ORIGINAL ARTICLE

Public health and the undergraduate medical curriculum: Are we preparing physicians for the 21st century?

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Abstract

Objective: To investigate the adequacy of the undergraduate medical curriculum in Pakistan to address primary healthcare and public health needs of the community at national level.

Methods: The cross-sectional study used standardised pilot-tested instruments from January 12 to July 14, 2010. Stratified purposive sampling technique was employed to include public and private-sector medical colleges in the study. A total of 174 faculty members were interviewed at 11 medical colleges. Data entry and analysis was done using SPSS 17.0.

Results: Of the 174 faculty members, 93(53%) were male. The age of the respondents ranged between 26 and 68 years (Mean: 43±9 years). Of the participants, 64(37%) had worked in a primary healthcare facility at some point in their career. Various aspects of maternal, newborn and child health are not covered by the medical curriculum as reported by the faculty members.

Conclusion: There is disconnection between academia, primary healthcare providers, policymakers and the regulators. The primary healthcare providers have inadequate representation in the curriculum design. There is a need to re-direct financial resources, medical education, and medical practitioners with a focus on addressing the needs of the rural areas.

Keywords: Undergraduate medical curriculum, Pakistan, Policymakers. (JPMA 63: 1241; 2013)

Introduction

Health is an integral part of human life and has important consequences in the quality of life spent by an individual. Its significance has been highlighted by various studies[1-3] which highlight and argue the concepts of 'health related quality of life'. Moreover, 'health' has now been incorporated in indicators for measuring development, such as the human development index,[4] which was in fact devised by Pakistani economist Mahbub-ul-Haq in 1990s, and is found in United Nations Development Programme's (UNDP) Human Development Reports.[5] Moreover, three of the Millennium Development Goals (MDGs), which are a part of a global action plan that most countries, international financial institutions and development organisations recognise, are directly related to health.[6] Despite this universal recognition of the importance of health, easily preventable diseases are still widespread, especially in developing countries such as Pakistan. According to the Pakistan Millennium Development Goals Report (2010),[7] Pakistan is lagging far behind in its goals to reduce child mortality, improve maternal health, and combat Human Immunodeficiency Virus/Acquired immunodeficiency syndrome (HIV/Aids), Malaria and other diseases.[7]

The healthcare delivery system in Pakistan is unable to address the health problems of the majority of population, particularly due to a mismatch between human resource in health (HRH) training and the requirements of healthcare delivery system. Although HRH appears to be one of the points of focus in the National Health Policy, there is no specific National HRH policy and strategy in Pakistan. The World Health Report 2006 indicated that 57 countries, including Pakistan, have a critical shortage in their health workforce.[8] Similarly, the World Health Report 2008 presented the same issues in more detail while emphasizing that "Primary care requires team of health professionals: physicians, nurse practitioners and assistants with specific and sophisticated biomedical and social skills. It is not acceptable that in low-income countries primary care would be synonymous with low-tech, non-professional care for the rural poor who cannot afford any better."[9] Furthermore, this report distinguished 'Conventional health care' from 'People-centered Primary Healthcare.'[9]

The objective of this study was to investigate the adequacy of undergraduate medical curriculum in Pakistan to address primary healthcare (PHC) and public health (PH) approaches. Similarly, studies have been conducted internationally which signify deficiencies in

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curriculum.[10,11] This was done through a survey of a representative sample of public and private-sector medical colleges in Pakistan and also reviewing the undergraduate medical curriculum of the Pakistan Medical and Dental Council (PMDC).

Methods

The cross-sectional study was used to standardised pilot-tested instruments through interviewer-administered questionnaires in the four provinces of Pakistan from January 12 to July 14, 2010. The principal investigators in Islamabad were responsible for data collection and supervision in the twin cities of Rawalpindi-Islamabad, while the co-investigators in the four provinces were responsible for data collection and supervision in the provinces. Training of the co-investigators on tools and instruments was done at a day-long workshop in Islamabad. Sampling flow chart (Figure-1) was discussed. Stratified purposive sampling was used to include public and private-sector medical colleges in the study. The first stratum consisted of the provinces and the second stratum consisted of public and private medical colleges.

