Impact of Community Diagnosis Programme on Undergraduate Students at BP Koirala Institute of Health Sciences

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ABSTRACT

Background

Community Diagnosis Programme (CDP) aims to demonstrate the importance of teamwork in health care to understand the comprehensive health needs of the rural people and conceive about the research.

Objective

To assess the impact of community diagnosis program on undergraduate students of BP Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal.

Method

A cross sectional study with mixed design (quantitative and qualitative) was conducted among the undergraduate students of batch 2017 participating in community diagnosis programme of BP Koirala Institute of Health Sciences, Dharan, Nepal. Eight questions assessed the students' perceptions regarding their abilities about community diagnosis program using six point Likert Scale and four open ended questions were used to know the students' experience and perception of community diagnosis programme.

Result

Overall mean ± SD score for pre-exposure response was 30.47 ± 6.18 and for the post-exposure response was 40.49 ± 5.16. The overall mean ± SD score of the students categorized according to streams showed similar results in both pre-exposure response and post-exposure responses. Qualitative analysis revealed the themes like "Research, a reflection of community and new method of learning to medical students"; "method of developing confidence and good communication skills", "learning to work as a team" and "exposure to rural area"; "Research an adjunct to medical profession".

Conclusion

Community diagnosis programme had a positive impact on the students about basic survey process, learnt to communicate with rural people, understood the type of data and were willing to participate in similar projects in future. Qualitative analysis showed most of the students had positive experience with some negative experience of community diagnosis programme.

KEY WORDS

BPKIHS, Community Diagnosis Programme, Undergraduate Students

INTRODUCTION

College students entering the medical university after very tough competition expose to a new challenging social environment becomes very difficult for students to deal with the community and patients directly.[1] To get well acquainted with the community, disease and health it would be great for the undergraduate students to be involved in the community oriented program like community diagnosis program (CDP).

Research is the key element in the progress of modern medicine and has created an ever-evolving medical world, which has been integrated as one of the important subjects in medical curriculum.[2,3] The assertion that improved health care delivery is made possible through public health researches cannot be disputed by anyone. It is very much essential to inculcate critical thinking and reasoning skills, and to develop a positive attitude among medical students towards scientific research and patient care from the very beginning of their medical career.[4] The class based epidemiology is difficult for the students to understand and are not able to impel its relevance.[5]

In BP Koirala Institute of Health Sciences (BPKIHS), during the first year after 2 months of joining, groups of multidisciplinary students (medical, dental and nursing) are posted for two weeks in a rural village of a teaching district as a part of Multidisciplinary Community Diagnosis Program (M-CDP). CDP aims to demonstrate the importance of teamwork in health care to understand the comprehensive health needs of the rural people and conceive about the research.[6] Hence, this study was done to assess the impact of community diagnosis program on undergraduate students of BPKIHS, Dharan, Nepal.

METHODS

It was a descriptive cross sectional study with mixed design (quantitative and qualitative) conducted among the undergraduate first year students of BP Koirala Institute of Health Sciences, Dharan, Nepal.

The study was conducted from November 1, 2017 to November 15, 2017. The sample size was calculated using the mean ± SD scores from the study conducted by Dongre et al.[7] The calculated sample size was 82 but all 190 students participating in CDP programme were enrolled in the study. Translated and validated questionnaire in English from study conducted by Dongre et al. was used for data collection.[7] Ethical approval was obtained from institutional review committee (IRC) of BP Koirala Institute of Health Sciences (Ref no.: 273/074/075-IRC). Written informed consent was obtained from all the participants.

The questionnaire had two components quantitative and qualitative. For quantitative component, self-administered questionnaire (twice: at the first day prior to CDP and then after completion of the CDP) was used to assess impact of CDP on students using six point likert scale (1: Strongly Disagree; 2: Disagree; 3: Slightly Disagree; 4: Slightly Agree; 5: Agree; 6: Strongly Agree). The questionnaire had eight questions assessing the impact of CDP on students. Regarding assessment of the qualitative component, the students were provided with four sets of open ended questions to express their perception and experience regarding the community diagnosis program at the last day of the community diagnosis program.

