

# Capacity Building of Medical Students – a Strategy to Respond to the Epidemic of Chronic Disease in Developing Countries such as India

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## ABSTRACT

**Background:** Developing countries such as India face an increasing burden of chronic diseases. Shortage of trained manpower and meager allocation of budget by the government for health, pose additional challenges for tackling the chronic disease problems in the country. The need of the hour is to develop feasible, quick, cost effective and sustainable strategies for patients in need of long term care. Capacity building of every medical graduate for care of patients with chronic disease could serve as an effective tool.

**Objective:** To assess the impact of an educational intervention workshop in capacity building of medical students for the care of patients with chronic conditions.

**Methodology:** A 5 day intensive, integrated module based workshop was organized for medical students (intervention group) based on the World Health Organization' chronic care module for HIV / AIDS. The students were subjected to a structured, written evaluation which was inbuilt in the modules. Formal and informal feedback from the students was obtained. Scores were compared against a similar group of students who did not attend the workshop (matched control group).

**Results:** The mean post-test score of the intervention group of students improved to 36.06 from the pre-test score of 19.83 (maximum attainable score was 38). The standard deviation of the intervention group was 3.85 with 99% confidence interval of 34.12 - 37.99 and was statistically significant by Paired t-test ( $p < 0.00001$ ).

**Conclusion:** The students opined that the workshop had not only increased their knowledge and understanding of chronic care, but had empowered them with the necessary skills and confidence to tackle the patients with chronic conditions.

**Key Words:** Chronic Disease, TEAM-P, Integrated workshop approach

## Background

Chronic diseases, such as heart disease, stroke, cancer, chronic respiratory diseases, diabetes, HIV / AIDS, Hepatitis B, Mental disorders etc are by far the leading cause of morbidity and mortality in the developing countries like India.

Rapid economic transition, socio-cultural and occupational environment changes shall accelerate the burden further. (Abegunde *et al.*, 2007). The delivery of effective interventions for chronic diseases is largely determined by the capacity and preparedness of the health-care systems (Abegunde *et al.*, 2007). However, surveys conducted by World Health Organization (WHO) in 2000 and 2010, reveal major gaps in health-system capacity in many low and middle-income countries. Further, Beaglehole *et al.* (2007) added that such gaps in the provision of essential services for chronic diseases could often result in complications like heart attacks, strokes, renal disease, blindness, peripheral vascular diseases and cancers. These complications can mean catastrophic

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spending on health care by families and consequent poverty (Beaglehole, 2005).

Studies in developing countries like India have highlighted the fact that the primary health care in the country is presently focused towards the provision of curative care. Emphasis is always on episodic treatment. There is hardly any follow-up care due to the overcrowded health sector, meager resources, frequent transfers, lack of trained staff, etc. However, serious research is needed to find a quick, sustainable and cost effective solution for this problem (Bodenheimer *et al.*, 2002; Reddy *et al.*, 2005).

This paper shares an experience from an educational intervention project conducted at the Mandya Institute of Medical Sciences (MIMS), an autonomous Government Medical College, under the Government of Karnataka State, India. MIMS admits 100 medical students every year on merit basis through the State and All India Entrance Examinations. The graduate medical degree Bachelor of medicine and Bachelor of Surgery (M.B.B.S) is awarded following 4.5 years of study, and is followed by 1 year of internship. The objective of the project was to explore the possibility of using an intensive, integrated modular approach to strengthen the medical curriculum, thus enabling the capacity building of medical students for the care of chronic conditions.

This educational intervention project was funded by the World Health Organization, India office, as a part of the pilot project on Continuum of Care for Chronic Common Conditions during July 15 2011 to December 15 2011 through the Rajiv Gandhi University of Health Sciences, Karnataka Health Promotion Trust and St. John's Medical College, Bangalore.

## Methodology

The educational intervention project was carried out in three phases

Phase I: Development of chronic care modules by experts

Phase II: using the chronic care modules for intervention among medical students.

Phase III: evaluation and feedback of students' results

*Phase I: Development of chronic care modules*

A three day workshop was held to develop the curriculum on chronic care. A total of 28 faculty members with experience and expertise in teaching and training medical students from departments like General Medicine, Community Medicine, Dermatology, Endocrinology, etc were invited to design a module for this project. Consultants developed prototype modules for HIV / AIDS and diabetes based on the WHO Integrated Management of Adolescent and Adult Illness (IMAI) module. The modules focused on the must know aspects of chronic care and had inbuilt evaluation tools like pre -test, post -test questionnaires, quiz, case scenarios, role plays and matching exercises. It was piloted on a group of medical students and corrections incorporated as necessary.

*Phase II: Using the chronic care modules for intervention among medical students (observations)*

The batch of third year medical students (consisting of total 91 students) was requested to participate in this study. 76 students volunteered to participate. Response rate was 83.5%. 60 students (of 76) were picked using a random number table and assigned to two separate intervention and control groups of 30 students each.