The sample size considerations were as follows: overall, 17.8% of the medical colleges were sampled, which is good enough for a national level survey. This came to be 11 medical colleges in all. More weightage was given to the province with higher number of medical colleges. Therefore, from Punjab 5 medical colleges, Sindh 3 medical colleges, Khyber Pukhtoonkhwa (KPK) 2 medical colleges and 1 medical college from Balochistan was included in the study. The sample size was further stratified to get a representative sample from both the public and private-sector medical colleges. As a result, 5 public-sector medical colleges were recruited in the study which constituted 17.8% of the public-sector medical colleges in the country, while 6 private sector medical colleges were included in the study which constituted 17.7% of the private-sector medical colleges in the country. Total of 174 faculty members were interviewed which was a random sample from the available pool of faculty members. It consisted of a mix of senior and junior faculty members. Data entry and analysis was done using SPSS 17.0.

Results

A total of 174 faculty members participated in the study of which 93(53%) were male. The age of the respondents ranged between 26 and 68 years (Mean: 43±9 years). The study participants were in the medical field for 4 to 54 years (Mean: 17±9 years).

The number and percentage of faculty members taking part in the study according to province were: Punjab — 85 (49%); KPK - 38 (22%); Sindh - 28 (16%); Balochistan — 23 (13%).

Out of the participants, 122 (70%) were senior faculty members (Assistant Professor and above), while 52 (30%) were senior registrars and senior instructors in Basic and

Table-1: Comparison of PMDC feedback and Faculty feedback on the medical college curriculum.

Contents of Primary Health Care including public health	PMDC curriculum coverage (Yes/No)	Faculty Feedback No coverage in the curriculum (%)	Faculty Feedback Coverage in the curriculum Range (%)
Maternal care during antenatal period	Yes	17	18-38
Maternal care during child birth	Yes	17	23-33
Components of Emergency Obstetric & Newborn Care (EmONC)	Yes	25	21-31
Maternal care during postnatal period e.g. Post-partum hemorrhage prevention & management, Infection control	Yes	19	20-31
Neonatal care	Yes	26	14-34
Family planning methods	Yes	25	19-35
Common diseases of under 5 years old child	Yes	28	21-28
Knowledge and skills in child growth monitoring	Yes	30	17-29
Integrated management of childhood illnesses (IMCI)	Yes	33	16-26
Routine childhood immunization (EPI)	Yes	21	21-30
Prevention and control of non-communicable conditions	Yes	14	21-36
Knowledge and skills to cope with infectious outbreaks	Yes	12	24-38
Disaster preparedness, response & management	Yes	32	12-31
Community outreach activities (such as Screening programs)	No	28	6-42
Health promotion of the communities	No	30	7-32
Effective communication & counseling skills	Yes	24	14-33
Identification of when and where to refer patients	No	14	22-33
Capability of assessing& using information	No	22	10-34

PMDC: Pakistan Medical and Dental Council.

