



## Research Article

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# Perception of Professional Competence of Medical Doctors Trained Using Innovative and Traditional Learning Methods

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## Abstract

Background; Innovative learning also known as Problem Based Learning (PBL) is student centered whereas Traditional teaching is tutor centered. PBL is a main method of acquiring and applying knowledge and thus develop life-long learning skills. Moi University school of Medicine uses PBL whereas University of Nairobi uses traditional learning methods. **Objectives;** To evaluate the perceptions of professional competence among medical doctors using innovative learning methods (PBL) as contrasted to traditional teaching methods in their medical education. **Methods;** This was a cross-sectional study carried out on the medical doctors from Moi University and University of Nairobi. Moi University uses problem-based learning whereas University of Nairobi uses traditional methods as a learning model. A total of 92 post internship medical doctors were recruited. After the obtaining an informed consent, data was collected from the sampled respondents. Data was analyzed using STATA version 10 to obtain descriptive variables. **Results;** From Moi University there were 37(40.2%) and from University of Nairobi were 55(59.8%). There were 38 females (41.3%) and 54 male (58.7%). Majority of the respondents (79.3%) were in the age range of 25-29years. A total of eight competencies were assessed. In all the eight assessed competencies, the P-value for variable rating in two competencies was less than 0.05. These were; Leadership skills and Planning, organization and working independently. **Conclusion;** PBL curricula graduates felt that they were better prepared in leadership skills as compared to counterparts who were trained using traditional teaching methods.

**Keywords:** Problem based learning, Traditional teaching, Innovative leaning.

## INTRODUCTION

The School of Medicine in Moi University was started in 1989 as the second public medical school in Kenya. The Bachelor of Medicine and Bachelor of Surgery (MBCh.B) is a six year programme in this university. The learning model in this medical school is Problem Based Learning (PBL). Problem based learning is a student-centered pedagogy in which medical students learn about a subject through the experience of taking a patient's, community or a research problem as a stimulus for learning. Medical Students learn both thinking strategies and domain knowledge.

Medical school in the University of Nairobi (UoN) for the MBCh.B programme started in 1967 and it is also a six year programme. This medical school uses traditional teaching methods as the main form of instruction. This format is mainly tutor centered.

The medical doctors' competence towards their practical and clinical work is a question of energy, such as processes, starting, sustaining and directing their work behavior. This study focused on medical doctors qualified from Moi University and University of Nairobi in the last four years. An assessment of their own perception of competence towards their clinical work was assessed.

There is no generally accepted method of training medical students with a focus on the local and rural conditions in Kenya. This has an effect on the nature and manner of delivery of medical services to communities in Kenya. There is not yet domesticated model of training medics with the focus on local situation in Kenya.

The curricula used in the two Medical Schools is similar in many aspects. At the time of this study, the program was implemented in a minimum of six academic years and a maximum of twelve academic years in both Universities. Similar examination regulations applied. The first three years were mainly basic sciences and last three years were mainly clinical management courses. There was a similar pass mark and grading but there was no classification of the degree in both Medical Schools. The main difference was on the curriculum implementation where Moi University used PBL and University of Nairobi used Traditional teaching methods.

Traditional teaching is concerned with the teacher being the controller of the learning environment. Power and responsibility are held by the teacher and they play the role of instructor (in the form of lectures) and decision maker (in regards to curriculum content and specific outcomes). They regard students as having 'knowledge holes' that need to be filled with information. In short, the traditional teacher views that it is the teacher that causes learning to occur [1].

In a study carried out at Taiwan University, it was established that, problem-based learning (PBL) is a teaching and learning strategy, which emphasizes a student-centered approach, and encourages student to be self-directed in their learning. In problem-based learning, problems come from clinical cases, and are the learning triggers for group discussion. Through minimal guidance from a tutor, learning issues related to cause problems are generated via a brain storming discussion process [2].

A number of studies carried out especially in the comparison of traditional teaching methods with innovative teaching methods (otherwise commonly referred to as PBL). In a study done on the teaching and learning methodology in medical education, the results showed that the students extremely preferred the teacher-centered teaching and learning approach (62%), lecture teaching and learning method (68%). Their results further revealed that small group teaching and learning method was extremely possible for discussion (81%), clarification of doubts (86%) and interaction with teacher (92%). In this study, it may be concluded from their results that the students more preferred teacher centered approach, lecture method and small group method. The teacher must be an exceptional person who inspires students and allows the students to discuss, ask questions for clarification of doubts and interact with him/her. Teacher should be given suitable training in the teaching and learning skills and techniques [3]. A number of other studies done show that medical students prefer innovative learning where they develop individualized care plans on a patient-centered basis.

