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CHANGES IN KNOWLEDGE OF FIRST PROFESSIONAL MBBS STUDENTS ABOUT PRIMARY HEALTH CARE AFTER ONE-DAY INTERACTION IN A NEWLY STARTED COMMUNITY OUTREACH PROGRAM OF REHMAN MEDICAL COLLEGE, PESHAWAR, KHYBER PAKHTUNKHWA

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ABSTRACT

Introduction: A global effort is underway to encourage knowledge about Primary Health Care (PHC) among medical students. Rehman Medical College, Peshawar introduced a Community Outreach Program (COP) for training medical students in PHC. The present study was conducted to assess the impact of a one-day COP Orientation Visit to a rural community hospital on First Professional MBBS students of the college.

Materials & Methods: Prior to the one-day visit to the rural Nahaqi Emergency Satellite Hospital (NESH) in Charsadda, Khyber Pakhtunkhwa, conducted in November 2014, 102 students were given a Pre Test composed of 10 questions on relevant aspects of PHC. Following the visit, the same test was administered as a Post Test. Differences in responses were scored and their frequency distributions, means & SD evaluated for significant changes based on the Chi Square test and the Paired Samples T test, keeping $p \leq 0.05$ as significant.

Results: Significant improvement in responses ($p<0.001$) were noted for 08 (80%) of the questions, particularly for those related to observable aspects of PHC imparted during the Orientation visit. Score categories shifted for both frequency distributions and mean scores from lower marks categories to middle or higher marks categories in the Post Test.

Conclusion: The one-day orientation visit had a significant impact on medical students' knowledge of Primary Health Care.

Keywords: Education, Medical, Undergraduate; Education, Public Health; Students, Medical; Primary Health Care.

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INTRODUCTION

In most of the world, particularly in developing countries, the model of tertiary healthcare does not address the vital issue of primary or preventive healthcare, which can provide simple and cost-effective strategies to lessen the burgeoning disease burden in these countries.[1]

The traditional technology-based western model of medical education has resulted in the production of physicians who are disease oriented and rely on sophisticated clinical settings. As a result a large part of meager health resources are allocated to curative health. Consequently there is little improvement in population's health and almost nil in health promotion and disease prevention. The major burden is borne by the Developing countries.[2] Medical students are taught to view the tertiary healthcare model as the endpoint of medical knowledge and practice, so that after graduation they are ill-equipped to deal with changed demographics of patient population seen in their community-based practices.[3] This is all the more pertinent, as it is estimated that up to 75% of graduates will ultimately opt for community-based medical practice rather than placement in tertiary care hospitals or other similar locations.

To address this important issue, many medical colleges around the world have introduced Community Outreach Programs as essential components of undergraduate medical education.[3, 4]

Using Primary care and community setting for teaching and learning in medical trainings evidently contributed to the reform of medical education.[5] In recent years, undergraduate medical education has changed in terms of including attachments in Primary Health Care (PHC). These attachments in community hospital-based primary care, have confirmed their educational benefits and their popularity with both students and tutors. In the United Kingdom, a considerable number of medical schools have adopted the practice of

community-based teaching for acquiring knowledge and skills of primary care. Furthermore, a similar trend is delineated, with the conversion and gradual change from tertiary level hospital teaching towards smaller and patient oriented PHC components.[6]

As already documented in literature, the benefits of trainings in the community include the opportunity for medical students to associate their knowledge of longitudinal care, health promotion, preventive medicine and the communications between physician and the patients – all being important components of PHC.[7]

In an attempt to test the hypothesis of community based education as a more effective and extended educational program, Rehman Medical College (RMC) started Community Outreach Program (COP) in 2014. The program aims at the students' exposure and training at community level for all the 5 years of medical school with incremental increase in time and training objectives.

The objective of current study was to evaluate the newly started COP by assessing the change in first year students' knowledge of PHC after one day interaction in a community based hospital.

MATERIALS & METHODS

The study was carried out in November 2014 in Rehman Medical College (RMC), Peshawar and Nahaqi Emergency Satellite Hospital (NESH), a community based hospital near Peshawar, selected as a PHC teaching facility for RMC students.

