

# Workplace Learning for Undergraduate Medical Students at a National Referral and Teaching Hospital as Perceived by Lecturers, Administrators and Students of a Contemporary Medical Training University in Uganda.

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## Research article

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# Abstract

**Background** It is well documented that workplace learning is a significant contributor to competence development as it offers engagement opportunities that enable students to participate in clinical activities in preparation for future clinical practice. Undergraduate medical students of Makerere University College of Health Sciences have placements at Mulago National Referral and Teaching Hospital for purposes of workplace learning. The purpose of this study was to explore the perceptions and experiences of lecturers, administrators and students about workplace learning at the hospital for the undergraduate medical students with the ultimate aim of identifying opportunities and challenges in the learning environment for purposes of improvement.

**Methods** The study design was cross-sectional descriptive with a qualitative approach using key informant interviews for the lecturers and administrators, and focus group discussions for the students. The framework method was used to perform thematic data analysis with the help of ATLAS.ti

**Results** The workplace at Mulago National Referral and Teaching Hospital was perceived to be well-endowed with adequate patient numbers, a suitable case mix and unrestricted access to patients for purposes of competence achievement. The challenges reported included inadequate resources such as infrastructure, equipment and supplies, poor learner agency and overcrowding which compromised competence development. The resource challenge appeared insurmountable in the context of two autonomous institutions with divergent planning priorities in terms of teaching, research and patient care. Resource challenges notwithstanding, alternative perceptions were that occasional shortages of equipment and supplies during workplace learning presented as a reality check for students to fit in with the realities of the practice setting when they finally qualify.

**Conclusions** There were mixed perceptions about the learning environment at Mulago National Referral and Teaching Hospital with both enabling and challenging factors. It therefore requires that enabling factors are enhanced and innovative solutions are designed to address the challenges in order for workplace learning to be optimal.

## Background

It is well documented that workplace learning is a significant contributor to competence development in preparation for clinical practice (1–3). Competences such as clinical skills, communication and interpersonal skills achieved during workplace learning have a significant impact on patient care (4).

Workplace learning offers opportunities for feedback during demonstrations and return demonstrations which promotes learning by informing students of their progress, advising them of their learning needs and the resources available. For effective competence development, learning environments should offer engagement opportunities that enable students to participate in activities at the workplace according to the highest level allowed by their experience and abilities (5). Additionally, there is need for protected time, designated or protected space and an enthusiastic group of lecturers and students. Preparation and

identification of opportunities for learning by both lecturers and students should however be balanced with acknowledgement of patients' rights to privacy, confidentiality and dignity (6, 7).

At the time of the study, undergraduate medical students of Makerere University College of Health Sciences (MakCHS) had placements in their fourth and fifth year at Mulago National Referral and Teaching Hospital (MNRTH) for purposes of workplace learning. This placement was to enable students to gain exposure to situations similar to those they will encounter when they qualify. This exposure is important for their transition from a student identity, with peripheral participation in patient care, to that of clinicians ready for full participation and responsibility for their own patients (8, 9).

MakCHS, now a constituent college of Makerere University since 2008, was originally founded in 1924 and is the oldest medical school in East Africa. It is now comprised of four schools; Medicine, Health Sciences, Public Health and Biomedical Sciences. Mulago Hospital, a 1790-bed capacity hospital was founded in 1913 and was designated the National Referral and Teaching hospital in 1962. The hospital has 10 departments where students rotate for their clinical placements namely; Surgery (General Surgery, Orthopedics, Cardiothoracic Surgery, Neurosurgery), Obstetrics & Gynaecology, Internal Medicine, Paediatrics & Child health, Ophthalmology, Anaesthesia & Critical Care, and Ear Nose & Throat. Psychiatry placements take place at a separate hospital that is about 9km away.

MakCHS & MNRTH have parallel and autonomous administrative structures and hierarchy of staff who are involved in the clinical teaching of undergraduate medical students (*Figure 1*). While MakCHS falls under the Ministry of Education and Sports, MNRTH falls under Ministry of Health as their line ministries.

The purpose of this study was to explore the suitability of the workplace at Mulago National Referral and Teaching Hospital as a learning environment for undergraduate medical students of MakCHS with the ultimate aim of identifying opportunities and challenges in the learning environment through stakeholder engagement and provide feedback for purposes of improvement.

