

Development of Community Based Learning and Education system within Undergraduate Medical Curriculum of Patan Academy of Health Sciences

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ABSTRACT

Background: In response to continuing health disparities between rural and urban population, Patan Academy of Health Sciences (PAHS) was established in 2008. It aimed to produce physicians who would be able and willing to serve in the rural areas. In order to empower them with understanding and tools to address health issues of rural population, an innovative curriculum was developed. This paper aims to describe the community based learning and education (CBLE) system within the overall framework of PAHS undergraduate medical curriculum.

Methods: A Medical School Steering Committee (MSSC) comprising of a group of committed medical educators led the curriculum development process. The committee reviewed different medical curricula, relevant literatures, and held a series of consultative meetings with the stakeholders and experts within and outside Nepal. This process resulted in defining the desirable attributes, terminal competencies of the graduates, and then the actual development of the entire curriculum including CBLE.

Results: Given the critical importance of population health, 25% of the curricular weightage was allocated to the Community Health Sciences (CHS). CBLE system was developed as the primary means of delivering CHS curriculum. The details of CBLE system was finalized for implementation with the first cohort of medical students commencing their studies from June 2010.

Conclusions: The CBLE, a key educational strategy of PAHS curriculum, is envisaged to improve retention and performance of PAHS graduates and, thereby, health status of rural population. However, whether or not that goal will be achieved needs to be verified after the graduates join the health system.

Keywords: Community based learning and education; community engagement; national health system; partnership; undergraduate medical education; patan academy of health sciences; Nepal.

INTRODUCTION

Over the last half a century, Nepal's health sector has made significant improvement in national health indices. However, in terms of access to and quality of health services and thereby the health outcome, a significant urban-rural disparity continues. For example, while the national average life expectancy is about 67 years, it is about 10 years lower for the remote rural population¹ and the infant mortality rate in the rural mountainous areas is more than double that of urban areas.²

One of the reasons for such disparities is ineffective health services in rural and remote areas, which is partly due to inappropriate medical education, inefficient

deployment and poor retention of health human resources where they are needed most. Two-third of the estimated 4,000 physicians engaged in health-sector are concentrated in the urban areas³ leaving large numbers of rural health institutions grossly understaffed.

Moreover, the majority of medical schools in Nepal have not embraced the social accountability principle that directs medical schools to collaborate with communities, governments, healthcare organizations, health professionals, for improving population health outcomes.^{4,5}

It is in this context that Patan Academy of Health

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Sciences (PAHS) was established in 2008 with a uniquely different mission cited below, which is driven by the social accountability principle,⁶ and aims to help reduce existing rural-urban health inequity in Nepal.

“PAHS is dedicated to sustained improvement of the health of the people in Nepal, especially those who are poor and living in rural areas, through innovation, equity, excellence and love in education, service and research.”

This paper aims to describe the community based learning and education (CBLE) system within the overall framework of PAHS undergraduate medical curriculum.

METHODS

The Medical School Steering Committee (MSSC)⁷ comprising of a group of committed medical educators was formed in late 2003 under the chairmanship of the then Medical Director of Patan Hospital. The committee initially prepared a comprehensive concept paper outlining the overall philosophy and framework of PAHS initiative.⁸ Based on the concepts articulated in that paper, the committee conducted wider stakeholder consultations that included representatives of rural communities, consumer groups, health managers, policy makers, professional bodies, medical students and academics from within and outside the country.^{7,9} The six year long consultative, collaborative and reflection process occurred throughout the development of PAHS both as a concept and a legal entity. This development process included, among others, undertaking the feasibility studies, defining the mission, determining graduate attributes and terminal professional competencies, designing curriculum, selecting appropriate educational strategies including CBLE system.

The committee also recognized the critical importance of proactively engaging with the National Health System (NHS) as well as community at large for without their goodwill and support it would not be possible to accomplish the PAHS mission and enable its graduates to contribute optimally.