A study conducted in University of Cape Town South Africa showed that the Graduates (minimum of 4 months and maximum of 4 years working experience) perceived level of competency was either good or very good for 87% of the 105 students who were assessed. However, when the experts (n=63) assessed the participants they found out that 67.7% of the graduates were competent [4].

## MATERIALS AND METHODS

This study was a cross sectional study design. The target population was 500 post internship medical doctors who qualified in the last 2-4 years from Moi University and the University of Nairobi School of Medicine and have not joined any postgraduate program.

University of Nairobi's school of medicine is the oldest and largest public medical school in Kenya. Moi University's school of medicine is the second largest public medical school in Kenya. This medical school was started in 1967. Moi University medical school is the second largest public medical school and it was started in 1989. This study was carried out in all the 47 counties in Kenya. The ratio of those who qualified from Moi University and University of Nairobi was roughly 1:4 between MU and UoN respectively.

Due to the small numbers of those who had qualified from Moi University Medical school, a census was carried out. However, those who had qualified from University of Nairobi, a simple random sampling was carried out.

A total sample 92 was drawn from the target population. There were 37 who had graduated from Moi University and 55 from University of Nairobi.

Data was analysed using standard statistical analysis and computing software version 10 to obtain descriptive variables such as age and gender.

Before commencement of the study, ethical approval was sought from our local Institutional regulatory boards (Institutional Research and Ethics Committee and National Commission of Science and Technology) to carry out this study. This study observed the professional ethics as required by Kenya Medical Practitioners and Dentist Council (KMPDC) which is the regulatory body. Informed consent was sought from every respondent before collecting data. Data confidentiality was observed and the filled questionnaires securely and safely stored.

We included Moi University and University of Nairobi qualified medical doctor currently registered by KMPDC as a medical practitioner and offering the services within the country.

We excluded Medical doctors who have enrolled for a postgraduate program in any of the universities and those who have specialized in any field.

The working environment may not be exactly the same for all medical doctors in registered to offer medical services in various parts of this country. However, for this study, the working environment was assumed to be similar.

## RESULTS

**Table 1:** Gender and Age distribution of the medical doctors

Variable	Intern N=92
<b>Gender</b>	
Female	38 (41.30)
Male	54 (58.70)
<b>Age</b>	
<25	2 (2.20)
25-29	73 (79.30)
30-34	16 (17.40)
>35	1 (1.10)
<b>University</b>	
Moi	37 (40.20)
UON	55 (59.80)

Majority of these Medical doctors 79.3% (n=92) felt that their learning model prepared them well for expert medical knowledge and professional skills. On competence in leadership skills, 50% (n=92) felt they were good and another 50% felt that they were poor. However, majority of those from Moi University graduates, 64.9% (n=37) felt that they were good in leadership skills. Most of these medical doctors, 85.9% (n=92) were good in information and computer technology (ICT). In teamwork skills and patient referral, most of them were good (82.6%). Competence in communication skills and medical report writing was good in 67.4%. Majority of these officers (70.7%) were good in planning, organization skills and working independently. On resource management, majority (67.4%) felt that they were poor. However, majority (66.3%) were perceived to be good in health promotion in the community.

**Table 2:** Descriptive data for the Medical officers

Variable Rating	Freq (%) Moi	Freq (%) UON	Total	P-value
<b>Preparation for expert medical knowledge</b>				0.165
Poor	5 (13.5)	14 (25.5)	19 (20.7)	
Good	32 (86.5)	41 (74.5)	73 (79.3)	
<b>Leadership skills</b>				0.019
Poor	13 (35.1)	33 (60)	46 (50)	
Good	24 (64.9)	22 (40)	46 (50)	
<b>ICT</b>				0.279
Poor	7 (18.9)	6 (10.9)	13 (14.1)	
Good	30 (81.1)	49 (89.1)	79 (85.9)	
<b>Team work and patient referral</b>				0.380
Poor	8 (21.6)	8 (14.5)	16 (17.4)	
Good	29 (78.4)	47 (85.5)	76 (82.6)	
<b>Communication and medical report writing skills</b>				0.164
Poor	9 (24.3)	21 (38.2)	30 (32.6)	
Good	28 (75.7)	34 (61.8)	62 (67.4)	
<b>Planning, organization and working independently</b>				0.006
Poor	5 (13.5)	22 (40)	27 (29.3)	
Good	32 (86.5)	33 (60)	65 (70.7)	
<b>Resource management</b>				0.183
Poor	22 (59.5)	40 (72.7)	62 (67.4)	
Good	15 (40.5)	15 (27.3)	30 (32.6)	
<b>Health promotion in the community</b>				0.119
Poor	9 (24.3)	22 (40)	31 (33.7)	
Good	28 (75.7)	33 (60)	61 (66.3)	

