent on the supply of sufficient, evenly distributed, suitably qualified, and motivated public health professionals to provide accessible and equitable health care. Human capital is an essential aspect of any system.

The future career goals of medical students and recent graduates will play a crucial role in deciding the success of Pakistan›s efforts to prevent and control non-communicable diseases. Their interest will play an important role in the success of attaining UHC and National action plan goals.

Although there is widespread agreement on the need to educate and promote public health concepts, the scope and depth of public health education vary considerably across nations and within medical schools. Because Pakistan is facing a triple burden of disease, health services urgently need to reorient toward effectively combating non-communicable diseases (NCDs) through health promotion, seeing as how investing in health promotion and capacity building results in a healthy population [13]. As a result of the fact that physicians are the most critical stakeholders, they are in a position to play a significant part in the process of raising patients› awareness regarding modifications

to their lifestyles [14, 15]. An unwavering approach to general public health prevention and promotion above self-interest demonstrates social responsibility among healthcare professionals. Tackling Social determinants of health in patients and communities is also part of social responsibility and applied learning.

Nevertheless, more studies are needed on the medical student›s concept and understanding of positive health and health promotion. The current study aimed to assess medical students and house officers› public health proficiency, social responsibility, and applied learning.

MATERIALS AND METHODS

Study Design Study Population and Setting

A cross-sectional survey was done among medical students and house officers at a private hospital in Rawalpindi. Data were gathered over three months (July-September 2022). After gaining permission, individuals were randomly contacted at public hospitals and asked to complete a questionnaire. Included in the research were medical students in their third year or above and house officers who were willing to participate.

The Research ethics committee of the Riphah International University examined and approved the research protocol. Before their inclusion in the study, individuals provided their informed permission. Participants were briefed beforehand on the aims of the research and advised at the conclusion about the significance of public health, health education, and health promotion.

Sample Size

The sample size for the current study was determined using a formula for a single population proportion, which is represented as n = (Zα/2)2 * p(1-p)/d2. In this case, the calculation was made assuming a proportion (p) of 0.24, which represented the level of clinical practice competency at a Medical University [16]. The study aimed for a 95% confidence level, a margin of error (d) of 5%, and accounted for a non-response rate of 4%. As a result, the total sample size required for the study was determined to be 300. The research population was recruited using a technique known as convenience sampling.

Research Tool

A comprehensive evaluation was conducted to assess the proficiency levels in public health, social responsibility, and applied learning among a cohort of medical students and recent graduates. The assessment utilized a pre-validated questionnaire comprising 24 items, as documented in reference [17]. Employing a five-point Likert scale, respondents were provided with response options ranging from “Strongly disagree” (1) to “Strongly agree” (5). The cumulative scoring spectrum for the questionnaire spanned from 24 to 120, with the total score serving as a quantitative measure of participants’ perceptions and attitudes toward public health knowledge, skills, social responsibility, and applied learning.

Scores ≤ 69 were deemed indicative of a relatively poor understanding of public health, while scores exceeding 69 signified a commendable grasp of the subject. Notably, the absence of an established cut-off value in existing literature prompted the determination of this threshold based on the mean score, which stood at 58.

The questionnaire was meticulously organized into five distinct sections. Section 1 consisted of six questions dedicated to exploring participants› experiences in community health learning, resulting in a calculated score ranging from 6 to 30. Section 2 comprised five questions designed to assess capabilities in public health risk assessment and communication, yielding a score range of 5 to 25, where a higher score indicated enhanced proficiency. In Section 3, six questions were formulated to gauge participants› perceptions regarding the future integration of evidence into their professional practice, yielding a maximum total score of 30. Section 4, focused on recognizing Public Health as a scientific discipline, involved four reverse-coded questions, with a calculated score range of 4 to 20. Lastly, Section 5, designed to assess the enhancement of public health skills, particularly among house officers and students, encompassed three questions, resulting in a score range of 3 to 15, where a higher score reflected heightened proficiency in public health skills.

To ensure the questionnaire›s suitability for our research population, necessary adjustments were made, and a pilot study was conducted involving 30 participants. The reliability of the questionnaire was determined through the calculation of Cronbach›s alpha coefficient. The obtained Cronbach alpha score of 0.82 signified the reliability and consistency of our research instrument.