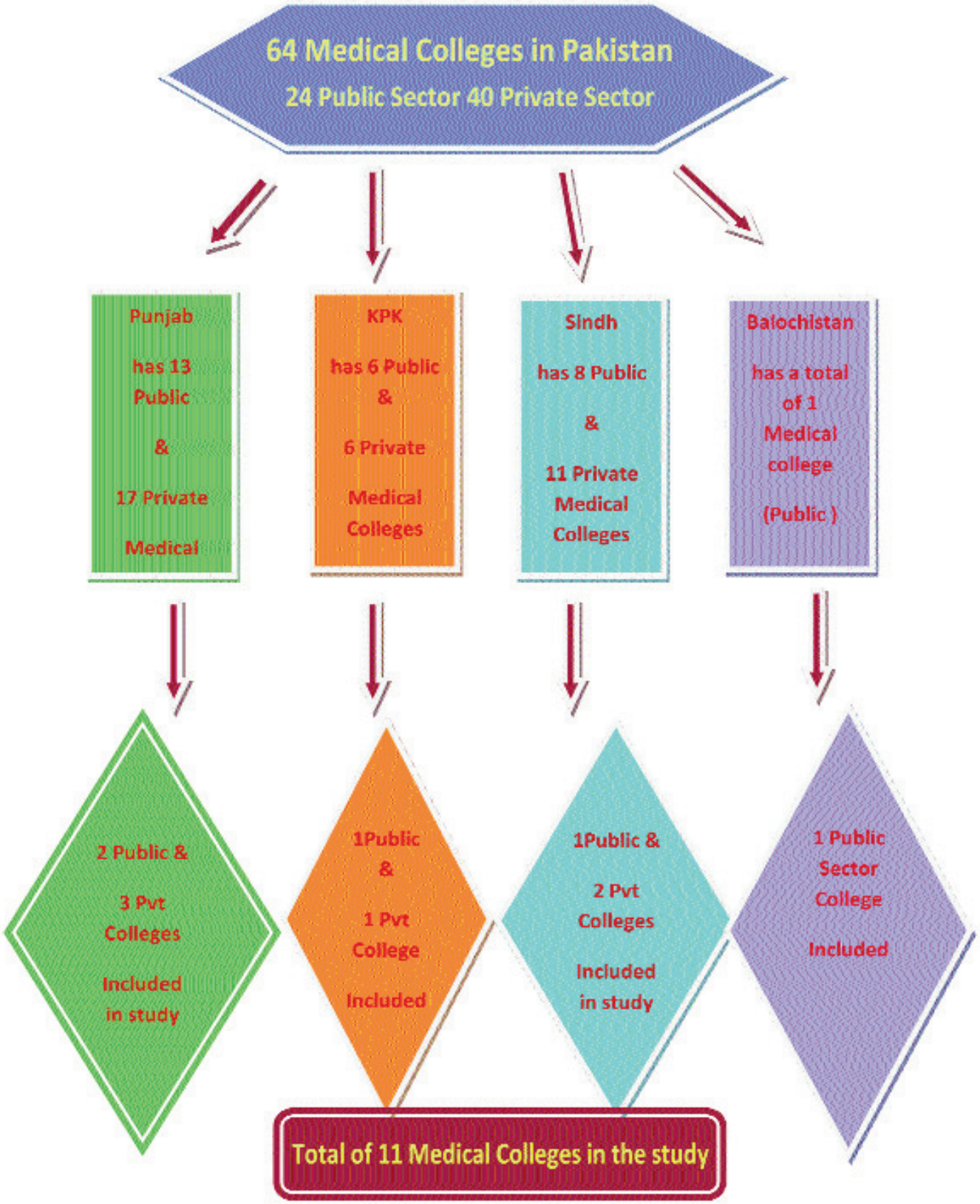

Figure-1: Sampling Flow Chart.

Table-2: Comparison of PMDC feedback and Faculty feedback on the medical college curriculum.

Contents of Primary Health Care including public health	PMDC curriculum coverage (Yes/No)	Faculty Feedback No coverage in the curriculum (%)	Faculty Feedback Coverage in the curriculum range (%)
Keeping abreast with current medical literature	No	15	16-40
Research methodology and analytical skills	Yes	23	13-36
Ability to problem solve community Health Problems	No	13	16-40
Managerial skills	No	28	13-30
Monitoring & evaluation skills	No	26	11-33
Importance of clean drinking water & proper sanitation	Yes	11	24-36
Management of common conditions such as T.B, diarrhoea, acute respiratory infections, skin, Eye and ENT problems	Yes	6	22-40
Rational drug use	Yes	15	20-33
Recognition, prevention & management of common mental conditions	Yes	16	12-37
Nutritional deficiency of Iron	Yes	11	18-43
Nutritional deficiency of Vitamin A	Yes	15	22-34
Nutritional deficiency of Iodine	Yes	12	20-35
Malnutrition (Under & over nutrition)	No	12	12-35
Knowledge, prevention & management of STIs/STDs	Yes	19	14-36
Knowledge about Millennium Development Goals (MDGs)	No	26	10-40
Current stages of the different indicators of MDGs in Pakistan	No	31	9-44
Required stages of the different indicators of MDGs for Pakistan	No	33	12-32
Advocacy for deserving and needy patients	No	13	20-38

PMDC: Pakistan Medical and Dental Council. TB: Tuberculosis. ENT: Ear Nose Throat. STIs/STDs: Sexually Transmitted Infections/diseases. MDGs: Millennium Development Goals.