Right from the beginning the committee was fully aware of the fact that without creating an institution with full academic autonomy, innovative medical education would be impossible. The ratification of PAHS Act⁷ by the Parliament of Nepal provided the PAHS with that opportunity including designing and launching novel academic program relevant to the needs of Nepal. These needs include finding sustainable solutions to the long-standing challenges of deploying and retaining appropriately trained physicians and other health

workers to serve the rural areas.^{7,10-11}

Subsequently, during the process of undergraduate medical curriculum development, a sub-group headed by the first author conducted a wide review of medical curricula from around the world that have embedded various degrees of community based educational components including that of the existing medical curricula in Nepal.¹²⁻¹⁵ Based on these reviews and their own personal experiences, the team members drafted the Community Health Sciences (CHS) course and Community Based Learning and Education (CBLE) system through an iterative process of drafting, discussion and revision through consensus. These drafts were subjected to scrutiny and content validation through inputs from wider stakeholders including relevant experts and academics from within and outside Nepal during the consultative meetings held annually since 2005. The CHS and CBLE components were integrated into the overall undergraduate medical curriculum which was then ratified by PAHS Academic Council and accredited by the Nepal Medical Council. This curriculum was implemented right from the first cohort of medical students that started in June 2010.

RESULTS AND DISCUSSION

Overall framework for curriculum development:

In order to achieve its stated mission, PAHS has adopted multi-pronged innovative approaches^{7,10,16} in medical education particularly in the areas of student selection, curriculum design, teaching-learning methodology, training sites, student assessment, faculty development as well as building partnerships with rural communities, local government, the NHS and the community of innovative medical educators across the globe. In addition, an integrated incentive package including preferential enrollment in post-graduate trainings was envisaged for those graduates who would choose to work in the underserved rural areas of Nepal. The overall strategies adopted for curriculum development was a synthesis of inputs received from the literatures and expert groups as well as professional experiences of committee members, and has been summarized in a framework as shown in Fig 1. These strategies are very much in alignment with the evidences highlighted by the literatures including the global policy recommendations of World Health Organization.¹⁷⁻²⁰