## Methods

The study design was cross-sectional descriptive with a qualitative approach. The aim of the study was to explore the perceptions of lecturers, administrators and students about workplace learning at MNRTH, for undergraduate medical students of MakCHS

## Characteristics of participants and description of materials and methods

The study participants were administrators and lecturers from MakCHS & MNRTH as Key Informants, and undergraduate medical students (MBChB) of MakCHS. Administrators from MakCHS included the College Principal, Deputy Principal, College registrar, and the Dean and Registrar of the School of Medicine. Administrators from the other schools in the college were excluded because undergraduate

medical student had no rotations there. Administrators from the hospital included the Hospital Executive Director, Deputy Executive Director, Principal Hospital Administrator and the Assistant Commissioner Nursing (ACN). All the 10 heads of department were included in the study; and a sample of clinicians who were faculty from all the departments. Altogether, there were 187 eligible lecturers inclusive of the Heads of department, and the quota system was used to select lecturers purposively from all the departments where undergraduate medical students rotate during their clinical placements. Students in their fourth and fifth year of undergraduate medical school who were doing clinical rotations were invited to participate in the study in order to provide perspective and validate the perceptions of the lecturers.

## Data collection methods

Data from the administrators and lecturers were collected using a Key Informant Interview (KII) guide which was developed from reviewing literature on workplace learning. A pilot was done with one of the administrators using the Key informant guide so as to improve on the tool, ensure clarity of the questions and to estimate the duration of the interview. Most of the questions were found to be clear, and the interview lasted about 45 minutes. The administrators and lecturers were selected purposively so as to get results that were information-rich and guided by the principle that in every culture, some individuals know much more than the average person (10, 11). Altogether, nine administrators from both institutions were included in the study. Data from the administrator who participated in the pilot was later excluded from analysis. The target for lecturers was 30 participants inclusive of heads of departments, but saturation was reached at 24, when interviews elicited no additional new information and recruitment for further interviews was discontinued. By this time, all departments had been represented.

Data from the students were collected using a Focus Group Discussion (FGD) guide with questions that were formulated from literature. Groups of 8–10 students in their fourth and fifth year were constituted for the focused discussions. The students were recruited through the group leaders of each class. The FGDs were conducted in one of the offices on campus in order to ensure both visual and auditory privacy.

The key informant interviews and FGDs were conducted by the principal investigator (PI) assisted by a research assistant with prior knowledge in qualitative research. Permission was sought to record the interviews using an audio recorder and there were no objections by the participants. In spite of the PI being part of faculty, the students were assured of confidentiality and requested to be as free as possible during the discussion and they remained fully engaged throughout.

The students were grouped according to year of study so that they could feel comfortable with each other and be motivated to engage freely in the discussion, building trust as they went along generating data based on synergy of group interaction, while providing insight into their perceptions of workplace learning at MNRTH. Consent was obtained, to record the discussions using an audio recorder. Additional notes were taken to record non-verbal cues from the participants.

# Data analysis

Data analysis was done using the framework method to perform thematic data analysis with the help of ATLAS.ti (12, 13). Using a combination of deductive and inductive approaches, codes were developed separately by the PI and research assistant from five transcripts as an initial step in the data analysis process. The two people then met to discuss the codes and develop a codebook which was used by the PI to code the rest of the transcripts. The codes formed the themes and subthemes used to describe the perceptions of the administrators, lecturers and students about workplace learning at MNRTH.

## Results

The different stakeholders provided mixed perceptions about the workplace learning at MNRTH. While some perceived the learning environment as enabling, others noted that there were many challenges at the workplace that needed to be addressed for effective learning. The results are presented according to the themes and subthemes that emerged. (*Table 1*).

### 1. Resources available to students

Resources are materials required by lecturers to support students meet the expectations for learning clinical medicine as defined by the curriculum. At the time of the study, the undergraduate curriculum at MakCHS required students in their fourth and fifth year to have workplace rotations for the purpose of gaining skills, knowledge and attitudes required for competence development.