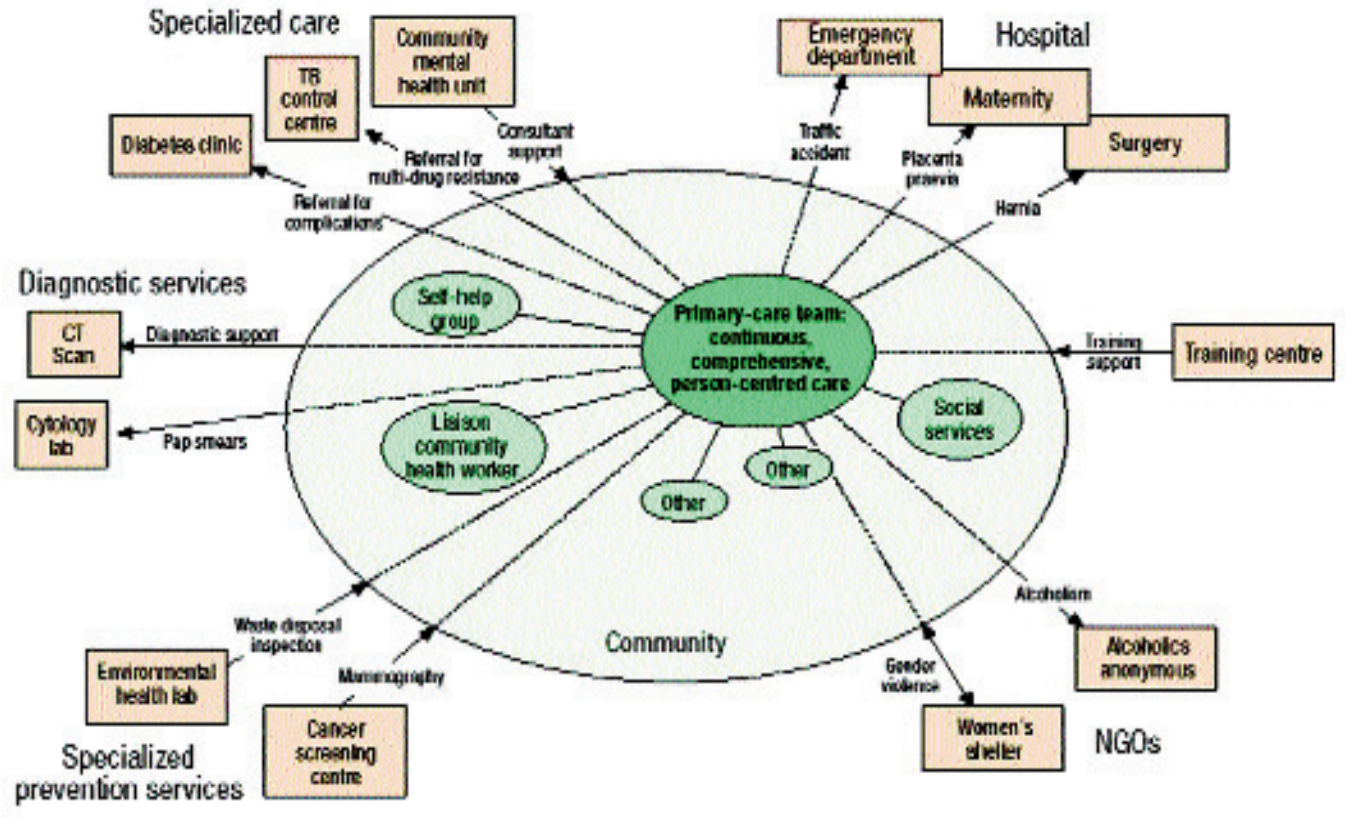

Figure-2: Primary care as a hub of coordination: networking within the community served and with outside partners.

Clinical Health Sciences. Public-sector medical colleges were represented by 92 (53%) faculty members, while 82 (47%) belonged to the private sector. From Basic Health Sciences, 44 (25%) faculty members participated, while participation from the Clinical Health Sciences was 130 (75%).

From the total number of participants, 64(37%) had worked in a primary healthcare facility (basic health unit [BHU]/rural health centre[RHC]) at some point in their career, while the remaining had no such experience.

The responses of the faculty members were collected and analysed (Tables-1 and 2).

