

## Students' perception regarding medical education in Nepal

Marahatta SB<sup>1</sup>, Dixit H<sup>2</sup>

<sup>1</sup>Lecturer, Department of Community Medicine, Kathmandu University School of Medical Science, Dhulikhel, Nepal,

<sup>2</sup>Professor, Department of Paediatrics, Kathmandu Medical College, Kathmandu, Nepal

---

### Abstract

**Background:** Medical schools and medical education look different as we advance into the 21st century. Nepal has seen a dramatic increase in the number of medical schools/colleges in the last decade. Most schools practice traditional teaching method while others are implementing problem based learning (PBL). It is important to explore the current advances and practices in medical education to meet the needs of the health services of the country.

**Objective:** The objective of the present study is to explore the students' perception regarding present status of medical education in Nepal and provide recommendations to address future needs.

**Materials and methods:** The study design of the present research was descriptive and exploratory type. Structured Questionnaire was used to assess the students' perception relating to different aspects of medical education. A total of 24 students studying in the final year of MBBS from six medical colleges were selected randomly.

**Results:** The traditional teaching/learning methodologies have been prevailing in the medical schools of the country. PBL suits many objectives of self directed learning (SDL) because students learn to reason and deduce facts and figures rather than rote learning. For the success of PBL and SDL students require learning resources and as per our findings although 71% of the students were satisfied with library facilities 54% were dissatisfied with computer resources. Community based approaches have been focused in the curriculum of all the medical schools of Nepal. About public health and community medicine teaching 86% of the students reported to be appropriate, of which 18% actually thought it was excessive.

About the teaching of evidence based medicine (EBM), 50% students felt it was adequate and other half thought it was inadequate. Majority of the students i.e. 62% of the students also felt that the care of ambulatory patients was as well covered as the care of hospitalized patients. The areas of clinical practice which the students felt were inadequate included: nutrition (71%), geriatrics (70%), end of life care (71%), palliative care (67%), long term health care (70%), continuity of care (70%), ethical decision making (56%) and patient follow up (50%). In spite of completing their training, 25% felt they were not confident that they had acquired the clinical skills required to begin the residency program. As much as 60% felt they did not receive information about specialities and alternative medical careers. About 75% of the students had the feeling that medical profession will not be financially rewarding; 80% felt it would not be as respectable; 99% felt it would be more scientifically challenging.

**Conclusion:** The medical education of Nepal is still guided by the notion of the traditional approaches. The teaching methods should come up as per the advancement in contemporary medical education. The training needs to be more structured and focused in practical reality than only feeding students with theoretical knowledge.

**Key words:** PBL, SDL, EBM

---

In the last century, the human race witnessed unprecedented changes that took place in all spheres of life. The health sector was no exception. Advances in medical sciences and technology are but a part of these events. From the time immemorial man has been interested in trying to control diseases. The medicine man, the priest, the herbalist and the magician, all undertook various ways to cure man's disease and bring relief to the sick<sup>1</sup>. In the absence of scientific medical knowledge, it would not be fair to ignore their contributions to alleviate the suffering of mankind.

Since there is an organic relationship between medicine and human advancement, the evolution of medical education should be viewed against civilization and advancement at that time. There was noticeable development in medical education as the theory of

---

### Correspondence

Prof. Hemang Dixit  
Consultant Paediatrician and Principal,  
Kathmandu Medical College, Sinamangal, Kathmandu  
E-mail: h2dixit@healthnet.org.np

disease causation changed from supernatural to germ causation and from genomics to proteomics. In this regard, medical education needs to be directed to aspire not only the teaching of diagnosis and management, the mainstay of medical education for the last hundred of years or more, but optimum health requires more than this<sup>2</sup>. The role of medical education has been to produce medical, nursing and other allied health science workers who can understand and assume their responsibilities to meet the wider health care needs of their people to remain physically, mentally, socially and spiritually healthy as envisaged by WHO. Equally reassuring for the future of medicine is the continued evolution of medical education itself.