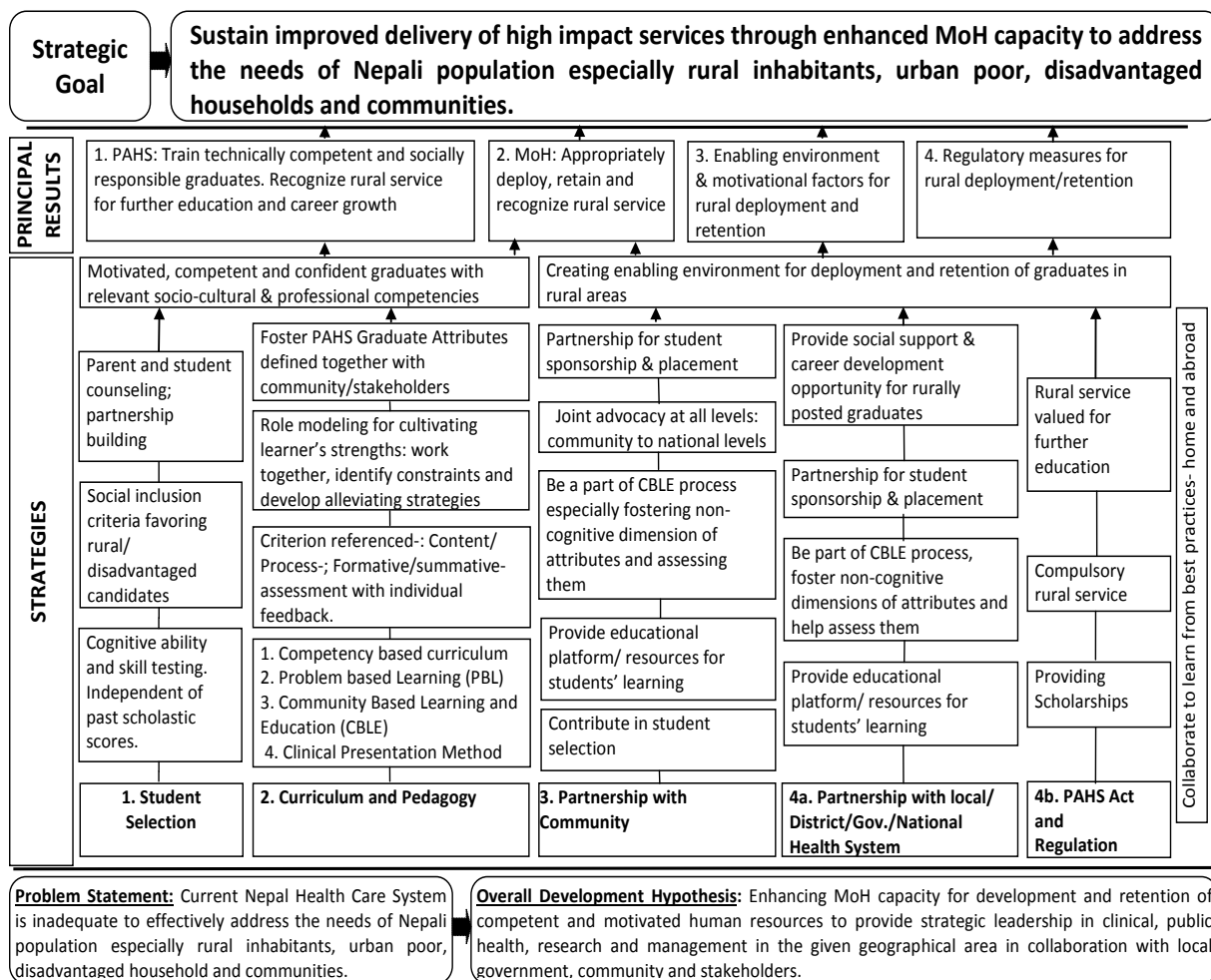


Fig 1. Overall Framework of PAHS Curriculum Development.

The elaborated description of the framework is beyond the scope of this paper and it is presented here primarily to illustrate the complex relationship between PAHS mission and strategies followed.

Figure 2 shows the organization of the undergraduate, i.e., Bachelor of Medicine and Bachelor of Surgery (MBBS) curriculum of PAHS. It is an integrated, organ system-based curriculum with seamless blending of medically relevant Natural (Physics, Chemistry and Biology), Basic Medical Sciences, Clinical Sciences and CHS implemented primarily through Problem Based Learning (PBL),²¹

Development of CHS courses and CBLE system:

Component	Introductory Course	Basic Sciences	Clinical Sciences			Internship
			Junior Clinical Clerkship	District Health System Rotation	Advanced Clinical Clerkship	
Community Based Learning and Education (CBLE)						
Duration	½ years	2 years	1½ years	½ years	½ years	1 year

Fig 2. Organization of PAHS MBBS Curriculum.

Subject	Year 1	Year 2	Year 3	Year 4	Year 5
	Intro	Basic Sciences Y I & II	Clinical Science Y I & II		
Society, Culture & Health					
Health Education & Promotion					
Epidemiology I (Basic)					
Biostatistics I (Descriptive)					
Management Science for Health Professionals I (Basic)					
Ecological Health					
Demography					
Epidemiology II (Advance)					
Family Health					
Biostatistics II (Inferential)					
Epidemiology III (Advance)					
Management Science for Health Professionals II (Advance)					
Food and Nutrition					
Public Health Laboratory					
Family & Community Practicum (Longitudinal)					
Integrated Workshops / Field Orientations					

Fig 3. CHS course matrix in MBBS curriculum

Clinical Presentations (CP)²² and CBLE methodologies respectively. The curriculum has clearly defined terminal professional competencies.

The population health related contents, which occupies 25% of the curriculum, organized under the CHS course is shown in Fig. 3.

PAHS developed CBLE system as the primary means of delivering CHS course. It regards CBLE as a pedagogic method used to train the medical students about the health system organization and population health issues using contextual educational platform and resources available in diverse rural community setting and different tiers of NHS. Immersion in such situation not only provides them with the real-life experiences regarding the multifaceted complexities of life and living conditions of the people, and social determinants of population health but also challenges their creativity in resolving them. This experience, which is a systematically planned, continuous and reiterative community immersion process, is expected to help the students acquire and cultivate cognitive and non-cognitive attributes as defined by PAHS,¹⁶ which will be valuable in identifying feasible and effective interventions for improving health status of rural population through a system-thinking approach and in partnership with relevant stakeholders and community at large.

The rationale of CBLE approach is also based on conceptual understanding of rural health practice²³ with contextualization of Nepal’s local situation. It uses a setting based approach²⁴ including both primary care focus and experiential exposure in communities. The

Platform	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Introductory	Basic Science Y1	Basic Science Y2	Clinical Science (Cl. Sc.) Y1	Cl. Sc. Y2	
Urban Slums	1					
Wards of Village development Committee(VDC)	2					
Sub-Health Posts		3				
Health Posts			4			
VDCs				5		
Primary Health Care Centers					6	
District Health System						7

Fig 4. CBLE Field Postings Scheme in PAHS MBBS Program

learning platforms used are diverse and include urban slums, rural communities, networks of primary health care facilities at sub-district and district level within the NHS.²⁵ At district level, students rotate through the District Health System (DHS) comprising both District Hospital as well as District Public Health Office (DPHO)²⁶. At sub-district level students rotate through the Primary Health Care Centers (PHCCs), Health Posts (HPs) and Sub-Health Posts (SHPs) that are supported by extension of primary health care/outreach (PHC/ORC)²⁵ services to the doorsteps of underserved communities. Of the seven CBLE postings (shown in Fig.4), urban slum posting is the only one which is non-residential.