#### 1.1 Patient numbers and case mix

A large number of patients with a variety of pathologies (case-mix) provides authentic workplace learning opportunities for students (14). The workplace at MNRTH was perceived to be well-endowed with adequate patient numbers and a suitable case mix, which would support clinical competence development.

*It is a national referral hospital and this provides a wide range of patients, cases nearly in all disciplines are referred from all the regions of the country so, clinically, that is very good, because the students end up getting exposed to nearly all the cases. Administrator, MakCHS.*

*About the working environment here, am very positive about it, there is opportunity to learn, because in Mulago, which is a national referral hospital, we get all kinds of patients and conditions, so there is a very big opportunity to learn. Student FGD, 4th year*

#### 1.2 Access to patients

Access to patients during workplace learning means that students can observe their clinical lecturers in action as they care for the patients and are also allowed to participate in patient care to the extent that the students' experience can allow (5). According to the participants, the students had unrestricted access to patients at the workplace and the patients were very receptive to the students.

*The patients do not mind about the students, they actually like the students because they are very close to them and they think that they can be their means to the ultimate ((the best care)), so they do not have a problem. Administrator, MNRTH.*

*For Mulago, as a teaching hospital, the patients are there with all sorts of diseases, so we get the exposure, which is a bonus and they want you to attend to them so you can never say you don't have a patient. They are always there; they are always wanting someone to listen to them. Student FGD, 5th year.*

## 2.The learning experiences

**The quality of learning experienced by the students at the workplace has important implications for the choice of career they choose in future (15).**

### 2.1 Career choices

The learning environment contributes to the choices that learners make in terms of medical discipline of interest for their future career but the workplace at MNRTH as a learning environment did not appear to be encouraging for students to choose a career in clinical medicine, mainly because of the limited resources.

*Their choice of career may actually be negatively affected, in a sense that, they do not enjoy what they are doing as well as they would have. They may say, clinical care is a very difficult area, it is a depressing area. You see patients who are suffering and you cannot do much for them because you do not have the resources. This is too stressful a situation, I do not want to get into clinical care, I would rather go to public health or laboratory medicine. Administrator, MakCHS.*

### 2.2 Use of spare moments

Occasionally during workplace learning, there are moments when students may feel bored and see as if nothing is happening on the ward because the lecturer is delayed or fails to turn up and yet they are surrounded by many opportunities for learning but they don't see them or utilise them (16). Many times, they walk away from the ward and miss the opportunity to utilise these spare moments. This was supported in the following statements:

*If he [the lecturer] doesn't come, then the whole day is more or less wasted. Whenever there is nothing on the ward, and there is no one to teach, I just go to my room or to the library and read something. Student FGD, 5th year.*

## **The key informants reported that the students were not utilising the spare moments appropriately.**

*Now, these students, when you are not on the ward, they do not stay around. Somehow, they want to be on the ward when you are possibly there. When they notice you are going away, then they also go away. Lecturer, Internal Medicine*

## **3.Challenges at work**

Workplace learning is frequently undermined by challenges such as time pressure due to competing demands, large numbers of students and patients, concerns about patient safety and the attendant litigation and these challenges can impede competence development (17).

### **3.1 Infrastructure, equipment and supplies**

The physical infrastructure, equipment and supplies at the workplace can have a profound impact on the quality of care provided to patients and by implication, the quality of learning experienced by students during workplace learning (18, 19). While patient numbers and case mix provided opportunities for learning to students, apparently the infrastructure, equipment and supplies were inadequate and this affected learning, as students missed opportunities for practice.

*Lack of adequate facilities affects learning in that it makes learning less enjoyable, yet learning should be enjoyable. Not only does it make it less enjoyable, but also difficult, and at the end of the day the learning may be suboptimal and it may be below the required standard that we expect. Administrator, MakCHS.*

*But as much as there are many patients like we said earlier, the resources are limited, you find that sometimes like in labour suite on some nights, we were just spectators and did not participate because there were not enough gloves and aprons. Student FGD, 5th year*

## **Shortages of equipment and supplies are usually compounded by an ever-increasing number of students admitted without regard to the facilities which compromises the quality of the learning experience.**

*Teaching sessions on the ward can be overwhelming, because of the large number of students that we have to interface with. You know about six junior clerks, about six senior clerks, then about six*