A revolution in health care is occurring as a result of changes in the practice of medicine and in society. These include changing demographics and the pattern of diseases; new technologies; changes in health care delivery; increasing consumerism; patient empowerment and autonomy; an emphasis on effectiveness and efficiency; and changing professional roles. These are the challenges which will be faced by the medical professionals as we advance into the 21st century and to which continuing medical education must respond<sup>3</sup>. Most importantly, the new millennium ushers in a new age of global relations, science, technology, and medical practice which is not sufficiently addressed by the conventional medicine. New era needs new types of physicians. The cultivation of good new physicians demands good medical education with new approaches.

Medical schools and medical education will look different as we advance into the 21st century. The tools for teaching and treatment approaches that served yesterday's doctors are inadequate for tomorrow's doctors. Medical schools need to respond to this ever-changing world with exciting curricular innovations designed to prepare future physicians for practice in the 21st century. They must respond to the rapid social, economic, and technological changes in the healthcare profession.

Nepal has seen a dramatic increase in the number of medical schools/colleges in the last decade. Universities and regulatory bodies (e.g. Nepal Medical Council) face the difficult task of providing quality medical education. Therefore, it has become necessary to set and maintain good standards nationwide. It is important to explore the current advances in medical education and practices to meet the needs of health requirement of the country and in global basis as well. The purpose of the present study is to explore the present status of medical education in Nepal and provide recommendation for future needs.

## **Materials and methods**

The study design was descriptive and exploratory type. Structured questionnaire was used to assess the students' perception regarding existing medical education. A total of 24 students studying the final year of MBBS from six medical colleges were selected randomly. The respondents included four students from each college including two boys and two girls.

Educational outcomes can be difficult to measure which makes the process of educational innovations complicated. It is not possible to measure all outcomes using quantitative methods therefore qualitative and descriptive studies were included. The limitations of such research methods include the inherent subjectivity and the lack of rigour in deductions. The present research has been designed in a way that will help planners to draw their own conclusions. We have entered the review with open minds, thus keeping decision making relatively objective. We seek to inform the critical readers rather than bias the opinions of uncritical ones.

## **Results**

The aim of this study was also to elicit the views of medical students in Nepal regarding various aspects of the medical education. In this connexion attempts were made to obtain from students an evaluation of the teaching/learning situation, courses of study and other aspects of medical education. The data for this purpose were collected by means of questionnaire. Questionnaire was administered amongst the last year medical students of different medical colleges of Nepal. The respondents included four students from each college including two boys and two girls from six medical colleges. The findings are as follows:

### ***Importance of premedical courses***

Regarding premedical course, 54% of the student felt strong relevance of genetics followed by 37% biochemistry, 21% physics and 19 % organic chemistry. For, ethics, only 15% feel strong relevance, followed by 27% moderately important, 31% expressed somewhat important, 8% slightly important however 19% expressed no importance at all.

### ***Experience about basic sciences courses***

Basic science objectives were not clear to 21% of the students with only 8% agreeing they were strongly clear and 67% of them feeling these were moderately clear (Table 1). Among respondents, 42% of the students expressed that basic science content were not sufficiently integrated and without sufficient illustration of clinical relevance. Only 8% of the students agreed that the basic science content objective and examination content were matched but 29% of the students didn't agree at all. In general, only 29 % of the students agreed that basic science content was well organised, however 34% disagreed and 4% strongly disagreed.

### ***Quality of education in clinical rotation***

Among the respondents, 37% of the students expressed that the quality of education of internal medicine was excellent in the following clinical rotations followed by 33% surgery, 21% family medicine, 21% obstetrics and gynecology, 17% neurology, 17% psychiatry, 12% emergency medicine, 8% paediatrics and 0% radiology. As per their experience 25% of the students expressed that quality of education of radiology was not applicable, followed by 21% psychiatry and emergency medicine, 12% neurology, 9% family medicine and 8% obstetrics and gynecology (Table 2).

### ***Teaching/ clinical guidance by residents***

Among respondents, 25% of the students expressed that more than 3/4th of the teaching time/clinical guidance was provided by resident and fellows in surgery, 38% of the respondents experienced that 1/2 to 3/4<sup>th</sup> of teaching was provided in internal medicine and 34% of the respondents experienced gynecology and obstetrics. However, 25% of respondents experienced that 1/2 to 3/4<sup>th</sup> of teaching was provided in emergency medicine, psychiatry, radiology and surgery.