Population and sample: All the 102 first year medical students newly inducted in RMC for the annual session 2014-2019 were included in the study. The medical students were given a one-day interactive tour to the NESH as part of Orientation to the educational curriculum.

Data Collection: Data were collected after approval from the RMI Research Ethics Committee (RMI-REC), in November 2014, before and after the visit to NESH, through a questionnaire, designed indigenously for recording the students' knowledge of PHC. The questionnaire had 10 questions, of which 9 were related to PHC and 1 to the comparison of public health physician and clinical physician. The students were taken to NESH in groups of 33 students / day on three consecutive days. Pre Test was administered at RMC after a 40 minutes orientation session in which NESH visit program was introduced to the students. On reaching the site, after a short briefing, students were divided into sub groups which were guided to the respective areas for orientation. All were rotated to five different areas viz. Reception/Registration, OPD, Laboratory, Radiology & In patient Wards given briefing at each area by the respective staff and supervisors. The rotation was of 20 minutes duration in each area, for a total of about two hours. The same test was administered at the end of the rotation after a debriefing session at NESH.

Each Questionnaire was checked by the researcher with 3 marks assigned to each question for a total of 30 marks. The Pre Test and Post Test were marked by the same person for assuring uniformity and decreasing the chances of error.

Data Analysis: SPSS version 15.0 was used to analyze the data. Descriptive statistics were derived for both qualitative and quantitative variables; means and SD were derived for continuous numerical data. The Chi square test and the Paired Samples T test were used to compare differences of frequencies and means respectively, keeping $p \leq 0.05$ as significant.

RESULTS

Though all 102 students participated in the tests, 92 students completely answered the Pre Test and 97 completely answered the Post Test; the number of students completing both Pre and Post Tests was 88 (86.3%); their results are presented in Tables 1-3.

Table 1 provides the mean values of answers to the Pre Test and Post Test, along with the p values. Out of the 10 questions, highly significant improvements are seen in mean values of 08 (80%) questions, with $p<0.001$.

The highest Post Test values were obtained for question 6 (List three levels of healthcare, 2.93 ± 0.45, from Pre Test 1.85 ± 1.45), followed by question 10 (What do abbreviations BHU, RHC and DHQ stand for?, 2.46 ± 0.47, from Pre Test 1.56 ± 0.95), and question 7 (Level of healthcare available to majority population of Pakistan, 2.40 ± 1.05, from Pre Test 1.45 ± 1.44). These questions relate to knowledge gained from the orientation provided during the NESH visit. The two questions that did not show a significant change related to theoretical knowledge about health (question 1) and the major disease categories in Pakistan (question 9), both of which were perhaps not brought into discussion during the NESH visit. In fact, for question 9, a decrease in mean Post Test score occurred (0.10 ± 0.95, from Pre Test score of 0.17 ± 0.34, p=0.083).

The mean total marks showed a significant improvement from a Pre Test mean of 09.66 ± 4.30 to a Post Test mean of 14.66 ± 2.88 (p<0.001), as did the mean percentage score (Pre Test 32.36 ± 14.16% to Post Test 48.88 ± 9.61%, p<0.001). The mean percentiles however did not change significantly (Pre Test 49.82 ± 29.28 to Post Test 50.80 ± 29.72, p=0.789).

Table 1: Mean values of Pre and Post Test answers to questions about definitions (n=102).