*postgraduate students, visiting students from wherever, so you end up being one lecturer who literally needs a microphone on the ward. Lecturer, Paediatrics and Childhealth.*

*The ward is actually a good platform for our learning because we learn with patients but there has been an increase in numbers of students over time so it gets to a point where you find maybe 30 students have come to learn and they all cannot fit around that small bed, and we are considering only medical students but there are all sorts of people; nurses, SHOs, international students, eh. Student FGD, 5th year*

The resource challenge appears to become even more pronounced in the context of two autonomous institutions MNRTH and MakCHS responsible for the workplace and learning environment. While the two institutions share common goals namely teaching, research and patient care, their planning priorities may differ.

*In planning for the resources that go into teaching at the Hospital, the University has always been clear or, at least, MakCHS has always been clear that we cannot plan for resources used in a different facility. Mulago is a teaching hospital, it is known as a teaching hospital, so the hospital should plan with the idea of the teaching component in mind. Administrator, MakCHS.*

*The Hospital budgets for itself and does not budget for the students, so the undergraduates and other students are a priority of the University. Unfortunately, the University that is supposed to be budgeting and giving those resources for teaching does not appear to budget. Administrator, MNRTH.*

## **These divergent perceptions seemed to suggest that a middle ground was unattainable based on this analogy by one of the key informants:**

*Therefore, it is like two neighbours existing. The two neighbours exist and when I come to your home, I eat what I find and when you come into my home, you eat what you find, but that does not mean that your home budgets for my coming and even plans for me. You should plan for yourself as I also plan for myself, but in case I visit you, we can share and so that is exactly the problem. Administrator, MNRTH.*

## **Nevertheless, there were voices of moderation too, which proposed that the two institutions should exploit each other's strengths for mutual benefit.**

*The college can say, we can provide counsellors and the patients can be counselled because they really need the counselling. The College can say, we are going to provide the break tea. You get what I mean, but you know it helps that we are pooling resources. Administrator, MNRTH.*

*The equipment sometimes is not there, so I do not know whether Makerere should make a contribution to the equipment in the hospital because if you know the training of medical students requires that particular equipment and Mulago cannot put it there, is it possible for Makerere to provide that*

*equipment, such that Makerere and Mulago work out a custody agreement, for the students to learn. Administrator, MakCHS.*

Resource challenges notwithstanding, the alternative perception was that occasional shortages of equipment and supplies at the workplace and learning environment may present as a reality check for students.

*This learning environment is in the context of the country, we have resource challenges, we have human resource challenges, we have budgetary challenges. So generally, it is in that context, things can be better but we are in a resource-limited country. Lecturer, General Surgery.*

*The positive side about it is that it makes students more resilient and creative, because they have trained in a difficult environment which makes them more thoughtful and consider the resources much more carefully compared to those who train from an environment where resources are just flowing; they never stop to think about the need to conserve or to utilize resources carefully. Administrator, MakCHS.*

## **3.2 Lecturer availability for bedside teaching**

Clinical lecturers provide engagement opportunities for students during bedside teaching and play the dual role of patient carers and teachers where they diagnose the patients' illness and diagnose the learner's progress (4). The practice of bedside teaching however appears to be on the decline as illustrated in this statement from one key informant.

*The bedside teaching, evening ward rounds, where people were taught in emergency wards, those ones are no longer taking place very well. They are not, because most of the lecturers are now engaged in private practice in order to survive, they are engaged in research and they do not have time for these students. Administrator, MNRTH.*

## **And the students expressed similar sentiments**

*We have minimum contact time with the consultants yet we need them to facilitate us. You find that in a week during ward rounds, you meet them once or twice and sometimes they don't show up at all or sometimes they show up and the atmosphere is very tense then it's hard to ask them questions. Student FGD, 5th year.*

## **3.3 Learner agency**

This refers to the intentionality and actions that mediate and shape learner participation or willingness to engage and seek the guidance necessary to support his or her participation in the learning activities (5). The students were described as being passive, lacking enthusiasm for learning and not applying themselves well enough to benefit from the available learning opportunities

*In our time, after the official hours, we would go to the wards and clerk among ourselves, present to each other, critique each other and leave the ward at 8pm. But of recent, we have bright students coming to the medical school who are not that interested in learning. Nobody is interested in learning, except the lecturer. Lecturer, General Surgery.*