### ***Students satisfaction in clinical rotations***

Only 8% strongly agreeing that they received clear learning objectives for clinical rotations with 58% agreeing, 21% with indifferent opinion and 13% disagreeing. Among the respondents, 8% of the students strongly agreed that their performance was assessed as per the learning objectives 29% agreeing, 25% with indifferent opinion and 38% disagreed. Among respondents, 32% of them strongly agreed that they had gain opportunity to follow a variety of different patients, 56% agreed, 4% with indifferent opinion and 8% disagree. As per the clinical guidance, 4% of the students strongly agreed that faculty members were adequately involved in teaching clinical rotations, 66% agreed, 17% with indifferent opinion and 13% disagreed. However, 13% of the students strongly agreed that a faculty member personally supervised when performing physical examination, 42% agreed, 16% with indifferent opinion and for 29% of them disagreed. In the clinical rotation 54% of the students did not feel that geriatrics/gerontology was adequately treated.

Apart from their course in medical school, 15% of the students participated in health education activities voluntarily, 10% in health promotion, 9% in offering home care, delivering health service to undeserved populations, research project with faculty member; 7% participated in seminar, educating high school or college students about carriers in health professions or biological sciences; 6% worked on project with community based multicultural group, learned another language; 5% participated in course/workshop on cultural awareness and independent study project, 4% international health

experiences, 3% in thesis projects and field experience in nursing home care, 2% authorship of a research paper submitted for publication.

### ***Time devoted in instruction of clinical decision making and clinical care***

The students experienced that time devoted to instruction was inadequate in long term health care (71%), team work with other health professional (58%), clinical pharmacology (48%), problem solving and patient follow up (50%), clinical reasoning (44%), care of hospital patient and ambulatory patients (38%), physician- physician communication skills (32%), pain management (33%) physician patient communication skills (21%).

### ***Evidence based medicine***

In general, 50% of the students expressed that evidence based medicine was inadequate with remaining 50% feeling it was adequate. Literatures review/critique as part of evidence based medicine was inadequate as expressed by 75% of the students with 17% feeling it as appropriate and rest 9% expressed excessive too. The interpretation of clinical data and research reports were inadequate as per the experience of 50% of the students. Likewise 50% of the students expressed that decision analysis was inadequate and only 25% of the students expressed that the interpretation of laboratory result was inadequate.

### ***Population based medicine***

Among the respondents, 78% of the students felt that health issues of underserved population was inadequate followed by 70% with opinion that women's health component was inadequate, 61% mentioned adequacy in risk assessment, counselling and occupational medicine, 59% in culturally appropriate care for diverse populations, 52% health disparity and culturally related health behaviours, 36% in clinical epidemiology and communicable disease prevention and 23% in health promotion.

### ***Management in Medical Practice***

In the general aspect of practice of medicine, 75% expressed adequacy with their knowledge regarding health care system, 58% expressed cost effective medical practice, 42% expressed care was managed, 42% in medical record keeping, 37% practice management, 29% quality assurance in medicine and only 25% in medical economics.

### ***Other medical topics***

Among the respondents, 91% of the students expressed inadequacy of genetic testing, 83% mentioned about inadequacy of pharmacogenetics, 79% complementary medicine, 78% in genetic history taking, 71% in end of life care, 67% in palliative care, 63% in behaviour sciences, 60% in family dynamics and human sexuality,

58% in professionalism, 56% in law and medicine 46% in biomedical ethics 38% in drug and alcohol abuse and 35% in family/domestic violence respectively.

#### ***Students competency in searching medical information***

Among respondents, 50% of the students disagreed that they have knowledge and skills to critically review a published research report with 13% indifferent opinion, 33% agree and 4% strongly agreed. Like wise, 29% of the students disagreed that they have knowledge and skills to carryout reasonably sophisticated searches of medical information databases with 21% indifferent opinion, 46% agreed and only 4% strongly agreed.

#### ***Emphasis on medical issues***

Among respondents, 42% of the students felt that the recognition and acceptance of limitations in one's knowledge and clinical skills and commitment to continuously improve one's knowledge was not addressed. 40% of the students expressed that the challenges of the medical profession was not addressed in course of obtaining medical education and 18% of the students expressed that the need to engage in life-long learning was not addressed.