Learning objectives for CBLE are divided into Cognitive (primarily technical domain) and Non-cognitive (primarily the domain of behavior, attitude, conduct and feelings). The illustrative skills belonging to non-cognitive areas are: 1. Communication 2. Relationship building 3. Empathy and compassion 4. Leadership 5. Teamwork 6. Community mobilization 7. Analysis and appreciation of community assets and strengths 8. Imagination and aspiration to do business differently in order to fulfill the assigned responsibilities in different contexts. Of note the learning objectives for the Cognitive domain are technical, more hierarchal and directly related to the job expectation of graduates in the NHS.

Each of the seven CBLE postings consists of a set of generic as well as specific technical learning objectives. The generic objectives include common aspects like observing the settlements, drawing social map, describing demographic-socio-economic conditions, describing socio-cultural practices relating to health, identifying the roles of organizations involved in social development including health, describing functions of (local) Health Facility Management Committee (HFMC), interacting with the stakeholders including patients for exploring opportunities and challenges of the posting

Tab 1: Nature and broad illustrative objective of each CBLE posting

Level and Site	Group size/ Duration	Illustrative objectives	Deliverables
1. Urban Slums	2 / 1 week	Describe reasons for migration, constraints and opportunities of migrants residing in slums in Nepal. Identify problems and challenges in relation to health.	Present findings locally and at PAHS. Submit report and individual reflection
2. Wards of FCHV	2 / 2 weeks	Describe FCHV Program, FCHV role, commodity supply and recording and reporting at FCHV level. Appraise health seeking behavior and pluralism existing in communities.	
3. VDCs and SHP	3-4 / 2 weeks	Describe structure and functions, programs and services, staff, logistics, recording and reporting of SHPs. Analyze 1-year data on HMIS 1, 16 and 32 to explore effectiveness of program. Identify challenges and opportunity of SHPs.	
4. Health Posts	4-5 / 2 weeks	Describe structure, functions, programs, services, staff, logistics, recording and reporting of HPs. Apply qualitative methods with stakeholders to identify challenges and opportunity of HPs and VDC for health and social development.	
5. VDCs	6-8 / 4 weeks	Conduct community diagnosis using appropriate methods and tools in assigned VDCs. Prioritize problems and identify constraints and their alleviating strategies.	
6. PHCC at sub-district	6-8 / 6 weeks	Participate and assist in day-to-day activities of PHCC. Analyze 1 year data on 1 national public health program. Apply quantitative and qualitative methods to describe program implementation challenges and opportunities. Reflect on the future roles as medical graduates.	
7. District Health System	6-8 / 6 months	Describe organization, programs, role and responsibilities of District Hospitals (DH) and District Public Health Offices (DPHO) under the District Health System (DHS) of Nepal. Participate/assist in all types of functions of DH and DPHO under supervision and appraise/reflect on future roles as medical officers there. Organize district level stakeholders workshop for conducting strategic planning on a selected public health issue in alignment with national plan/target (group level). Conduct in-depth study on a selected public health program of district (at individual level). Identify opportunity and constraints and make suggestions for health development in district.	Present findings locally. Submit 2 group reports (1 DHS, 1 strategic plan) and 1 individual report (on in-depth study and individual reflection).

areas, participate in day-to-day activity of health facility, drawing suggestions and recommendations to the stakeholders for improvement of services.

The specific objectives which differ for each posting have been summarized in Table 1 along with its level, site, duration, student group-size and deliverables.

CBLE starts very early on in the curriculum. The scope of learning and complexity increases as students advance in their studies. Such experience helps Students internalize communities as valuable teaching-learning resources. Experiential learning at the different levels of health facilities of NHS helps each student to imagine (mind map) their expected roles as a future health

professionals.

Teaching-learning methods:

Although the major delivery of CHS curriculum is done through CBLE, other methods such as PBL, overview lectures, group and individual assignments, laboratory works, report writing and presentations of field works are also employed. This integration provides sound understanding of concepts and theory of CHS courses and its relationship with other basic and clinical sciences disciplines.