*I think that students are not as interested in medicine as they used to be, you know, people would be so hungry to learn everything, follow the intern around, follow every bit of ward round, clerk patients, but now, there must be something that is making them, either as individuals, not as interested or we as lecturers on the ward, we are not enticing them and maybe because there are no repercussions. Lecturer, Paediatrics and Childhealth*

## **3.4 Practise opportunities**

**Opportunities for hands-on practice are important because medicine as a practical discipline is learnt best by practising but the shortages at the workplace compromised the learning experience.**

*I think the teaching environment is a bit far from ideal because you may read something in the books and then you come and find something totally different being practiced and it's a bit confusing. So, you may now forget what you and just remember what you see every day. Student FGD, 5th year*

*The students may not learn the right things if say there are deficiencies in the quality of care provided. So, what students learn and see and reflect on may be different from the ideal because the reality is the problem of the deficiencies available, so that is a weakness. Lecturer, Obstetrics and Gynaecology*

## **Discussion**

### **Resources available to students**

The workplace at MakCHS was perceived to be well- endowed with adequate patient numbers and a wide case mix as well as unrestricted access to patients which allows for adequate exposure to most common clinical situations. Unrestricted access to patients during workplace learning allows students to observe their lecturers during patient encounters and to participate with increasing responsibility in workplace activities according to their level of experience. The students also listen to the clinical lecturers verbalising their thoughts, a process known as “thinking aloud” which enables them to learn beyond what is formally taught and also enhance their clinical reasoning process (20, 21) Access to patients, as well as adequate patient numbers and suitable case mix, gives students more opportunities to observe a variety of pathologies, and to learn from their workplace experiences (22).

In contemporary medicine, successful workplace learning requires additional resources, such as online libraries and facilities for Information and Communication Technology (ICT). This was perceived as inadequate at MakCHS according to the participants. It is important for lecturers and students to be able to search recent literature as part of evidence-based care for patients. Using the internet for learning purposes improves the student experience and adds value to the quality of education (23, 24). The ability to consult while learning and offering health care at the workplace enhances the students' learning experience and provides an excellent opportunity to keep up-to-date with the ever-increasing evidence base thus improving the quality of care provided to patients through correct drug dosage calculations, information sharing, and education while on the move (25–27).

## **The learning experiences**

### **Career choices**

An ideal clinical learning environment should inspire students, not only to complete their training, but also to choose a future career in a discipline of interest because they are inspired by lecturers, as they see them as role models. The general perception by the key informants was that the workplace at MNRTH as a learning environment was not very encouraging for students to choose a career in clinical medicine. The environment in which students observe their lecturers practicing; the enjoyment the lecturers seem to derive from practicing, or the difficulty in which they practice, can form the basis for choices made by the young, impressionable students. Fewer graduates will choose a specialty as a career if the specialty does not appear attractive at the time of their clinical placement during training, in terms of flexible working hours, availability of equipment and supplies and practice satisfaction (28–31). In a study done in Ethiopia, students preferred not to specialise in particular disciplines because of observed shortages of equipment and supplies at the workplace (15). The undergraduate experience and exposure at the learning environment during clinical placement should therefore be made appealing as it plays an important role in students' career choices

### **Use of spare moments at the workplace**

Spare moments on the ward are those moments when there is no specific assigned activity, or no lecturer, or the lecturer is delayed or fails to report. The key informants reported that students appeared to only be available on the ward when there was faculty and did not spend time on the ward whenever there was no lecturer. The learners however reported that their schedules were too tight for them to get any spare moments, that there was always something to do with no time to relax except when they were totally exhausted. There is much that students can do during these spare moments on the ward; however, what they do is influenced by factors such as learner agency, and workplace affordance; situational factors, that invite and support learner participation such as protected learning space, supportive staff, management protocols, equipment, supplies. Spare moments are very important for learning clinical

skills and catching up on concepts that have been taught and need further clarification. The workplace therefore needs to be well-facilitated in order to encourage students to utilise spare moments and engage in peer-to-peer learning which can be mutually beneficial in building students' competence and confidence (32).