#### ***Students confidence for residency***

Among the respondents, 25 % the students have expressed that they were not confident about their clinical skills to begin residency program. 15% of the students didn't agree that they have fundamental understanding of the issues in social sciences of medicine (ethics, humanism, professionalism, organisation and structure of health system). 8% of the students expressed that they lack basic skills in clinical decision making and application of evidence based information. As per the fourth year of medical education, 20% of the student strongly agreed that they need additional required activities or selective (e.g.-courses, sessions, clerkship etc), 40% of the students agreed, 20% of the students have no opinion and rest 20% disagreed.

#### ***p) Students satisfaction towards management:***

Only 4% of the students are very satisfied towards the accessibility to administration with 9% satisfied, 12% no opinion, 38% were dissatisfied and 4% very dissatisfied. Regarding administration's awareness of the students problem, neither were very satisfied, 35% were satisfied, 13% with no opinion, 48% are dissatisfied and 4% very dissatisfied.

Concerning academic counselling neither of the respondents was very satisfied, with 48% were satisfied, 4% of no opinion, 39% were dissatisfied and 9% very dissatisfied. As per overall satisfaction of career planning services, neither of the respondents was very satisfied, 8% are satisfied, 13% with no opinion, 54% were dissatisfied and 25% were very dissatisfied. 8% of the students were very satisfied with the students health services, 58% were satisfied, 17% with no opinion, 13% were dissatisfied and 4% were very dissatisfied.

Regarding library services, 4% were very satisfied, 71% were satisfied, 13% have no opinion, 8% were dissatisfied with 4% very dissatisfied. As per computer resource, neither of them were very satisfied, 38% were satisfied, 8% had no opinion, 54% were dissatisfied with neither was very dissatisfied. 16% of the student reported that they have been mistreated during the medical school by the administration.

With regards to the medical profession, only 8% agreed that physicians will not receive the same respect from the society in the future as they have in the past, with 42% agreed, 13% with no opinion, 33% disagreed and 4% strongly disagreed. Interestingly 21% agreed that the demands of physicians work interfere too much with interest and pursuit, with 46% agree, 17% with no opinion, 16% disagreed and 0% strongly disagreed.

**Table 1:** Students experience about the basic science courses

	Strongly Agree		Agree		No Opinion/ Indifferent		Disagree		Strongly Disagree		Total
Basic science content objectives were made clear to students	2	8%	16	67%	1	4%	5	21%	0		24
Basic science content were sufficiently integrated coordinated	2	8%	9	38%	2	8%	10	42%	1	4%	24
Basic science content objectives and examination content matched closely	2	8%	10	42%	5	21%	7	29%	0		24
Basic science content had sufficient illustrations of clinical relevance	0		12	50%	1	4%	10	42%	1	4%	24
Basic science content were well organized	1	4%	7	29%	7	29%	8	34%	1	4%	24
Basic science content provided relevant preparation for clinical rotations	2	8%	8	34%	6	25%	7	29%	1	4%	24

**Table 2:** The quality of educational experiences in the clinical rotations:

	Excellent		Good		Fair		Poor		Not Applicable		Total
Emergency Medicine	3	12%	8	34%	5	21%	3	12%	5	21%	24
Family Medicine	5	21%	8	34%	7	29%	2	8%	2	8%	24
Internal Medicine	9	37%	8	34%	4	17%	3	12%	0		24
Obstetrics and Gynaecology	5	21%	11	46%	5	21%	1	4%	2	8%	24
Neurology	4	17%	9	37%	4	17%	4	17%	3	12%	24
Paediatrics	2	8%	14	58%	7	29%	1	5%	0		24
Psychiatry	4	17%	9	37%	6	25%	0		5	21%	24
Radiology	0		8	34%	7	29%	3	12%	6	25%	24
Surgery	8	33%	12	50%	4	17%	0		0		24