Data obtained was entered in Microsoft Excel Sheet 2007 and statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 11.5 (SPSS, Inc., Chicago, IL, USA) software. The Mean, Standard Deviation, Median, Percentage, and Proportion were calculated. The mean difference between pre and post tests were compared using paired t-test.

RESULTS

Quantitative Results

The response rate was 92.63% (n=176) for pre-exposure questionnaire and 91.05% (n=173) for post-exposure questionnaire. However, only 85.26% (n=162) responded to the both questionnaires and were included in the final analysis.

The final analyzed data had equal number of male and female responders. Most of the students belonged to Bachelor of Medicine and Bachelor of Surgery (MBBS) stream: 53.1%, followed by Bachelor of Dental Surgery (BDS): 24.1% and Bachelor of Nursing (BSc. Nursing): 22.8%.

Statistically significant (p=0.001) change in mean Likert scores for each question was seen (Table 1). Overall score for pre-exposure response was 30.47±6.18 and for the post-exposure response was 40.49±5.16 (Table 2). The change in mean score was statistically significant (p=0.001). Mean scores of the male student (31.98±5.95) in pre-exposure response was more compared to the female students (28.95±6.07) but post-exposure scores were similar for both the gender (40.25±5.50 and 40.71±4.82 respectively). The change in mean scores was found statistically significant (p=0.001) for both genders (Table 2). The change in mean likert scores were also seen statistically significant (p=0.001) in students of all the streams (Table 3).

Most of the responses changed from lower likert score in per-exposure responses to higher scores in post-exposure responses for each questions. (Fig. 1)

Qualitative Results

The qualitative components were assessed through four open ended questionnaires at the end of the CDP. For maintaining the confidentiality and ease of coding, the students' responses were given a numerical value instead

Table 1. **Overall Mean Score of the Participant responses at Community Diagnosis Program of BPKIHS.**

Questions	Gender	N	Pre-test		Post Test		p value
			Mean	Std. Deviation	Mean	Std. Deviation	
I have basic orientation to survey process	Male	81	3.62	1.40	5.10	0.93	0.001*
	Female	81	2.96	1.22	5.10	0.76	
	Overall	162	3.29	1.35	5.10	0.85	
I think, I can obtain the information from the respondent	Male	81	4.47	1.01	5.16	0.82	0.001*
	Female	81	4.14	1.09	5.23	0.69	
	Overall	162	4.30	1.06	5.20	0.76	
I understand the data types: qualitative and quantitative	Male	81	3.80	1.03	5.02	0.85	0.001*
	Female	81	3.20	1.27	4.91	0.80	
	Overall	162	3.50	1.19	4.97	0.83	
I think I can do data entry myself	Male	81	3.69	1.21	5.17	0.94	0.001*
	Female	81	2.94	1.22	5.11	0.88	
	Overall	162	3.31	1.27	5.14	0.91	
I think I am now sensitized to data analysis	Male	81	3.56	1.15	4.77	0.99	0.001*
	Female	81	3.22	1.24	5.02	0.74	
	Overall	162	3.39	1.20	4.90	0.88	
I think I know how to present data or field observations	Male	81	3.38	1.12	4.60	0.93	0.001*
	Female	81	3.19	1.23	4.78	0.77	
	Overall	162	3.28	1.18	4.69	0.85	
I am comfortable communicating with rural people	Male	81	4.48	1.23	5.15	0.89	0.001*
	Female	81	4.41	1.30	5.11	1.00	
	Overall	162	4.44	1.26	5.13	0.94	
I shall attempt to participate in this type of work in the future	Male	81	4.99	1.13	5.28	1.06	0.001*
	Female	81	4.90	1.24	5.44	0.92	
	Overall	162	4.94	1.18	5.36	0.99	