Q. #	Questions	Mean ± SD		p value
		Pre	Post	
1.	Define health (n=87)	2.00 ± 0.92	2.14 ± 0.92	0.233
2.	Define Community (n=88)	1.36 ± 0.71	1.64 ± 0.53	<0.001
3.	Define Public Health (n=88)	0.41 ± 0.53	0.75 ± 0.72	<0.001
4.	List two differences between public health physician and clinical physician (n=88)	0.32 ± 0.57	0.87 ± 0.75	<0.001
5.	Define Community Health (n=88)	0.32 ± 0.52	0.72 ± 0.67	<0.001
6.	List three levels of healthcare (n=88)	1.85 ± 1.45	2.93 ± 0.45	<0.001
7.	Level of healthcare available to majority population of Pakistan (n=88)	1.45 ± 1.44	2.40 ± 1.05	<0.001
8.	List three major sources of healthcare in Pakistan (n=88)	0.32 ± 0.77	0.75 ± 0.99	<0.001
9.	List three major disease categories in Pakistan (n=88)	0.17 ± 0.34	0.10 ± 0.95	0.083
10.	What do abbreviations BHU, RHC and DHQ stand for? (n=88)	1.56 ± 0.95	2.46 ± 0.47	<0.001
11.	**Marks Obtained (n=88)**	**09.66 ± 4.30**	**14.66 ± 2.88**	**<0.001**
12.	Percentage marks obtained (n=88)	32.36 ± 14.16	48.88 ± 9.61	<0.001
13.	Percentiles obtained (n=88)	49.82 ± 29.28	50.80 ± 29.72	0.789

Table 2 shows the details of distribution of marks obtained by students in the Pre Test and Post Test assessments. A marked shift is seen in the categories of higher marks obtained in the Post Test. The Pre Test had 52.2% students in 0-10 marks category and 47.8% in the 10.1-20 marks categories; there were no students in the higher category of 20-30 marks. In the Post Test however, it is seen that only 05.2% students are in the low marks category of 0-10, 92.8% students obtained the 10.1-20 marks category and 2.0% students also obtained the higher marks category of 20.1-30 marks.

This performance is reflected in the Percentages and Percentile distributions of students as well, with marked shifts from lower categories to middle and higher categories in the Post Test assessments. All Pre Test and Post Test results showed significant differences with p<0.001.

Table 2: Distribution of marks obtained by students in Pre Test and Post Test assessments.

Q. #	Questions	Marks Obtained			p value
		0-1.0	1.1-2.0	2.0-3.0	
1.	**Define health**				
	Pre Test (n=91)	14(15.4)	48(52.7)	29(31.9)	0.090
	Post Test (n=97)	11(11.3)	47(48.5)	39(40.2	
2.	**Define Community**				
	Pre Test (n=92)	47(51.0)	45(49.0)	-	<0.001
	Post Test (n=97)	22(22.7)	73(75.2)	02(2.1)	
3.	**Define Public Health**				
	Pre Test (n=92)	90(97.8)	02(2.2)	-	<0.001
	Post Test (n=97)	77(79.4)	17(17.5)	03(3.1)	
4.	**List two differences between public health physician and clinical physician**				<0.001
	Pre Test (n=92)	81(88.0)	11(12.0)	-	
	Post Test (n=97)	54(55.7)	41(42.2)	02(2.1)	
5.	**Define Community Health**				
	Pre Test (n=92)	87(94.6)	05(5.4)	-	<0.001
	Post Test (n=97)	80(82.5)	14(14.5)	03(3.0)	
6.	**List three levels of healthcare**				
	Pre Test (n=92)	33(35.9)	02(2.2)	57(61.9)	<0.001
	Post Test (n=97)	02(2.1)	-	95(97.9)	
7.	**Level of healthcare available to majority population of Pakistan**				<0.001
	Pre Test (n=92)	46(50.0)	01(1.1)	45(48.9)	
	Post Test (n=97)	25(25.8)	01(1.0)	71(73.2)	
8.	**List three major sources of healthcare in Pakistan**				<0.001
	Pre Test (n=92)	82(89.1)	07(7.6)	03(3.3)	
	Post Test (n=97)	77(79.4)	11(11.3)	09(9.3)	
9.	**List three major disease categories in Pakistan**				0.44
	Pre Test (n=92)	91(98.9)	01(1.1)	-	
	Post Test (n=97)	96(99.0)	01(1.0)	-	
10.	**What do abbreviations BHU, RHC and DHQ stand for?**				<0.001
	Pre Test (n=92)	35(38.0)	36(39.1)	21(22.9)	
	Post Test (n=97)	01(1.0)	27(27.8)	69(71.2)	