## Challenges at work

The administrators, lecturers and learners perceived the workplace as having inadequate infrastructure, equipment and supplies to facilitate learning. Infrastructure, equipment and supplies are very important for workplace learning, as these resources form part of the ecology of education. In a study to evaluate trainer perception about the learning environment in Ethiopia, lack of infrastructure and equipment was found to be one of the emergent themes (2, 33). Often, because of frequent shortages, lecturers become creative and improvise. This can become so routine and students and sometimes lecturers, begin to think that this is the right way to do things. The occasional shortages of equipment and supplies during workplace learning can however be considered a reality check for students. Students trained in such an environment become more resilient and creative and become doctors fit for purpose, because, in reality, such situations may be similar to what they will encounter when they qualify. Therefore, while shortages shouldn't be chronic, the training environment shouldn't be too utopian.

Improvisation may be part of innovation and creativeness but it sometimes promotes the hidden curriculum (34). The concept of the hidden curriculum positions the learning environment in the medical school as a cultural entity and a moral community, with its own definitions of good and bad; a sort of cultural ecosystem involving human interaction with the environment where lecturers and students contribute to the transmission of the hidden curriculum (34–37). Because few aspects of learning in the hidden curriculum are explicitly taught and assessed, there is the risk of negative influences creeping in and being passed on from one group to the next, as students are infused with the community's social expectations (38). It is therefore important to determine how the hidden curriculum can be used to promote positive messages and reduce the effect of negative messages and their unintended outcomes (34).

The learning environment is an entity comprising a number of stakeholders, who may present as opportunities or threats (39). MNRTH and MakCHS, the two major stakeholders in the learning of undergraduates of MakCHS, are autonomous of each other in terms of organisational management although they may share common goals of teaching, research and patient care. In such a relationship, the priorities differ and there usually exists an imbalance between the influence and interests of the different stakeholders (40). While MakCHS has considerable interest in ensuring that students have the best experience possible at the workplace during clinical placement, it has little influence on the way MNRTH operates in terms, for example, of providing learning aids, such as equipment and supplies. This is compounded by varied expectations from the stakeholders where one views the other as not doing enough to facilitate teaching and learning at the workplace. This was highlighted by the diametrically

opposing views from the Key Informants about which entity is responsible for procurement of resources for students learning at the workplace. This state of affairs tends to encourage antagonism instead of synergy. The challenge usually has little to do with roles and responsibilities for teaching, and more with resource mobilisation, allocation and utilisation. These varied priorities lead to conflicts of interest, especially when the two institutions have different supervising line ministries, as is the case in most African countries (19). Unless there is mutual trust and respect among stakeholders, the community cannot flourish and achieve its potential, and members will not feel the desire to belong and drive the community's agenda (41). In Uganda, Mulago Hospital falls under the Ministry of Health, and Makerere University falls under the Ministry of Education.

The stakeholders therefore need to be in constant communication, so that they can share their successes and challenges with each other in a quest for constant renewal and survival (42). Communication moderates two opposite ends of a continuum, between entropy and emergence within an ecosystem. Emergence can be supportive of improvement and evolution of new ecologies, while entropy can lead to a complete breakdown of the ecosystem leading to disorder, especially when communication between stakeholders fails to lead to a compromise position (43).

## **Patient privacy**

According to the results of the study, the workplace at MNRTH has large numbers of patients and students leading to situations of profound overcrowding which compromised patient privacy and confidentiality. There was also a shortage of designated protected spaces for teaching and learning. A supportive workplace learning environment should have protected spaces, so that the lecturer and the students can discuss the theoretical concepts underlying the patient's condition in more detail, as well as other issues related to a patient's illness, such as investigations required, differential diagnoses (handling the "what if" questions), treatment options and prognosis (17). During preparation for the clinical session by the lecturer, the patients should be assured of privacy and confidentiality (3, 7). This can only become reality when the workplace is equipped with facilities such as patient screens to ensure privacy and ward side-rooms for further discussion of more sensitive and detailed information about the patient such as differential diagnosis and prognosis, which may be too sensitive or delicate to be discussed while the patient is listening, as the patient may misunderstand the trend of discussion. Under the prevailing circumstances at MNRTH, the lecturers either discussed all the details by the patient's bedside, which compromised patient's privacy and confidentiality, or avoid detailed discussion about the case altogether, which in turn, compromised the quality of the students' learning experience.