*p value<0.05 is statistically significant (Paired t-test)

Table 2. **Comparison of Pre-exposure and Post-exposure Mean Differences of Male and Female Students**

Stream	Responses	N	Mean	Std. Deviation	95% Confidence Interval of the Difference		t	df	p value
					Lower	Upper			
Male	Pre-test	81	31.98	5.95	-9.65	-6.88			
	Post Test	81	40.25	5.50			-11.89	80	0.001*
Female	Pre-test	81	28.95	6.07	-13.48	-10.04			
	Post Test	81	40.71	4.82			-13.63	80	0.001*
Overall	Pre-test	162	30.47	6.18	-11.14	-8.89			
	Post Test	162	40.49	5.16			-17.59	161	0.001*

*p value<0.05 is statistically significant (Paired t-test)

Table 3. **Comparison of Pre-exposure and Post-exposure Mean Differences according to Streams**

Stream	Responses	N	Mean	Std. Deviation	95% Confidence Interval of the Difference		t	df	p value
					Lower	Upper			
MBBS	Pre-test	86	30.86	6.50	-10.89	-7.89	-12.47	85	0.001*
	Post Test	86	40.25	5.24					
BDS	Pre-test	39	30.94	5.28	-11.61	-7.92	-10.73	38	0.001*
	Post Test	39	40.71	3.97					
BSc. Nursing	Pre-test	37	29.05	6.26	-14.74	-8.71	-7.89	36	0.001*
	Post Test	37	40.78	6.10					

*p value<0.05 is statistically significant (Paired t-test)

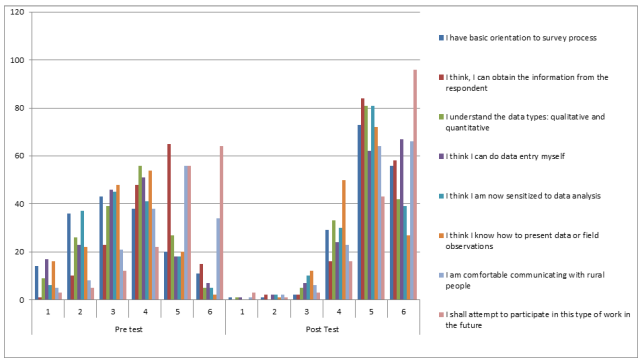

Figure 1. Likert responses to the each Question in Pre-exposure and Post-exposure

of their name. The students responded in written form to the questionnaires provided. The responses were subjected to content analysis by the investigator and further analysis was verified by the supervisors trained in qualitative analysis.

The coding was done after reading through each response of the students and themes were generated from the responses from every question asked.

The following aspects were inquired:

Question 1: Awareness and Perceptions about importance of research in medical field

The theme that emerged from the responses to this question was that the students felt community diagnosis program as extremely useful method of teaching research to new medical students stating "Research, a reflection of community and new method of learning to medical students". Most of the students had first exposure to the rural community setup in their entire life.

"Exposure to the new environment, new community and a new experience was totally different for me. I think this type of research is very important for a medical student for understanding health status at a local and community level and discovering the solution at the highest level of research for not only at national level but also at international level". (Student no. 16)

"*Awareness and perception about importance of research in medical field is very important as everything is changing day to day and should be updated with time which is possible only by time and again research".* (Student no. 54)

Community diagnosis program made them accustomed to the rural health care system and the impact of such community survey to the local people.

"Research was a new thing to me. But as a 10 days experience, I came to know that research helps us to investigate the crucial and the present situation of the community". (Student no. 138)

"Research is an inseparable part in medical field. Research helps people to know about different new things, especially in medical field, it helps to know about problems and encourage finding solutions. It enhances the quality of medical study". (Student no. 76)

Question 2: Positive and Negative experience of CDP

The students had 15 days of CDP where they had orientation session, field visit for data collection, filling up dummy tables and data entry in excel sheet, health camp exposure and some recreational activities. Different themes were identified for positive experience and for the negative experience of community diagnosis programme. Most of the students perceived CDP as a positive experience of their life time despite some problems they experienced.

