

Role of community service as a curriculum delivery tool in the outcome-based curriculum of the International Medical University, Malaysia

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Background: The International Medical University (IMU) has an outcome-based curriculum defined by eight major curriculum outcome domains. The attributes, qualities and competencies expected of a health care professional form the basis for these outcome domains. Community service is an effective curriculum delivery tool widely practised by medical universities around the world. We present the results of a survey among IMU students to explore the effectiveness of community service as a curriculum delivery tool in enabling activities defined within the major curriculum outcome domains of IMU.

Methods: A self-administered 6-point Likert scale questionnaire was used to survey student participants of 20 community service events held in a rural village between 2007 – 2012. The survey tool included questions on demographic data as well as the perception of the students on whether participation in the events enabled them to experience activities defined under the eight major curriculum outcome domains of IMU. The one sample Student t-test was used to test for statistical significance while regression analysis was done to look for significant predictors.

Results: A total of 255 students were surveyed, of which 229 (90.5%) were medical students while the rest were nursing students. Most of the students were in the 3rd (48.2%) and 4th (43.8%) year of their studies and have completed the surgery, internal medicine and family medicine posting. Six out of the 8 curriculum outcomes domains were achieved through participation in the community service programme.

Conclusion: Community service is an effective curriculum delivery tool for the outcome-based curriculum of IMU where activities defined in six out of eight outcome domains were achieved.

Keywords: Medical Education, Medical Students, Community-Based Medical Education, International Medical University

Introduction

The International Medical University (IMU) is the pioneer private medical university in Malaysia which has a unique 5-year outcome-based curriculum aimed at producing medical graduates who are able to demonstrate the competencies and attributes defined by eight major outcome domains (Table I). The outcome-based curriculum came to being as a result of a decision to develop an innovative curriculum in the early days of IMU where emphasis was on “results oriented thinking” as opposed to an “input-based education” which was practised in the traditional medical curriculum. These outcomes formed the basis for the content, delivery, assessment and evaluation of the curriculum, all of which were designed to help the students develop and acquire qualities needed to function effectively as health care providers upon graduation.

The education philosophy of IMU is self-directed and life-long learning. As such, in the clinical phase of the undergraduate medical and nursing students’ training, the task-based learning (TBL) philosophy, which is an expansion of the problem-based learning (PBL) in the preclinical phase, was adopted as a key curriculum delivery tool.¹ In addition to TBL, other tools of curriculum delivery such as bedside teaching in the hospital, seminars, plenaries, and attachments at hospitals and health clinics were also used.

In the last few decades, curriculum delivery methods in many medical schools from around the world have shifted from being hospital-centred to community-based learning activities. The shift arose mainly from new public health challenges, changes in delivery of health care from “episodic care of individuals in hospitals to promotion of health in the community” and new learning theories.^{2,3}

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In the United Kingdom (UK), the General Medical Council (GMC) report recommended that clinical teaching should adapt to changing patterns in health care, and should provide an experience of primary care of the community in addition to hospital-based services.⁴ For the same reasons, many medical schools in Australia have initiated programmes aimed at increasing medical workforce in rural and remote areas.⁵

In keeping with this trend, IMU adopted community service as a curriculum delivery tool in 2007 for clinical phase students at its clinical school in Seremban, Negeri Sembilan, Malaysia. Medical and nursing students of IMU were required to participate in at least one community service activity in an aboriginal village adopted by IMU. Participation was compulsory and recorded into the student's logbooks which are used as part of the overall assessment of the students' academic performance. The objectives of community service were two-pronged, namely, to provide opportunities for IMU students to practise the art of medicine in a rural setting; and to elevate the health status of the villagers in the adopted village through health related activities.

The benefits of community-based learning activities are manifold. Students gain a sense of social responsibility and a deeper understanding of the problems faced by the communities in which they serve; the host communities gain from a closer working relationship with medical students and faculty with direct access to human resources and expertise; while the medical institution gains from improved student-community centred activities, achieving its social responsibility and potential research opportunities.⁶

We present the results of a survey which explored whether students who participated in community service activities were able to develop expected competencies under the eight major curriculum domains of IMU.