## **Lecturer availability for bedside teaching**

While the workplace at MNRTH was considered to have enough clinical lecturers, the overall perception was that there were missed opportunities for learning because lecturers were not fully available at the

clinical areas to facilitate bedside teaching. Because of competing demands for their time, such as patient care, research and economic survival, lecturers sometimes find it difficult to create time to teach students (44). Similar explanations were advanced as to why the senior faculty were not available to teach undergraduates at MakCHS but this situation created negative role models for the learners which can impact negatively on their behaviour when they qualify.

The reported decline in the use of the bedside for passing on important clinical skills to medical students has been reported elsewhere (17, 45). Workplace learning should be such that every patient encounter is a learning opportunity; however, this is only possible when the lecturers are available, competent and willing to teach. While lecturers may be willing to teach at the workplace and for learning to be optimal, there is need for protected time and space, as well as students with the right experience, backgrounds and interest. Optimal learning requires that when students present themselves at the workplace for learning, lecturers dedicated to teaching the students are available.

## **Learner agency**

Learner agency, the intentionality of the learner to learn, motivates lecturers as they are stimulated by enthusiastic students (5, 46). The attitudes of the students of MakCHS towards learning were described by the key informants as being passive and lacking enthusiasm to learn; that students were not applying themselves well enough to benefit from the available learning opportunities at the workplace. The learning triad is comprised of the lecturer, patient and learner with all the three playing complementary roles in workplace learning (47, 48). The lecturers bring their skills, experience and knowledge, patients present with signs and symptoms and share insights into their problems and students should present themselves as motivated and eager to learn, by actively seeking out and participating in the learning activities at the workplace as far as their knowledge and experience allows.

The responsibility for stimulating students' interest in workplace learning does not solely lie with the students, lecturers also need to be conversant with contemporary theories of workplace learning, such as achievement goal theory and assist students to become interested in learning when they come to the workplace. Achievement goal theory describes three learner goal orientations; the mastery learner approach (learn to improve), performance learner approach (demonstrate competence), and performance-avoid approach (avoid demonstrating incompetence). The best learner orientation is the mastery approach, where the learner's goal is to succeed with success being defined according to the task at hand. In contrast to the performance learner approach where the learner's goal is to demonstrate competence by outperforming others. In the performance-avoid approach, the learner focuses on avoiding failure or appearing incompetent (5). For successful workplace learning, the lecturer is responsible for steering students away from the performance-avoid approach, to the mastery approach. This information about learner achievement theory is not necessarily part of the knowledge clinicians acquire at medical school, instead, it requires specific training in bedside teaching; hence, the need for focused faculty development opportunities.

## Practice opportunities

Key informants reported that the workplace at MNRTH afforded opportunities for practise to the students, albeit with some limitations, and even with their limited knowledge and skills, the students also contributed to the health workforce during their peripheral participation (41). Experiential learning should offer opportunities for students to participate in patient care by applying the knowledge, skills and attitudes that they have acquired over time to the real patient/clinical situations (49). The students usually start by performing simple tasks, such as drawing blood, writing notes and taking observations under supervision—tasks referred to as peripheral. They eventually move on to more complex tasks as they practise taking care of the patients themselves, with increasing responsibility which builds their competence (22).

Changing health care demands therefore require that the clinical practice environment should be regularly evaluated for purposes of continuous renewal and improvement to march with the changes (8). As the students' progress in their development, it becomes important that they have opportunities to observe their lecturers' clinical practise. During the repeated encounters, students model the behaviour of their lecturers while the lecturers interact with patients, and students gradually learn professionalism and the right attitudes. "Active structured participation by students in day-to-day clinical activities is the key to learning in context"(3)

For successful workplace learning, students should be afforded opportunities, as willing participants to work with patients as they learn. This approach provides for gradual integration of students, as they immerse themselves into the medical ecosystem and its culture, language, and values in an authentic fashion.

## Study limitations

The exclusion of students in their preclinical years may have created missed opportunities to obtain their views before they were fully immersed and possibly absorbed into culture of the clinical environment and accepted it as a norm.