### Some of their voices

#### Medical Doctors from University of Nairobi

“Leadership and research skills should be effectively incorporated into the curriculum” Female. “UoN during the period I was there, used to impart mostly theoretical skills, not the practical ones students are so many so supervision and mentoring of students especially in clinical areas does not happen as efficiently as it should. A student can actually pass without even showing up for class and the lecturers will not even know. They just need to show up for exams and make sure they get a pass and they are home dry. In Moi, because of their smaller classes and greater student-lecturer interaction, it is impossible to do that” Male

#### Medical Doctors from Moi University

“I am grateful to have studied in Moi University School of Medicine” Male

“Moi University taught discipline and hard work will lead to desired goal. It gave confidence in one ability to read and decipher difficult medical books” Male

### DISCUSSION

A total of 92 post internship medical doctors were interviewed out of these 37 were alumni of Moi University and 55 had previously qualified from University of Nairobi. None of these medical doctors had registered for a post graduate training. A structured questionnaire was used to assess them in terms of competence basing on the curriculum that prepared them in their undergraduate training. Moi University uses problem based

learning (PBL) curriculum whereas University of Nairobi used traditional teaching methods.

A total of eight competencies were assessed. These were; how their curriculum training prepared them for expert medical knowledge; Health Promotion in the Community; Leadership skills; Planning, organization and working independently; Team work skills; Communication skills and medical and report writing Information and computer technology (ICT) and Resource management. In all the eight assessed competencies, the P-value for variable rating between these two cohorts was less than 0.05 in two competencies. These were; Leadership skills and Planning, organization and working independently

From the results obtained, they were discussed under the following subheading:-

#### How the curriculum prepared them for expert medical knowledge?

Majority of these doctors 79.3% felt that they were well prepared. In both universities, there was this consensus that the preparation was good. Moi University had 32(86.5%). A study was done at the University of Maastricht in the Netherlands on the general competencies of PBL and non-PBL graduates. In this study PBL graduates compared with non PBL colleagues gave a higher rating for the connection between school and work, for their medical training and preparation for practice. According to these graduates, the most frequently used competencies with sufficient coverage during medical training were expert knowledge, profession-specific skills and communication skills. All graduates in this study called for more curriculum attention on working with computers, planning and organization and leadership skills. More PBL graduates

than non-PBL graduates indicated that they had learned profession specific methods, communication skills and teamwork in medical school [5]. This compares well with this study. This could be attributed to the Moi University curriculum where PBL students spend a significant amount of time with their teachers in the Community during the Community Based Education and Services (COBES) in the field. This COBES improves profession-specific methods, communication skills and teamwork.

### **Leadership skills.**

A total of 24(69.9%) of Moi University graduates as compared to 22(40%) of University of Nairobi graduates felt that their curriculum prepared them well for leadership skills. In both curricula, there is an elective period which is compulsory. This time of electives, the student is attached to a county hospital for a period of about 6 weeks. During this time, the student is supposed to learn the day to day operations of that institution. This exposure period might not be enough for the student to learn county hospital leadership skills. During PBL study, there are multiple tutorials in every academic year. In these small tutorial groups (STG's) there is normally a team leader and a rapporteur. This helps in Leadership skills preparation. In a study carried out in Canada, it was noted that many counties have begun to realize the importance of good medical leadership. In this study, Canada was tasked to put an increased effort into developing a new generation of competent and efficient medical leaders in all levels of their healthcare structures. These are the student, the physician, the executive and the government official. In this Canadian context, two ways out of five in achieving this is by selecting more medical students who have the ability to become great leaders and integrating medical leadership training in all steps of medical education [6].

A study was carried out on the physician competencies for a 21<sup>st</sup> century Health care system. In this study, it was argued that in order to enhance the ability for health care delivery teams to function effectively, a need to utilize the full professional capabilities of all members of the clinical team is necessary. This team should practice within their recognized disciplines and a clear understanding of the skills of the different allied health professionals. The authors suggest that this could be facilitated through joint education and training programs [7].

### **Information and communication Technologies (ICT) skills**

In our study, majority of the doctors from both institutions (85.9%) stated that they were competent in terms of ICT use in healthcare delivery. A study was done in Northern Uganda among medical doctors towards e-health use in healthcare delivery. In this study, majority of healthcare professionals had positive attitudes towards e-health attributes, with moderate level of skills. The authors concluded that their findings suggest need for hospital managements to strengthen e-health services in healthcare delivery in Northern Uganda [8]. The findings above compare well in our study which showed most doctors had a good attitude towards ICT use.