Methods

Study setting

Between 2007 and 2012, twenty health screening and health education events which were planned and carried out by medical and nursing students were held at a rural aboriginal village. The village was located in a remote area of Labu District in the State of Negeri Sembilan, Malaysia, about 15 kilometers away from the IMU Clinical School in Seremban. The villagers were aborigines (*orang asli*) from the Tenom clan and the estimated population was 500 with almost half of them being children below the age of 12 years. The village had limited access to clean treated water and electricity supply. The nearest primary health clinic was located 10 kilometers away. The village was only accessible either by motorcycles, four-wheel drive vehicles or tractors on un-tarred gravel pathway.

The community service events were primarily student-driven under the supervision of faculty and corporate staff of the university who provided guidance, logistical support and liaison services with various governmental agencies. An organising committee comprising of student leaders was formed for each community event and was responsible for the planning and carrying out of each community service event in the village, the recruitment and assignment of students to their various tasks and duties during the event, and ensuring the logistical needs (e.g. food for students and villagers, audio-visual equipment, tents, tables and chairs, printing of t-shirts) are met.

Activities performed

Most of the students were in the first year of the clinical phase of their studies where they had completed rotations within the departments of internal medicine, surgery, family medicine, pediatrics and obstetrics and

gynecology. Before each community service event, the students were briefed by an experienced faculty member regarding their duties and responsibilities at the event. The students also received training by faculty members from the Nutrition and Dietetics department in dietary assessment, dietary advice and the measurement of anthropometric parameters in children below the age of 12 years.

In each of the community service event, the students carried out health related activities such as the registration of villagers, history taking, physical examinations including assessment of visual acuity and color vision, simple investigations using handheld devices such as peripheral blood glucose level, urine analysis, blood lipid level, and more specialised examination such as pap smear, prostate examination, and breast examination. These activities were performed under the supervision of qualified faculty members. The students were taught how to prescribe and dispense medication for simple ailments such as scabies infestation, uncomplicated upper respiratory tract infections and superficial skin infections. Students were also taught how to prepare referral letters to the nearest health clinic or hospital for villagers found to have conditions which required more extensive assessment and treatment. Medical and nursing students worked alongside each other in performing health screening activities.

In addition, the students also prepared and delivered health education talks covering many relevant topics such as personal hygiene, dental hygiene, food hygiene, drug and alcohol abuse, smoking-related issues, teenage pregnancy and contraception, and nutritional advice. House-to-house visits were conducted from time to time by small supervised groups of students to provide opportunity for closer interaction with the villagers and allow for experiential assessment of various rural living conditions. Participation in communal activities such as games, football matches and singing competitions with the villagers were encouraged. A typical community service event usually lasted between 3 – 5 hours. The activities and the major curriculum outcome

domains under which they are categorised are shown in Table II.

Survey tool

We used a self-administered questionnaire as a survey tool to evaluate the students' experience at the end of each community service event held at the rural aboriginal village between 2007 and 2012. We designed part 1 of the questionnaire to gather basic demographic data such gender, prior experience in community service and year of study. Part 2 of the survey tool contained eight 6-point Likert scale questions designed to evaluate the students' experience in performing activities in relation to the eight major curriculum domains. The 6-points were: (1) strongly disagree, (2) disagree, (3) somewhat disagree, (4) somewhat agree, (5) agree, and (6) strongly agree.

Statistical analysis

We analysed the data using the one-sample Student's t-test for comparison of means. The test value of 4 (somewhat agree) was used wherein mean value below the test value was considered as disagreeing with the questionnaire statement and mean value above 4 considered as agreeing with the questionnaire statement. A *p* value of < 0.05 with 95% confidence interval was considered statistically significant. Chi-square analysis was done to determine any link between demographic parameters and students' experience while regression analysis was used to look for significant predictors towards the 8 curriculum outcomes domains.