**Table 3:** Percentage of teaching time provided by residents

	<5%		5-25%		25 – 50%		50 - 75%		>75%		Total
Emergency Medicine	5	21%	2	8%	9	38%	6	25%	2	8%	24
Family Medicine	7	29%	4	17%	6	25%	6	25%	1	4%	24
Internal Medicine	2	8%	7	29%	4	17%	9	38%	2	8%	24
Obstetrics and Gynaecology	2	8%	7	29%	5	21%	8	34%	2	8%	24
Neurology	7	29%	8	34%	6	25%	2	9%	1	4%	24
Paediatrics	3	13%	9	37%	7	29%	4	17%	1	4%	24
Psychiatry	3	12%	6	25%	5	21%	6	25%	4	17%	24
Radiology	7	29%	9	38%	1	4%	6	25%	1	4%	24
Surgery	1	4%	7	29%	4	17%	6	25%	6	25%	24

**Table 4:** Students satisfaction in clinical rotations

	Strongly Agree		Agree		No Opinion/ Indifferent		Disagree		Strongly Disagree		Total
I received clear learning objectives for the clinical rotations	2	8%	14	58%	5	21%	3	13%	0		24
My performance was assessed against the learning objectives	2	8%	7	29%	6	25%	9	38%	0		24
I had an opportunity to follow a variety of different patients (with different medical conditions) on the clinical rotations	8	32%	13	56%	1	4%	2	8%	0		24
My attending faculty members were adequately involved in teaching the clinical rotations	1	4%	16	66%	4	17%	3	13%	0		24
A faculty member personally observed me performing physical examinations during the clinical rotations	3	13%	10	42%	4	16%	7	29%	0		24
Faculty members provided me with sufficient feedback on my performance	2	8%	12	50%	5	21%	4	17%	2	8%	24
The clinical rotations included adequate geriatric/gerontology subject matter.	1	4%	5	21%	2	8%	13	54%	3	13%	24
My time in ambulatory care was productive	2	8%	12	50%	6	25%	2	8%	2	8%	24
Residents and fellows provided effective teaching during the clinical rotations	2	8%	16	67%	2	8%	4	17%	0		24
Overall, the teaching I received from residents and fellows enhanced the educational value of my clinical rotations	6	25%	16	67%	2	8%	0		0		24

**Table 5:** Evidence based practice in medical education

	Inadequate		Appropriate		Excessive		Total
Evidence-based medical in general	12	50%	12	50%	0		24
Interpretation of clinical data and research reports	12	50%	12	50%	0		24
Literature reviews/critiques	18	75%	4	17%	2	8%	24
Interpretation of laboratory results	6	25%	18	75%	0		24
Decision analysis	12	50%	12	50%	0		24

**Table 6:** Management in Medical Practice

	Inadequate		Appropriate		Excessive		Total
Cost effective medical practice	10	42%	14	58%	0		24
Quality assurance in medicine	17	71%	7	29%	0		24
Practice management	15	63%	9	37%	0		24
Medical record-keeping	13	54%	10	42%	1	4%	24
Managed care	13	54%	11	46%	0		24
Patient Private/HIPAA	6	25%	18	75%	0		24
Health care systems	6	25%	18	75%	0		24
Medical Economics	18	75%	6	25%	0		24

**Table 7:** Issues most emphasized in medical education

	Pre Clinical		Clinical		Special Preceptor ship		Role Modelling		Not Addressed		Total
A Commitment to advocate At all times the interest of one's patients over one's own interests.	3	12%	14	58%	0		2	8%	5	21%	24
A Commitment to advocate for access to health care for members of traditionally underserved population	9	38%	6	25%	0		2	8%	7	29%	24
The need to engage in lifelong learning to stay abreast of relevant scientific advanced	4	17%	13	54%	1	4%	1	4%	5	21%	24
The threats to medical professionalism posed by the conflicts of interest inherent in various financial and organizational arrangements for the practice of medicine	2	8%	9	37%	3	12%	1	4%	9	37%	24
The compassionate treatment of patients	4	17%	16	67%	2	8%	2	8%	0		24
Respect for the privacy and dignity of patients	4	17%	17	70%	2	8%	0		1	5%	24

Table 7 cont...