Statistical Analysis

Continuous and categorical variables were presented as mean ± standard deviation (SD), number, and percentages, respectively. Continuous variables were analyzed using an independent sample t-test whereas discrete variables were analyzed using the chi-square test. The data was analyzed using SPSS version 26.0 for Windows. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Among the 300 participants included in this study, the majority consisted of 234 (78%) individuals who were pursuing a medical degree, while 66 (22%) were house officers. Notably, a significant proportion of the participants, particularly 192 (64%) of the student respondents, identified as female. The average age of the sample was 24.2 years with a standard deviation of 2.7. A predominant number of respondents were in their final year of medical studies. Additionally, 205 (68%) of the participants had family members employed in

Table 1: Demographic characteristics of the sample

Variables	Total n(%)	Students n(%)	Doctors n(%)	p-value
N (%)	300 (100)	234 (78)	66 (22)	-
Age Mean (SD)	24.2 (2.7)	23.84 (1.7)	25.26 (2.9)	*<0.001
Gender n (%)				
Female	192 (64)	182 (78)	10 (15)	*<0.001
Male	108 (36)	52 (22)	56 (85)	
Year studying n (%)				
3rd year	43(14)	43(14)	-	-
4th year	72(24)	72(24)	-	
Final year	119(40)	119(40)	-	
A family member in the Public health domain n (%)	205 (68)	161 (69)	44 (67)	0.742
Personal or Family H/O of NCDs n (%)	196 (65)	154 (66)	42 (64)	0.797
Health score n (%)				
Excellent	23 (8)	20 (9)	3 (5)	*0.013
Good	164 (55)	124 (53)	40 (61)	
Reasonable	90 (30)	77 (33)	13 (20)	
Moderate	23 (8)	13 (6)	10 (15)	
Bad	0	0	0	
Want to continue PG in Community Medicine or in PH	98 (33)	82 (35)	16 (24)	0.098

Table 2: Comparison of respondents' knowledge skills, social responsibility, and applied learning.

Variables	Total score n(%)	Medical Students n(%)	House officers n(%)	p-value
Adequate score n (%)	247(82)	44 (19)	9 (14)	0.333
Inadequate score n (%)	53 (18)	190 (81)	57 (86)	

Table 3: Association of PH score with sociodemographic variables.

Variables	Adequate Score n (%)	Inadequate Score n (%)	p-value
Age Mean (SD)	24.38 (1.94)	24.21 (1.72)	0.542
Gender n (%)			
Female	39 (73.6)	153 (61.9)	0.109
Male	14 (26.4)	94 (38.1)	
Year studying			
3rd year	8 (15.1)	35 (14.2)	0.432
4th year	17 (32.1)	55 (22.3)	
Final year	19 (35.8)	100 (40.5)	
A family member in the Public health domain			
Yes	39 (73.6)	166 (67.2)	0.742
No	14 (26.4)	81 ()32.8	
Personal or Family H/O of NCDs			
Yes	38 (71.7)	158 (64.0)	0.283
No	15 (28.3)	89 (36.0)	
Health score			
Moderate	2 (3.8)	21 (8.5)	0.695
Reasonable	16 (30.2)	74 (30.0)	
Good	31 (58.5)	133 (53.8)	
Excellent	4 (7.5)	19 (7.7)	
Want to continue PG in Community Medicine or PH			0.672
Yes	16 (30.2)	82 (33.2)	
No	37 (69.8)	165 (66.8)	

N Number, **SD** standard deviation, *P< 0.05

Table 4: The mean score for each public health domain.

Mean Score Per Public Health Understanding Domain	Students Mean (SD)	Doctors Mean (SD)	Total Mean (SD)
Knowledge of population health and environmental risk factors	15.38 (2.88)	13.08 (3.47)	14.87 (3.16)
Intellectual and practical skills	10.87 (2.74)	11.61 (3.04)	11.03 (2.82)
Personal and social responsibility	14.21 (3.62)	15.27 (2.90)	14.44 (3.49)
Integrative and applied to learn	18.00 (5.02)	17.09 (6.05)	17.80 (5.27)

healthcare, specifically as public health professionals. It is noteworthy that 98 (33%) of the respondents expressed an interest in pursuing postgraduate studies in the field of community medicine. Moreover, 16 (24%) of house officers and 83 (25%) of medical students aspired to pursue careers in public health. The statistical tests (T-test for mean age and Chi-square for other variables) reveal significant associations (P<0.05) between age, gender, year studying, and health scores between the groups (students and doctors). However, there are no significant associations observed for having a family member in the public health domain, personal or family history of NCDs, and the desire to continue postgraduate studies. For detailed information on the demographic characteristics of the study participants, please refer to Table **1**.

Among the respondents, 53 individuals (18%) demonstrated a satisfactory level of comprehension concerning Public Health (PH), while the remaining 247 individuals (82%) exhibited insufficient understanding. The majority of participants were found to be unaware of the fundamental competencies and skills associated with Public Health. An independent t-test analysis indicated no statistically significant differences between these two groups, with a p-value of 0.333 (**Table 2**). To assess the association between Public Health proficiency and variables such as personal or family history of Non-Communicable Diseases (NCDs) and having a family member employed in the public health sector, Chi-square analysis was employed. The results revealed no significant correlations between these variables and the outcome scores (**Table 3**).