Results

A total of 255 students responded to the survey. Most of these students were in the 3rd year of study (122, 48.2%) or 4th year of study (111, 43.8%). Majority of the students were medical undergraduates (229, 90.5%) while the rest were undergraduate nursing students (24, 9.5%). At the time of survey, most of

the students had completed their postings in surgery (187, 74.5%), internal medicine (186, 74.1%) and family medicine (167, 66.5%). The complete demographic profiles of the students are shown in Table III.

The result of the students' experience at the community service events in relation to the eight major curriculum domains using the Likert Scale is shown in Table IV. The students' experiences were significantly linked to 6 of 8 curriculum domains ($p < 0.05$). Regression analysis did not reveal any specific community service activity as a significant predictor towards the curriculum domains. Similarly, none of the demographic data of the students (e.g. gender, undergraduate course, year of undergraduate studies, number of prior events participated by students and postings completed) were statistically linked to the students' experience in the community service events.

Discussion

In this study, we found that student participation in community service events in the rural village allowed them to experience activities related to 6 out of 8 major curriculum domains, namely, the application of basic sciences in the activity, clinical skills, communication skills, insight into family and community issues in health care, enhancement of professionalism, ethics and personal development, and disease prevention and health promotion. (Table IV). The 2 domains which were not experienced by the students were: the promotion of self-directed learning with skills in information and resource management; and the development of critical thinking, problem solving and research skills.

Community service is effective in teaching procedural skills in undergraduate medical teaching where students are able to learn and practise their skills in diagnosing disease and formulating a management plan.⁷ In addition, serving the community aids the instillation of understanding in the disease process and the development of empathy in medical trainees.⁸ Involvement in community services during medical undergraduate training has been shown to produce

doctors and physicians with better academic and work performances.⁹

An ideal health education programme in a rural setting should be based on three premises, as demonstrated in a Nigerian study, namely: (1) good teaching in medicine is service-based; (2) learning should be experiential; and (3) the experiences should be relevant.¹⁰ The nature of the community service activities by IMU in a rural aboriginal village had a good mix of these vital ingredients which allowed the students to gain insight into the common health problems in the community through experience and close interactive contact with the villagers. By going beyond the classrooms, the community service activities helped promote active learning and equipped the students with vital non-cognitive skills such as communication skills, professionalism and empathy which may in turn enhance their personal development. These skills are all relevant to their future career as health care professionals.

It was found that students who participated in the community service activities acknowledged that the experiential learning provided by the events have contributed to their learning curve in 6 of the 8 curriculum domains. Although the community service events in the village was, by and large student-driven, the work of planning, organising and carrying out of each event, which would have provided a reasonable amount exposure to acquiring the skills extolled in the two unachieved domains (i.e. self-directed learning with skills in information and resource management; and critical thinking, problem solving and research skills) were, unfortunately, limited only to a smaller subset of students who were student leaders in the organising committees for each programme. Encouraging the expansion of the student organising committee with formation of smaller sub-committees in future community service events which involve a larger number of students may contribute towards achieving the two remaining unachieved domains.

We identified several limitations in our study, namely the reliance on a self-administered questionnaire as a survey tool may have resulted in response bias from the students, thus making it difficult to independently verify whether every student had responded truthfully. The simplicity of the questionnaire also meant that it had been assumed that the students were well acquainted with the eight stated curriculum outcome domains along with the expected competencies within each of the domains and were thus able to relate their experiential learning to the domains. However, we thought this is unlikely as most of the students were already midway through their undergraduate studies and should be well aware of the 8 curriculum outcome domains as the latter form the constant outcome measurement throughout the medical and nursing undergraduate programmes in IMU.

Another limitation of this study was the possibility of students who were unable to experience all the activities in the community events due to various unforeseen circumstances, such as unexpectedly large crowd and/or the relative lack of student numbers to cope with the crowd, which may force some students to remain at their assigned work station in the health screening process for too long and not being able to move on to other activities. Indeed this was true for a number of students who provided written feedback during the survey indicating just such a scenario had happened to them. These students may then have responded to the survey tool based on their limited experiential exposure in the community event thus skewing the overall results.