Table 3 provides the distribution of marks obtained for the 10 questions, as well as the total marks, percentages and percentiles obtained. Significant differences are observed for 08/10 (80%) questions between the Pre Test and Post Test performances of students; questions 1 and 9 did not show significant improvement. The improvements in Post Test scores are based on a shift towards more correct answers (hence scores closer to 3), seen as changes in percentages of students in the 1.1-2.0 and 2.1-3.0 marks categories. The greatest shifts are seen in questions 2, 6, 7 & 10. As before, these questions are the ones related to acquisition of knowledge about community hospitals, community setting, and PHC structure during the NESH orientation visit. Smaller, but significant shifts are noticed in questions related to more theoretical aspects of PHC (questions 3, 4, 5 & 8).

Table 3: Distribution of results of Pre Test and Post Test assessment.

Q. #	Questions	Pre-test (n=92)	Post-test (n=97)	p value
1.	**Marks Obtained (total 30)**			
	0 – 10	50(52.2)	05(5.2)	<0.001
	10.1 – 20	42(47.8)	90(92.8)	
	20.1 - 30	-	02(2.0)	
2.	**Percentages Obtained**			
	0 – 25	29(31.5)	-	
	25.1 – 50	57(62.0)	53(54.6)	<0.001
	50.1 – 75	06(6.5)	43(44.4)	
	75.1 - 100	-	01(1.0)	
3.	**Percentiles Obtained**			
	0 – 25	25(27.2)	28(28.9)	
	25.1 – 50	23(25.0)	20(20.6)	<0.001
	50.1 – 75	20(21.7)	22(22.7)	
	75.1 - 100	24(26.1)	27(27.8)	

DISCUSSION

The present study was carried out to evaluate the newly started Community Outreach Program (COP) by assessing the change in knowledge of Primary Health Care (PHC) of 102 first professional MBBS students of Rehman Medical College (RMC), after their one-day interaction in a community based hospital. In this study 92 out of 102 students responded to the Pre Test and 97 to the Post Test. After analyzing data, 88 participants were included who had responded to both Pre Test and Post Test. The results have shown a positive effect where significant change in knowledge was observed in response to 08/10 questions. All 08 questions were related to concepts and knowledge of PHC.

A study (Beverly EA et al, 2014)[9] from Ohio University, USA on Pre and Post data of 117 first year medical students of an osteopathic medical school, who underwent a one-week course on Primary Care, showed positive effects in primary care attitudes based on 20 out of 25 survey questions; moreover improved understanding of scope of primary care, emphasis on its importance recognition of primary care, new-found respect for primary care, increased motivation and dispelled myths and stereotypes about primary care were the most common changes in perceptions about primary care.

The change in attitude, knowledge and perspectives of medical students towards chiropractic was examined by a study[10] after a one-hour educational intervention in which two phases were compared (Phase I and Phase II) and revealed that an educational session was able to improve the attitudes and knowledge of medical students towards chiropractic immediately after the session.

In the present study significant differences were observed on applying Paired T-test on questions regarding general knowledge about health and community; similar results were obtained in another Pre and Post survey[11] that evaluated first and second year medical students attitudes knowledge or skills confidence regarding health literacy; paired t-test was applied between average pre-survey to average post-survey. The increase in knowledge was significant (p=0.017) as was skill confidence (p=0.02) related to health literacy techniques, strategies, and resources after participation.

Additional benefits of a COP program have also been documented in a recent review of rural training programs and their impact on medical students.[12] Such programs not only enhance

medical students' knowledge about medical conditions and practices in rural areas, but also bring about positive changes in attitudes, as well as encourage them to adopt careers based on future rural practice. To this end, many medical schools throughout the world have included strong community outreach programs in their undergraduate curricula.

CONCLUSION

A short-term, one-day interaction of first year medical students with a Community Outreach Program brought about significant changes in their knowledge regarding Primary Health Care, which provides reassurance about sustainability of undergraduate curricular changes towards Public Health and Preventive Medicine.

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