A 5 days intensive, integrated training workshop was organized for the 30 students in the intervention group, using the modules developed in Phase I. Day - 1 of the workshop was introduction to principles of chronic care, must know theory aspects of chronic care of HIV / AIDS and diabetes patients care, with emphasis on the 5 A's (5A's stand for - Assess, Advise, Agree, Assist and Arrange) and TEAM P (stands for Triage, Education, Assessment, Management and support for Positive living) approach of chronic care. Day - 2 was demonstration of practice of the 5A's and TEAM P chronic care model in the wards by faculty. On Days - 3, 4 and 5 students carried out a work-up of different cases of HIV / AIDS and diabetes in the wards and documented the same in the case log books provided to them. This was followed by discussion of individual cases in the classroom provided where the student, faculty from various departments and patients (along a care taker) could interact, discuss and learn.

The students were subjected to structured, evaluation as designed in the modules, and feedback was obtained. Scores were compared against the control group student scores. Data

was entered into the Microsoft Excel 2007 spreadsheet. Mean, standard deviations and 99% confidence intervals were computed. Student's unpaired and paired t-test was applied to test for statistical significance.

*Phase III: evaluation and feedback of students (Results / observations)*

*Evaluation of the intervention group as compared to control group*

Of the 30 medical students in intervention group, 14 were males, 16 were females. The control group had 30 medical students, 12 males and 18 females. The overall scores of both the groups before the interventional workshop are summarized in table 1.

The maximum attainable score was 38. However, there was no statistically significant difference between the intervention and control group mean scores ( $p > 0.05$ , unpaired t-test).

**Table 1: Comparison of the mean scores: Intervention Vs. control group**

Overall scores	Mean	Standard Deviation	99 percent Confidence Interval	P-value
Intervention group	19.83	5.53	17.05-22.61	>0.05
Control group	21.63	3.16	19.80-23.45	

**Table 2: Comparison of the mean pretest and post test scores of the medical students in the intervention group**

	Pre test			Post test			P-value
	Mean	Standard Deviation	99 percent Confidence interval	Mean	Standard Deviation	99 percent Confidence interval	
overall score	19.83	5.53	17.05-22.61	36.06	3.85	34.12-37.99	<0.00001

After the intensive training workshop, the mean post test score was 36.06 (maximum attainable score was 38) with a standard deviation of 3.85 and 99 % confidence interval 34.12-37.99 (Table 2). Paired t-test applied showed a statistically significant difference among the scores. ( $p < 0.00001$ ).

The feedback from medical students revealed that, the 5A's and TEAM P approach were easy to remember and helped them practice when handing a patient needing chronic care. The students also opined the areas of T-Triage, E-education and S-support for positive living were not stressed in routine teaching and the workshop had empowered them with the necessary knowledge, skills and confidence to tackle the patients with chronic diseases.

## Discussion and Conclusion

Today, teaching and learning in medical schools is disease centered and compartmentalized, more so in the developing countries such as India. In India, the focus of medical education is on producing more and more doctors to tackle the health problems of the population with little or no stress is being given on quality of care. The overcrowded outpatient and inpatient departments hardly give scope for patient-centered follow-up care of illnesses. Communication skills building of medical students though vital is the most neglected part of medical curriculum and evaluation (Strong *et al.*, 2005). These challenges cannot be excused for lack of quality and patient centered care. Hence, in order to devise a way to tackle these challenges, we undertook this small intervention study as a pilot project to check for the feasibility of a new approach to medical curricular reforms.

Reasons for choosing diseases such as HIV/AIDS and diabetes as the prototype to develop the module were 1) availability of WHO's ready to use module on continuum of care in HIV/AIDS. 2) Diabetes was the most familiar chronic disease that is recognized as chronic diseases among the doctors and lay public alike. 3) Integrated teaching of diabetes was a familiar concept among the faculty.

The third year medical students having completed basic pre- and para- clinical subjects like anatomy, physiology, pathology, pharmacology and microbiology, just entering into clinical medical teaching, are at an appropriate level to understand and apply the concept of continuum of care for chronic conditions.

The quick capsule of 5 days intensive teaching of medical students to introduce them to the concept of continuum of care of chronic diseases was a new concept of teaching in our institute.

The concept is resource intensive (faculty) and requires extensive planning and preparation by the faculty, whole hearted support by the management to provide for the infrastructure and logistics for the workshop. The techniques used for teaching included interactive lecture with PowerPoint slides, demonstration and hands on training for skill building, using charts, handouts, log books, role-plays by faculty made learning interesting. Quizzes, case scenarios, case taking, case log books and problem solving type of exercises helped practice and re-enforcement.

The above fact was evidenced by the average mean score among the interventional group students, which increased to 9.3 from 4.83 (maximum attainable score being 10) and 26.76 from 14.96 (maximum attainable score being 28) for the diseases HIV / AIDS and diabetes respectively. The difference in scores was found to be statistically significant with  $p < 0.00001$ . Feedback from medical students revealed that workshop facilitated building good communication skills, increased confidence and helped better and more effective handling of patients with chronic disease conditions. Thus intensive integrated training workshops could be a feasible, quick, effective and sustainable strategy for capacity building of medical students, and thus in responding to the epidemic of chronic conditions in developing countries like India.

#### Limitations of this research project

The study results are based on immediate evaluation; hence a long term evaluation to

asses recall and retention would be useful in assessing the impact of the programme. Further study may have to be done among final year medical students and house surgeons, as this can better address the feasibility of practice in the long term. A study on larger numbers of students involving private medical institutions is also essential. The workshop being resource intensive requires planning and much preparation on the part of the faculty hence may be a matter of concern, given the hectic schedule of teaching doctors in developing countries like India.

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