In conclusion, we found that community service activities have an important role in helping medical and

nursing students experience the competencies, attributes and qualities represented in 6 out of 8 major curriculum domains and form an important curriculum delivery tool in an outcome-based curriculum. Activities in future community events should be refined to provide students with experience in activities under the two remaining unachieved domains. Further studies should be done to evaluate if participation in community services during undergraduate training may have an eventual lasting impact on the students' professional outlook and career choice.

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Table I: The eight major outcome domains of IMU curriculum

Major Domains
1. The application of basic sciences in the practice of profession
2. Clinical skills
3. Communication skills
4. Family and community issues in health care
5. Self-directed lifelong learner with skills in information and resource management
6. Professionalism, ethics and personal development
7. Disease prevention and health promotion
8. Critical thinking, problem solving and research

Table II: Community service activities in relation to the 8 major curriculum domains

Major Domains	Activities
1. The application of basic sciences in the practice of profession	Vital signs assessment Dietary assessment/advices Health talks
2. Clinical skills	History taking Vital signs assessment Physical examination Blood/urine tests
3. Communication skills	Registering of villagers History taking Physical examination Communal activities Interdisciplinary interaction between medical and nursing students
4. Family and Community issues in health care	Home visits Health talks
5. Self-directed lifelong learner with skills in information and resource management	Planning of community service event Recruitment and assignment of student to specific tasks Logistical arrangements at the village
6. Professionalism, ethics and personal development	History taking Vital signs assessment Physical examination Health talks Dietary assessment/advices Interdisciplinary interaction between medical and nursing students
7. Disease prevention and health promotion	Treatment of minor ailments Referral to health clinics/hospital Health talks Dietary advise
8. Critical thinking, problem solving and research	Planning of community service event Recruitment and assignment of student to specific tasks Logistical arrangements at the village

Table III: Demographic profiles of undergraduate medical and nursing students

Profile	N*	Frequency	Percentage
1. Undergraduate course	253		
Medical		229	90.5
Nursing		24	9.5
2. Gender	249		
Male		102	41.0
Female		147	59.0
3. Year of undergraduate studies	253		
Year One		4	1.6
Year Two		14	5.5
Year Three		122	48.2
Year Four		111	43.8
Year Five		2	0.9
4. Postings completed	251		
Internal Medicine		186	74.1
Surgery		187	74.5
Obstetrics and Gynecology		36	14.3
Family Medicine		167	66.5
Ear, Nose and Throat		47	18.7
Ophthalmology		47	18.7
Orthopedics		75	29.4
Pediatrics		40	15.9
5. Participation in previous events including current event	248		
1 – 2		238	96.0
3 – 4		7	2.8
> 5		3	1.2

* Number of students who responded to this question.

Table IV: Students' responses to questions assessing the students' experience in relation to the eight IMU curriculum outcomes

Question	N*	Likert Scale**						p value
		1	2	3	4	5	6	
1. I was able to apply basic sciences in the activity	251	6	7	27	91	89	31	<0.001
2. I was able to apply my clinical skills in the activity	251	7	5	9	50	107	73	<0.001
3. The activity helped me improve my communication skills	253	1	2	8	45	107	90	<0.001
4. The activity provided insight into family and community issues in health care	252	1	3	13	45	115	75	<0.001
5. The activity promoted self-directed learning with skills in information and resource management	252	6	13	52	105	51	25	0.777
6. The activity enhanced my professionalism, ethics and personal development	252	2	3	16	70	108	53	<0.001
7. The activity helped in disease prevention and health promotion	252	3	3	11	47	108	80	<0.001
8. The activity helped me to develop critical thinking, problem solving and research skills	251	11	15	61	89	57	18	0.097

**Number of students who responded to the question.*
***Number of students responses according to the Likert scale: 1 – strongly disagree; 2 – disagree; 3 – somewhat disagree; 4 – somewhat agree; 5 – agree; 6 – strongly agree.*