The mean scores within each domain of public health exhibited a range from 11.03 (with a standard deviation of 2.82) to 17.80 (with a standard deviation of 5.27), assessed on a 5-point scale for both medical students and house officers (**Table 4**). Notably, the domain characterized as ‹Integrative and applied learning› displayed the highest mean score, reaching 17.80. Conversely, the domain labeled ‹Intellectual and practical skills› registered the lowest mean score among the participants, which was 11.03.

DISCUSSION

The current study assessed knowledge of public health, skills, and social responsibility and applied it to medical

students and house officers after studying community medicine as an MBBS curriculum. 18% of respondents obtained an appropriate score, while 82% obtained an inappropriate score, indicating a lack of understanding of public health by students and house officers.

The impact of medical students› career choices on the nationwide availability of healthcare personnel is a matter of paramount importance. Notably, there is an increasing demand for professionals in fields such as Community Medicine, aligned with the global focus on Sustainable Development Goals (SDGs). It is imperative to acknowledge the role of medical education in shaping students› perceptions of community-oriented healthcare, particularly in addressing SDGs related to health and well-being. There are few studies on MBBS students› perceptions of Community Medicine as a career option. A past research study on primary care specialty choice in India, which may be regarded as the equivalent of Community Medicine in both India and Pakistan, found that students begin medical school with a strong preference for public health jobs but that this desire decreases with time over the clinical clerkship years [18]. Students who go into primary care are more likely to be women, older, and married, to have non-physician parents, to have lower salary aspirations, to be interested in a wide range of patients and health issues, and to care less about professional status, cutting-edge medicine, and surgery [19]. We have yet to get this answer since we used quantitative approaches to evaluate students› attitudes regarding the issue. The study was conducted before the global pandemic; much has changed after COVID 19, along with students› preferences regarding careers in public health [20]. Much interest has developed in public health careers worldwide, especially since there is a dynamic shift in public health careers in Pakistan. The double disease burden and global emphasis on health promotion and prevention could be the reason.

As has been reported in previous studies, reasons for preferring other disciplines were personal interest, better salary scales, lack of attraction to scientific-technical interest, workplace conditions, and research potential [21, 22]. In the context of medical education, incorporating Sustainable Development Goals (SDGs) becomes crucial. Previous studies, such as the work of Bobby *et al.* [23] and Kwan [24], have highlighted the effectiveness of integrating SDGs into educational strategies, such as presentations and problem-based learning sessions. These findings suggest that aligning medical education with global health priorities, as outlined in the SDGs, could serve as a transformative approach to cultivate a greater interest in public health among medical students.

The 130-hour community medicine (CM) curriculum overemphasizes certain topics, neglecting epidemiology and biostatistics, leading many students to view it as burdensome. CM education is disjointed, lacking focus, and delivered through lengthy lectures with limited room for discussion. CM instructors, primarily medical specialists, lack formal education in public health despite their extensive experience in community medicine. Both undergraduate and graduate CM programs are not designed to facilitate the acquisition or instruction of public health (PH). Although there is potential overlap in required skills between public health and CM, they differ in their primary focus. Public health has a broader scope, encompassing community medical services, while «community medicine» often refers to family practice-led primary care. The reasons behind individuals choosing or not choosing a career in public health were not analyzed. However, studies [25, 26] point to personal interest, exposure during clinical training, employment prospects, and financial benefits as possible explanations. Given Pakistan›s status as a developing nation, potential salary and employment prospects may weigh more when making a professional decision.

The results of our study demonstrate the significance students place on the field of public health, as the vast majority of students believe it will be useful in the future. Because the study was conducted at a single teaching hospital with a small size, the findings cannot be generalized, and it is recommended conduct several studies on a similar topic.

CONCLUSION

Medical students and house officers who comprehend the relevance of community medicine have developed a favorable view of public health due to the current curriculum. However, students need more skills, social responsibility, applied learning, and the desire and curiosity to learn about public health concerns.

Aligning medical curricula with global health agendas, particularly the SDGs, presents an avenue for fostering a greater understanding and appreciation of public health among the medical community, thereby contributing to the achievement of broader societal health goals.

ETHICAL APPROVAL

Ethical approval was obtained from the Research and Ethical Committee (REC) at Riphah International University (Dated: 22nd June, 2022). All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/ or national research committee and with the Helsinki Declaration.

CONSENT FOR PUBLICATION

Written informed consent was taken from the participants.

AVAILABILITY OF DATA

The data set may be acquired from the corresponding author upon a reasonable request.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORS' CONTRIBUTION

All the authors contributed equally to the publication of this article.

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