Valuing honesty and integrity in all interactions with patients' families, colleagues, and others with whom physicians must interact in their Professional lives	3	13%	17	71%	2	8%	2	8%	0		24
The Theories and principles that govern ethical decision making	4	17%	11	46%	2	8%	2	8%	5	21%	24
The major ethical dilemmas in medicine from the rapid expansion of knowledge in genetics	1	4%	10	42%	3	13%	1	4%	9	37%	24
The recognition and acceptance of limitations in one's knowledge and clinical skills and a commitment to continuously improve one's knowledge and ability	2	8%	8	33%	3	13%	1	4%	10	42%	24

Table 8: Students confidence for residency

	Strongly agree		Agree		No Opinion/ Indifferent		Disagree		Strongly Disagree		Total
I am confident that I have acquired the clinical skills required to begin a residency program	2	8%	12	50%	4	17%	6	25%	0		24
I have the fundamental understanding of the basic disease mechanism, clinical presentation, management for the common condition encountered in the major clinical disciplines	1	4%	19	80%	1	4%	2	8%	1	4%	24
I have the communication skills necessary to interact with patients and health professionals.	5	21%	18	75%	1	4%	0		0		24
I have basic skills in clinical decision making and the application of evidence based information to medical practice.	1	4%	15	63%	5	21%	2	8%	1	4%	24
I have a fundamental understanding of the issues in social sciences of medicine(e.g. ethics, humanism, professionalism, organization and structure of the health care system)	1	4%	15	63%	5	21%	3	12%	0		24
I have the ethical and professional values that are expected of the profession.	4	17%	15	63%	3	12%	2	8%	0		24



## Discussion

While the medical curricula in Nepal reflect integration of clinical and basic sciences, the students reported that certain knowledge, skills and attitudes were only to be learnt in the clinical stages. For example, 56% felt they learnt the need to engage in lifelong learning to stay abreast of relevant scientific advances, during the clinical stage compared to only 18% during the preclinical stage; whereas 18% felt this was not addressed at all during their training. Clearly, the need for lifelong learning should become apparent from the very early stages of medical training.

Attitudes such as advocating the interest of one's patients, compassionate treatment of patients, respect for privacy and dignity of patients and valuing honesty and integrity in dealing with patients' families and colleagues were mainly reported to be developed during the clinical stages. Some of these attitudes can also be imparted from problem-based learning tutorials where students are presented with different cases. Some attempt at integration is being done by having clinical teachers to be involved in Basic Sciences Teaching / Learning activities and vice versa. However, this is a long process and more radical thinking has got to be brought into play.

PBL suits many objectives of self-directed learning because students learn to reason and deduce facts and figures than rote learning. Students, who have gone through the PBL route, have been found to do as well as those who followed of the traditional system in their board or licensing exams. However, students from the PBL background reported to be highly enjoying their studies<sup>4</sup>.

The scientific basis for the benefits of PBL is that there must be a suitable activation of prior knowledge<sup>5</sup> before new knowledge can be learnt in association<sup>6</sup>. The case used in the PBL serves as retrieval cues for future when it can be applied in similar situation because of the "encoding specificity" in the brain<sup>7</sup>. It is also generally accepted, that elaboration of knowledge by reading new information, discussing<sup>8</sup>, formulating and criticising hypotheses<sup>9</sup> and teaching peers<sup>10</sup> leads to longer retention in memory and better retrieval<sup>11</sup>.

For the success of SDL and PBL, students require learning resources and although 71% were satisfied with the library facilities; 54% were dissatisfied with computer resource center; 61% reported they had insufficient study space and 84% mentioned they had lack of relaxation space.

Meanwhile, what has also been observed is that the PBL exposure has made students familiar and influenced their

thinking towards high tech medical care. The students have been thinking of sophisticated technology which may not be appropriate and applicable in our settings. It has also been a matter of worry if the graduates will find difficulty in working at the rural settings of Nepal. Likewise, the requirement of resources to train the students is a limiting factor. How far are the medical colleges equipped in terms of manpower and other resources? We need to weigh the benefits of PBL at all levels and judgement has to be taken accordingly as per our reality.

### *Community-based approach*

About public health and community medicine teaching, 86% of students reported they were appropriate, of whom 18% actually thought they were excessive. About appropriate coverage of different topics, the coverage was: health promotion and disease prevention (73%); screening of diseases (59%), prevention of infectious diseases (55%), clinical epidemiology (59%) and biostatistics (57%). Social issues like drug / alcohol abuse (62%) and domestic violence (65%), human sexuality (60%) and family dynamics (60%) were reported to be quite well covered. However, 9% felt there was inadequate experience in culturally appropriate care for diverse populations and only 9% were involved in home care programme and 3% in nursing home care. Other inadequate areas reported were, health issues for underserved population (78%), women's health (70%), risk assessment and counselling (61%) and occupational medicine (61%).