Various aspects of maternal, newborn and child health (MNCH), particularly Emergency Obstetric and Newborn Care (EmONC), post-natal care (PNC), Neonatal care, family planning, common diseases of under-5 children, knowledge and skills in child growth monitoring, integrated management of childhood illnesses (IMCI) are not covered as reported by 25-33% of the faculty members. Community outreach activities, such as health promotion activities, screening for common and uncommon diseases and effective communication and counselling skills are not priority areas in undergraduate medical curriculum. Disaster preparedness response and management, capability of assessing and using information, research methodology and analytical skills, managerial skills, monitoring and evaluation skills, rational drug use, recognition, prevention and management of common mental conditions, knowledge and prevention and management of sexually transmitted infections and diseases (STIs/STDs) are other less emphasised areas in undergraduate medical curriculum. Knowledge about some of the most important international commitments in public health, such as MDGs, current stages of the different indicators of MDGs in Pakistan and required stages of the different indicators of MDGs for Pakistan were also reportedly not well emphasized.

The areas of public health significance/primary healthcare which are not even covered in the PMDC/Higher Education Commission (HEC) curriculum include community outreach activities, such as screening programmes, health promotion of the communities, identification of when and where to refer patients, capability of assessing and using information, keeping abreast with current medical literature, ability to solve Community Health problems, managerial skills, monitoring and evaluation skills, malnutrition (under and over-nutrition), knowledge about MDGs, current stages of the different indicators of MDGs in Pakistan, required stages of the different indicators of MDGs for Pakistan and advocacy for deserving and needy patients.

Discussion

Pakistan is a country with predominantly rural population, with 70% of the population living in villages. The healthcare system, including financial resource allocation, infrastructure development, and development of referral system and training of medical, technical and paramedical staff should, therefore, be designed to cater to the needs of the people living in the rural areas. However, this is not the case, as the majority of under-graduate medical colleges in Pakistan are situated in the urban areas. The students in these colleges are trained in tertiary healthcare centres situated in the cities where advanced preventive, diagnostic and therapeutic facilities are readily available. Moreover the spectrum of disease that the students see in the cities are quite advanced and, hence, the students are not trained to detect the diseases in the early stages, and the concepts of primordial prevention, primary and secondary prevention are not their priority learning experiences. This is the 'inverse care' that is the norm in Pakistan, meaning that those who deserve the most of the healthcare get the least. Majority of undergraduate and post-graduate medical training is focused on the health needs of 30% of the population and we fail to train our future doctors on the health problems of 70% of the population. These doctors face severe handicap when they are placed in healthcare facilities in the rural areas.

This study gives a snapshot of the status of the training received in terms of knowledge, attitude and skills in Public Health and Primary Healthcare by the existing medical doctors in Pakistan and also what could be expected of the medical graduates of tomorrow who are taught by this faculty. One must realise that it's not only the function of Community Medicine department in a medical college to transfer PH and PHC concepts to medical students, but it's a joint responsibility of the faculty in both the Basic and Clinical Health Sciences and, therefore, these concepts have to be integrated with the curricular delivery, rather than taught in isolation. Therefore, the study included all the faculty members in Basic and Clinical Health Sciences, including Community Medicine.

PHC is defined as 'essential healthcare' and is a form of comprehensive healthcare which includes community participation, inter-sectoral coordination and addressing the socioeconomic aspects of health.[12] Primary healthcare covers a wide range of health aspects which includes education concerning prevailing health problems and the methods of preventing and controlling

them, promotion of food supply and proper nutrition, and adequate supply of safe water and basic sanitation, maternal and child healthcare, including family planning, immunisation against major infectious diseases, prevention and control of locally endemic diseases, appropriate treatment of common diseases and injuries and provision of essential drugs.[12] PHC has had a significant influence on health workers in many developing and underdeveloped countries.[13] However, there is little understanding of the actual concept of PHC.[13] Efforts to develop more effective PHC need a more balanced approach to reform, with a better balance across the different elements of PHC.[14,15]

This study attempted to make a contrast between the curriculum designed by PMDC to cover the different aspects of PHC and contents of PHC taught in different medical colleges of Pakistan. It is vital to understand the basic principles of PHC and the aspects that are covered in it. Such understanding and inclusion in the curriculum is important for the training of medical students as future primary care physicians. There is a dire need to re-configure PHC delivery within the country, but quality of PHC provided is equally important.[16,17] This is only possible when the medical graduates have been fully exposed and trained in PHC and PH concepts and competencies.