CHS themes and topics are incorporated into relevant basic sciences PBL. Experiential learning in real life

settings in communities during CBLE helps students to add professional relevance while discussing health problems during PBL sessions. Similarly, the skills related to problem solving and critical thinking experienced during PBL helps students become better communicators, rapport builders and problem solvers when they are in the field. PBL and CBLE, thus, act in synergy²⁴ and helps realize the curricular goals.

Implementation of CBLE:

Inter-sectoral Collaboration for Selection CBLE Field Sites and Implementation:

PAHS has developed a network of partners within health sectors including Ministry of Health and Population (MOHP) and outside health sectors for implementation of CBLE field rotations. Selection of field sites is made in consultation with these stakeholders. Local needs are taken into considerations while developing specific objectives and detailed activities of students' field postings. In the field, students assess health status of assigned catchment population by analyzing primary and secondary data. They identify low performing program areas, share their findings with service providers and program managers and organize discussion so as to draw feasible suggestions or plans of action for improvement.

At the community level, PAHS aims to build strong partnership with Community Based Organizations such as women's groups and women's cooperatives, Red Cross, local community leaders as well as local health institutions. Wider support for program implementation needs to be secured by engaging the local administrative bodies such as District Development Committees, Village Development Committees, Police and Security units, as well as Non-Governmental Organizations working in the field of social mobilization and community development.

Evaluation of CBLE Field Postings:

In the area of student assessment, PAHS has incorporated both content (cognitive/technical skills part) and process (non-cognitive skills and behaviors) evaluation of learning, independent of each other, both in the formative and summative assessment. Criterion referenced cut-off scores and a pass/fail grading system have been adopted to foster collaborative and team learning in students.^{27,28}

The content assessment aims to measure technical competence- knowledge and skills- using methods such as multiple choice questions (MCQs), problem based questions (PBQs), Logbooks, Field Reports, Presentations, Research projects, etc. The process

assessment is expected to foster development of appropriate non-cognitive domains using specific tools to assess student's performance. Community members, including heads of households hosting students during field stay, local community leaders and local health workers are involved in assessing students' behaviors during field postings. This is a distinct feature of PAHS as an academic institution wherein the partnership with community extends to the opportunity and responsibility for lay/community members to contribute to the summative evaluation.

Creating Synergy in Implementation:

Along with CBLE, PAHS has adopted other innovative approaches to help achieve institutional and curricular goals. The innovative student selection strategy gives preferential credits to those who are from rural, remote and disadvantaged sections of the society but having reasonably sound cognitive ability. Such practice is conducive for improved overall coverage of rural areas by health workers as suggested by both international literature^{18-20, 29-31} and findings reported by a study done in Nepal.³²

PAHS provides scholarship to 2/3rd of class tied a mandatory rural service obligation. A collaborative scholarship scheme has been setup in partnership with communities and local governments to subsidize education in return for recruitment and service locally.

PAHS plans to provide continued mentoring and support to its graduates working in rural areas through the telemedicine network. It is expanding partnership with the government and local bodies for creating enabling environments for deployment and retention of graduates in rural areas.

Further studies should also involve perspectives of all stakeholders and incorporate recent evidences generated globally in this area³²⁻³⁵ for ensuring success and sustainability of CBLE strategy. The findings of such studies will provide an objective basis for further refinement and modification of the currently implemented CBLE system.

In spite of the relevance and importance of CBLE, we need to appreciate the fact that improvement of population health is determined by many factors other than the medical education alone. For example, unless the structure, culture and orientation of the entire health system is directed towards improving the rural health, CBLE trained physicians, regardless of their professional competence and motivation level, will not be able to unleash their potential to realize the

PAHS goal. Hence, it is important not only to train the physicians appropriately but also to help create an enabling environment within the health system for optimizing the performance of the graduates trained under CBLE system.

CONCLUSIONS

Given the continuing rural-urban health disparity, there was a need for innovative initiatives for availing appropriately trained physicians to serve in rural areas. PAHS was established for that purpose and aims to produce technically competent and socially accountable physicians who are able and willing to fulfill that mission. PAHS chose CBLE as one of the principal educational strategies so that graduates will be better prepared to work in rural areas and contribute to improved health outcomes. It should be emphasized here that in order to ascertain as to whether or not the CBLE strategy adopted by PAHS succeeded in realizing its goals, appropriate longitudinal studies need to be undertaken after these graduates begin their professional work within the NHS.

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