### **Teamwork and Patient Referral**

In this study, majority of the doctors 82.6% (n=76) have good teamwork qualities. This was observed from graduates of both medical schools. A study was carried out in the United Kingdom which identified ten characteristics underpinning effective interdisciplinary teamwork. In conclusion, the authors propose competency statements that an effective interdisciplinary team functioning at a high level should be demonstrated [9].

### **Communication skills and report writing**

A total of 75.7% (n=37) of Moi University and 61.8% (n=55) UoN graduates perceived themselves as good in communication skills and report writing. A study was carried out on the communication skills in medicine. In this study, it was concluded that communication in Medicine is considered a fundamental clinical skill to establish a relationship with the patient, paving a way to successful diagnosis and treatment. Experiential learning is important and the principles of

evidence-based and person-centered medicine should be adhered to. Human relationship matters most [10].

### **Planning, organization and working independently**

Most of the Moi University graduates 86.5% (n=37) felt adequate in planning, organization and working independently. Majority of the UoN graduates (60%) – (n=55) also felt the same. In a study carried out on competencies necessary for becoming a leader in the field of community medicine, there were six themes that emerged.

One of these is Medical ability which includes psychological issues and difficult cases in addition to basic medical problems [11]. High medical ability gives confidence to other medical professionals

### **Resource management**

In this study, most of these medical doctors 67.4% (n=92), felt that they did not have the required skills in resource management. This might be due to inadequate training in resource management. The curriculum in both PBL and traditional teaching methods does not lay much emphasis on resource management. In a study done in Nigeria, it was noted that over the years, medical practice in Nigeria has evolved in scope and practice, in terms of changing disease patterns, patients' needs, and social expectations. In addition, there is a growing sentiment especially among the general public and some health workers that most doctors are bad managers. Besides drawing examples from some doctors in top management positions that have performed less creditably, critics also harp on the fact that more needs to be done to improve the training of doctors in health management [12]. A study was done in Italy on making doctors manage in the Italian NHS. In this study, one of the strategies to spread organizational principles in healthcare settings is by involving doctors in management. This trend is promising because such means of performing medical management appear to be more easily compatible with professional logics; therefore, this could facilitate the engagement of a large proportion of professionals rather than the currently limited number of doctors who are “forced” or willing to take formal management roles [13].

### **Health Promotion in the Community**

Majority of the doctors 66.3% (n=92) felt that they were competent in the health promotion within the community. This can be explained that both curricula allow community health interaction by the students during their training. In the Moi University curriculum, there is a regular and recurrent Community Based Education and Studies (COBES) which allows the students to interact with the community from study year one to fifth year. University of Nairobi also have Community health in their fifth year.

In a study done in Pakistan, the authors explored specific tasks of physicians and nurses employed to work in primary or secondary health care units in a context where there is a structural scarcity of community health care providers. In their results, they noted that at all levels of health settings, physicians' were mostly engaged with diagnosing and prescribing medical illness of patients coming to health center. The nurses, depending on their employer, were either providing preventive health care activities, assisting physicians or occupied in day to day management of health center. In their conclusions, they noted that their results have provided insight into some critical facts. Firstly, the current generation of health providers are not well prepared by education and training to provide comprehensive care to the general population. Secondly, in community settings there are many synergies between the competencies of physicians and nurses and at the same time these two groups offer distinct sets of services, which should be harnessed to build effective, non-hierarchical, collaborative health teams. Finally, educators and policymakers must join forces to ensure that populations receive the best of care from all members of the health team [14].

### **Some of their voices**

From their voices, the UoN alumni feel that teaching in Leadership skills should be in-cooperated in their curriculum. Also, they felt that a more

“hands on” approach in their teaching should be used. For an all-round doctor to be produced, a more “hands on” approach is necessary. Since a doctor is usually the team leader in a medical institution, then he/she should be taught leadership skills so as to be able to provide leadership adequately.

## CONCLUSION

Medical doctors in the two Universities in Kenya were trained using Problem Based Learning or traditional teaching methods. In both cases, most of them felt that they were prepared well for expert medical knowledge during their medical education. Majority in these two sets of curricula perceived themselves to be good in teamwork and patient referral system as well as in communication and medical report writing skills. In both sets, majority perceived themselves as competent in ICT, health promotion in the community, planning, organization and working independently. In both sets of curricula, majority perceived themselves that they were poor in resource management. Majority of the doctors who were trained using PBL perceived themselves as having good leadership skills unlike their counterparts in traditional teaching methods, whom majority perceived themselves as poor in leadership skills.

## Recommendations

Train more doctors in management courses so that they can improve their skills in leadership and resource management skills. In Kenya, the Kenya Medical Practitioners and Dentists Council (KMPDC) needs to encourage many doctors to undergo management courses at the School of Government. This will enable the doctors to improve on their resource management skills, planning and general organization.

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## Conflict of interest

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