The positive feedback themes were "method of developing confidence and good communication skills", "learning to work as a team" and "exposure to rural area". Good communication skill is an asset to apprehend every new situation and act accordingly. CDP was conducted in a rural municipality of Siraha district, Nepal where most of the people speak local *Maithali* language. Very few students had some fluency in speaking *Maithali*, but all of the students managed to collect data through collective team effort and developing some communication skills to gather information through natural human instinct. Even some students learnt a bit of the *Maithali* language.

"*CDP was very interesting and a new experience for me. Going to the community and talking to the people direct/ collecting fist hand data taught me patience and help build my analyzing/communicating skills".* (Student no. 25)

"*Working together with the teachers, seniors and friends for the common purpose was overall a never forget experience".* (Student no. 93)

"*I got chance to learn new things, self confidence was increased; cooperation between friends and the days were full of respect, love and people's hospitality. CDP was very memorable part of my entire lifetime. Before, I had only heard that BPKIHS is different, now I am experiencing why it is different and the best one…. !!! Thank you everyone*". (Student no. 145)

Most of the students felt CDP was hectic as many targets were to be accomplished in limited time. Data collection was tiresome. Many houses were to be surveyed and even more, the data tally in dummy sheet and data entry in excel was perceived as frustrating by the students. Despite this, some students managed to comprehend the local Maithali language but many had difficulty. Some students expressed lack of enough recreational activities. The theme emerged was "Hectic schedule with difficulty in comprehending local language".

"If we were to be taken to the community whose mother tongue is Maithali, we should be made familiar to it at least for 1-2 days in the class during orientation for good communication. It was very difficult to understand their views, feelings and we could not understand their expectations from us". (Student no. 93)

"*It was really hectic and most of the students including me were in a state of illness and weakness*". (Student no. 88)

"*Very tiresome; data collection of 40 houses was worst and very challenging*". (Student no. 19

Question 3: Willingness to conduct similar projects in future

Research is an integral part of medical field. Research has helped discover many new endeavors to human kind for beating the disease and achieving healthy life. It was seen that almost all the students responded to be either part of similar projects or even lead and conduct similar projects in future. The theme emerged was "awareness about the local epidemiology".

"Yes, I wish to conduct such projects in future as everything appears very clear and vivid; not only from books but by real life interaction provide us with better knowledge". (Student no. 61)

"I am willing to conduct similar projects in future because the programme gave knowledge about social norms and value and also about their health situation and it was an experience of my life". (Student no. 32)

Question 4: Choosing research as their career

Research is never ending journey for a medical professional. To grow as a successful medical professional one has to balance both clinical and research aspect in current context. There was a mixed response to this question. Some students wanted just to be a renowned clinician whereas some were planning to keep balance of both clinical and research work. Very few responded to choose only research as their career. The theme emerged was "Research an adjunct to medical profession".

"Nope, I don't want to be a researcher. Being a researcher always attempts to discover lot of problems and I guess I don't to add more on that. So, just want to be a true healer for those aroused problems". (Student no. 86)

"I would like to choose research as my career but whenever I talk to this, people laugh at me what are you going to do with this, they often say this. They say there is no scope of research in medical field for country like Nepal. But I would like to choose research as my career because, I like dealing such type of stuffs that we took part in the CDP. Furthermore, it's my dream to pursue a career as medical researcher". (Student no. 09)

DISCUSSION

The "Edinburgh Declaration" of World federation for Medical Education recommends the use of active learning methods like tutorials, focused group discussions which are self directed and independent.[9] There has always been need of studies that deepens the understanding and advances of medical education.[10] Encouraging and advancing health professional education and training in decentralized, rural setting helps students understand the perspective of rural life and inculcate the learning for healthier society.[11] Exposure to such settings helps student recognize the benefits of research in experience. This study revealed dramatic increase in the mean score of responses in post-exposure (40.49±5.16) compared to pre-exposure (30.47±6.18). The students felt oriented to survey process (Pre-exposure Score: 3.29; Post-exposure Score: 5.10), types of data (Pre-exposure Score: 3.50; Post-exposure Score: 4.49) and data presentation Pre-exposure Score: 3.28; Post-exposure Score: 4.69).