### *Evidence-based approach*

About the teaching of evidence-based medicine (EBM), half of the students felt it was appropriate and the other half thought it was inappropriate. Although, 75% reported they were taught well about the interpretation of laboratory results, only 50% said the interpretation of clinical data and research reports was inappropriate. Among respondents, 75% students also mentioned that the literature review was insufficient. The evidence-based approach should also be backed up with original research in to local health problems otherwise it becomes meaningless.

### *ICT in medical education*

Medical students have to master the application of information and communication technology (ICT) including the use of computers for education (using electronic teaching media, statistics, making presentations) and communication (e-mails, internet). These skills are vital for updating their knowledge to become competent life-long learners. In order to provide these skills, medical schools have to provide a mediatheque or a resource centre with adequate numbers

of computers and other audiovisual equipments. The present study found that 54% of the students were dissatisfied with their computer resource centre.

### ***Meeting Demands of Medical Practice***

#### ***a) Knowledge of different disciplines of medicine***

The areas of clinical care that were well done included essential skills: diagnosis of disease (88%), patient interviewing skills (84%) and management of patients (76%). Students also felt that the care of ambulatory patients was as well covered as the care of hospitalized patients (62%), which suggests that clinical teaching has adapted to the changing clinical scenario in which there have been an increase ratio of ambulatory patients compared to hospital inpatients. The areas of clinical practice the students felt were inadequate, included: nutrition (71%), geriatrics (70%), end of life care (71%), palliative care (67%), long term health care (70%), continuity of care (70%), ethical decision making (56%) and patient follow up (50%).

Students felt they had not been taught the latest advances in medicine, particularly in genetics such as medical genetics (75%), taking genetics history (78%), genetic testing (91%), pharmacogenetics (83%) and genetic counselling (71%).

About the practice of medicine, 73% said they were taught about the health care systems while only a minority reported they were taught about medical economics (22%), quality assurance (30%) and practice management (35%).

#### ***b) Communication skills***

Communication skills are vital for the practice of medicine anywhere. About 64% of medical students reported there was appropriate coverage about the physician-patient communication skills while 58% reported there was adequate coverage of team work with other health professionals (58%). It was interesting to note the variability in clinical experience that such students felt regarding the patient-follow up (16% excessive; 50% inadequate).

The evidence for mastery of communication skills comes from practices such as the interactions students had with their community during their training. Some 15% were involved in providing health education (in HIV/AIDS, breast cancer awareness and smoking cessation) and health promotion. 6% had in fact learnt another language to improve their communication with some patients. Among respondents, 9% had the chance to share their knowledge with high school or college students about their profession and biological sciences. This interaction has useful repercussions as students become positive role models early in their careers.

About their ability to deal with certain difficult topics; 67% felt they agreed with discussing a prescription error with a patient, 71% agreed with providing safe sex counselling to patients whose sexual orientation differs to their own and 79% agreed with negotiating with a patient demanding unnecessary tests.

#### ***c) Preparedness for medical profession***

In spite of completing their training, 25% felt they were not confident they had acquired the clinical skills required to begin the residency program. However the majority felt they had necessary communications skills (86%), ethical and professional values (78%), understanding of basic science mechanisms (84%), skills in clinical decision making and application of evidence based information to medical practice (67%) and understanding of social sciences of medicine (68%).

In terms of career planning services, 84% felt they did not have to help them in providing career planning; 79% were dissatisfied with career planning services; 60% felt they did not receive information about specialities and alternative medical careers. This is important also from the point of fulfilling national needs of specialists and primary care providers. If clear requirements and targets were made available to the students, it would help them plan their future careers.

Majority of students reported that the medical profession was becoming more demanding and less attractive in the future: 75% were aware that it will not be financially rewarding; 80% felt it would not be as respectable; 99% felt it would be more scientifically challenging; 75% felt it would make demands over family life; 54% were worried about increasing legal liabilities. In spite of these obstacles, the students were entering medical professions with positive attitudes such as holding the belief that everyone is entitled to receive adequate medical care regardless of the ability to pay (92%).