Important contents of PHC, such as community outreach activities, including screening programmes, health education of the communities, managerial skills, monitoring and evaluation skills and malnutrition are not covered by the PMDC in the curriculum. The spectrum of disease that is seen in PHC setup pertains to primordial and primary prevention with early diagnosis and prompt treatment of diseases. However, the exposure of the medical students in tertiary healthcare facilities in big cities to advanced diseases with a greater focus on technology, including advanced diagnostic techniques and lavish treatment options defies the basic principles of early diagnosis and prompt treatment in early stages of diseases and, therefore, limited training in screening for diseases. These graduates face extreme difficulty to practice medicine when they are placed in resource-constrained environments, particularly at the union council, tehsil and district levels, as opposed to the larger cities. Moreover, they lack the communication skills, managerial skills, community problem-solving skills, health promotional and monitoring and evaluation skills that are so essentially required to practise in these areas.

The MDGs are targets which are aimed at favourable outcomes in different aspects of health. Surprisingly, they are not included in the medical curriculum by PMDC. This leads to the students being deprived of an important opportunity to think in terms of national PH targets and ways and means to achieve them. This lack of emphasis in thinking persists throughout their career and they are unable to contribute positively towards the betterment of PH in the country. Hence, emphasis is required on MDGs especially in the medical curriculum, addressing the contents of PHC. It will not only motivate the students, but will also make them more target-oriented once they become practising primary care physicians.

On the other hand, some of the important contents of PHC are either not included in the curriculum or taught inadequately in the medical colleges of Pakistan. Research methodology and analytical skills are excluded from curriculum from 23% of the medical colleges surveyed. Health research is essential for improving healthcare.[18] Unfortunately, health research has a low priority in the developing world. In all disciplines of science and technology, India and Pakistan combined have 208 researches per million citizens,[19,20] compared to 4,526 researches per million citizens in the United States.[6] The published research output from South Asia is small - South Asian health researches accounted for only 1.2% of all papers within the Institute for Scientific Information database from 1992-2001.[21] Developing countries must, therefore, enhance their research capacity to efficiently address the growing burden of both communicable and non-communicable diseases.[22]

The medical curriculum should be proactively updated and so should all important aspects of PHC[23] according to their significance, keeping in mind the PH scenario in Pakistan. There should be a strong check on the implementation of the curriculum in the true sense not just mere amendments in the syllabus. Medical educationists, PH practitioners, policymakers, PHC providers, community health workers and the community members should take up their responsibility to identify PHC issues for incorporation in the curriculum. The fruits of this change would be visible in the form of better community outreach services and better health outcomes for the people.

Human resource development for Health in Pakistan should be given top priority and it should be able to provide a vision for the next 20 years of health planning. It should take the lead from the Vision 2030 of economic development of Pakistan given by the Planning Commission in February 2006. We have to strategically gauge the challenges to the health system keeping in view demographic trends, epidemiological transition, with particular emphasis to the poor, disadvantaged and high-risk groups in the communities. Our health

manpower should not be a mere depiction in terms of numbers of doctors, nurses and dentists, expressed per 1000 population, but their capacity in training human resource management in order to cater to the needs of the communities which we serve. Our health manpower needs projection for 2030 and beyond. It should be modelled around future health needs and should be targeted towards achievement of well-defined health outcomes.

World Health Report 2008 by W.H.O puts forward the following model of PHC:[9]

Conclusion

The healthcare delivery system in Pakistan should address the health problems of the majority of population, particularly due to a mismatch between HRH training and the requirements of the system. There are severe gaps in the curriculum of undergraduate medical education as far as PHC and PH approaches are concerned. Such gaps need to be filled. Moreover the PMDC curricular guidelines need to be streamlined to address PHC and PH approaches which have certain deficiencies. The future medical doctors of Pakistan are not prepared to address PHC and PH challenges. There is a need to re-direct financial resources, medical education, and medical practitioners with a focus to addressing needs of the rural areas.

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