Many students felt that they now have developed communication skills (Pre-exposure Score: 4.44; Post-exposure Score: 5.13) to deal with rural people and can obtain the information from the respondents (Pre-exposure Score: 4.30; Post-exposure Score: 5.20). The students even seemed more interested to participate in similar programs in future (Pre-exposure Score: 4.94; Post-exposure Score: 5.36). Similar results were seen in the studies conducted by Dongre et al. and Burgoyne et al.[7,12] There were no much differences in the responses of the students of various streams (MBBS, BDS, and Bsc Nursing).

Gender and cultural issues are identified as the influencing factor in medical education and it also extends its influence in research skill training and choosing research as career preference.[12] In contrast, this study revealed that male mean score were more in pre-exposure questionnaire compared to that of female. But in post test responses, the mean score were found to be similar. This might be due to the efficient delivery of CDP and effective impact of CDP on all students.

Community diagnosis introduces the students to a world with which they are unfamiliar. Research in a community helps to discover a new persona of the society to the medial students.[13] In this study, students were accustomed to the rural health care system and were able to realize the impact of such community survey to the local people. The students felt lucky to be part of such extensive community based house to house survey that enabled them to develop communication skills and feel the diversity in socioeconomic class of the people. The students also got the opportunity to interact with the local health workers like FCHV (female community health volunteer), AHW (auxiliary health worker) and 'champions' (sub-community health volunteers) of the local health post and primary health center.

This study made the students learn the pros and cons of team work making them realize that large missions can be easily accomplished by a successful team work. However, providing training in community research is not without challenges. A study from Egypt reported about the problems their school had to face in facilitating students' community research, including curriculum overload, too little time, inadequate student training for research, lack

of staff guidance and cooperation, lack of interest and motivation, and lack of incentives.[11,14]

A good training is known to improve the awareness and skill of medical students and help them develop a positive attitude towards research.[6] Good financial support systems and exclusive support programs for research could increase chances of students taking up research as their career choice or make sure they are associated with research irrespective of their future careers.[7,15] Few students expressed their willingness to consider research as their career. Despite having the awareness and skills, due to lack of proper support systems in our country, and lack of clarity of 'research path' (unlike a clinical branch) seem to de-motivate the students from a research oriented career.

Four open ended questions were used to assess the perception of the students regarding community diagnosis programme. This does not explain in detail the overall experience of the students. Focus group discussion or in-depth interview would be better options for future research to expose all the aspects of the CDP experience of the students.

Strength: The response rate was 85.26%. Students were from MBBS, BDS and BSc Nursing streams. Hence, the result can be considered representative and be generalized to the student of BP Koirala Institute of Health Sciences. This study is first of its kind done in the country. Hence, it is an added asset for the curriculum developers to have insight of the impact of community diagnosis programme that will help to produce products that can address the holistic health of the community.

CONCLUSION

Community diagnosis programme had a positive impact on the students (post-exposure score: 40.49±5.16; pre-exposure score: 30.47±6.18). Students were oriented to basic survey process, learnt to communicate with rural people, understood the type of data and were willing to participate in similar projects in future. Qualitative analysis showed that students perceived CDP as a reflection of community and new method of leaning to medical students. Moreover, few of them felt choosing research as their career in future after exposure to CDP.

The consequences of the community diagnosis programme account for change in stated attitudes, and their long-term impact. These programmes also support the case for early clinical exposure in the community, to maintain the holistic views which students hold about the practice of medicine, and to reduce the risk of establishing career expectations based on a biased experience of hospital-oriented practice. Hence, regular exposure to such community oriented programmes is recommended.

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