#### ***d) Other health care providers***

Before the introduction of modern allopathic medicine, Ayurvedic practitioners and traditional healers were the main providers of health care in Nepal. Even today, a large proportion of Nepalese people go to them as well as other alternative medical practices such as traditional Tibetan medicine, Chinese medicine, acupuncture and homeopathy. Among respondents, 79% of students reported that other complementary and alternative medicine practices were not covered in their instruction. There is the need to recognise different practices so the patients can be better informed.

### ***e) Health needs of rural community***

Nepal has been unable to provide sufficient health care to the vast majority of the rural communities and it has been claimed that students who had early experience as middle level workers, were more likely than controls to choose residencies in primary care, and show positive attitudes towards rural practice provided they received their early experiences in the rural setting.

When the medical students were asked about the present shortcomings of the Nepalese health system; 92% felt that access to medical care is a problem for the poor; 92% agreed that everyone is entitled to receive medical care regardless of their ability to pay; 96% were prepared to treat patients of other races and cultures and 88% felt there should be increased role in promotion of preventions of diseases. However, students also reported they were not suitably prepared to face the needs of the poor. For example, only 9% were involved in delivering health service to underserved population during their training; 6% learned another language to improve communication with patients; 7% took a seminar in minority health issues; 6% worked in a project with a community based multicultural group; and 5% participated in a course / workshop on cultural awareness. It appears that the young students are more idealistic and motivated to help the poor but the education system is not developing their potentials properly.

At present, scholarships are awarded only on academic merits such as performing well on entrance exams. It might be more sensible to link scholarships with future service to the community of which one is a member. In addition, the working conditions in rural districts should be made more appealing by giving financial incentives as well as offering scopes for further studies.

### **Conclusion**

The present research revealed that compartmentalized teaching needs to be gradually more and more integrated, especially as regards basic sciences with clinical sciences. The physical facilities need to be upgraded and student centered learning approaches need to be promoted. Attention need to focus on enhancing the skills in the promotive health care and medical education to be directed towards evidence based medical approaches.

### **Acknowledgement**

We would like to acknowledge the support of the University Grant Commission for offering us a grant to carryout this study. Thanks are due to Prof. Shekhar Babu Rizyal and Prof. Jagadish Agrawal for their comments and suggestions.

### **References**

1. Park K. Textbook of Preventive and Social Medicine. 18th ed. Jabalpur: M/s Banarsidas Bhanot; 2005.
2. Jasmid HR, Cook DA. Some thoughts in medical education in twenty first century. *Medical Teacher*. 2003; 25(3): 229-38.
3. Weisfeldt ML. Training for Academic Careers in the Twenty-first Century. *P&S Medical Review*. 1994;1:11-2.
4. Mennin S, Majoor G. Position Paper on Problem-Based Learning. *PBL Network Newsletter*: 2002 January;6-7.
5. Rumerlhart DE, Ortony E. The representation of knowledge in memory. In: Anderson RC, Spiro RJ, Montague WE (editors): *Schooling and the acquisition of knowledge*. Hillsdale, NJ: Erlbaum, 1977.
6. Mayer RE. Instructional variables in text processing. In Flammer A, Kintsch, W (editors): *Discourse Processing*. Amsterdam, North-Holland Publishing Company, 1982.
7. Tulving, E, Thompson, DM. Encoding specificity and retrieval processes in episodic memory. *Psych. Rev.* 1973;80:352-373.
8. Ruddock, J. Learning through small group discussion. *Society for Research into Higher Education*, Guildford, England, 1978.
9. Schmidt, HG. Activation and restructuring of prior knowledge and their effects on text processing. In Flammer A, Kintsch, W (eds): *Discourse Processing*. Amsterdam, North-Holland Publishing Company, 1982.
10. Barch, JA, Schul, Y. On the cognitive benefits of teaching. *J Educ. Psych.*, 1980: 72:593-604.
11. Reder, LM: The role of elaboration in the comprehension and retention of prose: a critical review. *Rev. Educ. Res.* 1980; 5:5-53.