The principal investigator being part of faculty at MakCHS may have created some degree of expected response bias especially among the student participants but this was mitigated by the assurance that their names would not appear anywhere in the transcripts.

## Conclusions

The key stakeholders revealed mixed perceptions about the learning environment at MakCHS with both enabling and challenging factors that needed to be addressed in order for an optimal learning experience. Factors perceived as enabling included adequate patient numbers, case mix and unrestricted access. The large patient numbers and wide case-mix afforded students the opportunity to observe their lecturers in

action while they cared for the patients. Because of the unrestricted access, students also had opportunities to practise taking care of the patients under supervision and with increasing responsibility according to their level of experience.

The challenges raised included the shortage of equipment and supplies, and infrastructural inadequacies in addition to an ever-increasing number of students, leading to situations of profound overcrowding which made it even more difficult for lecturers to interact with students on a one-to-one basis in order to appreciate and respond to the student learning needs. The shortage of equipment and supplies, and infrastructure compromised the quality of care the patients receive, and the quality of the learning experience for the students as lecturers were often forced to improvise which promoted the hidden curriculum.

The shortages were compounded by the organisational setup at the workplace where there was ambiguity regarding the roles and responsibilities of the university and the hospital in planning for the resources that go into workplace learning by undergraduate medical students where each entity perceived the other as not doing enough to facilitate learning.

When infrequent, shortages at the workplace were not perceived entirely as a negative but as a reality check because such situations of inadequacy prepared the students for the real world of clinical practice; making them more innovative and resilient or fit-for-purpose in the face of challenges that are a reality when students qualify and enter clinical practice.

Learner agency was lacking among students as they showed little enthusiasm to actively seek out learning opportunities at the workplace or interact with the lecturers as much as possible. Practice opportunities though generally available to students, were hampered by the inadequacies at the workplace. The chronic inadequacies had an impact on learner agency, use of spare moments on the ward and students' choice of career when they graduate, as they could see no satisfaction in clinical medicine under these conditions.

## **Recommendations**

The mixed nature of the perceptions of the key stakeholders means that enabling factors need to be enhanced while the challenges get addressed in order for workplace learning to be optimal.

In terms of policy, there is need for an open dialogue between the two institutions; MakCHS and MNRTH together with their line ministries to harmonise each other's responsibilities and come up with a policy regarding planning and procurement of equipment and supplies for learning purposes.

In terms of practice, there is need for an audit of the available learning facilities at MNRTH and then advise the university so that student admissions are commensurate with the facilities.

In terms of research, there is need for further studies to elucidate the reasons underlying the decline in learner agency and availability of clinical lecturers for bedside teaching.

# Abbreviations

MakCHS = Makerere University College of Health Sciences

MNRTH = Mulago National Referral

CHS = College of Health Sciences

MBChB = Bachelor of Medicine and Bachelor of Surgery

ACN = Assistant Commissioner Nursing

FGD = Focus Group Discussion

KII = Key Informant Interview

ICT = Information Communication and Technology

# Declarations

## **Ethical approvals and consent to participate**

Before commencing with data collection, permission was obtained from the ethical committees of MakCHS (REC REF No. 2015-125), MNRTH (MREC 868), the Uganda National Council for Science and Technology (SS 3935), and the University of the Free State (ECUFS NR 174/2015). Participation in the study was voluntary and participants were free to withdraw from the study at any time. Anonymity and confidentiality of the study participants was ensured by using numbers instead of names to label the audio recordings and transcripts for storage, while participants in the focus group discussions (FGD) were assigned and referred to by letters, and not their real names. Audio recordings and transcripts were stored as password-protected files on a password-protected laptop belonging to the researcher.

## **Consent for publication**

Participants were informed that the information obtained may be published and there was no objection.

## **Availability of data and materials**

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

## **Competing interests**

The authors declare that they have no competing interests

## **Funding**

Funding for this study was from personal savings.

## Authors' contributions

MNK contributed to the conceptualisation of the idea, the design of the study, data collection and analysis, and manuscript writing. SK contributed to conceptualisation and concretisation of the idea, the design of the study and manuscript writing. HS contributed to conceptualisation and concretisation of the research idea, the design of the study and manuscript writing, and MPJ contributed to the conceptualisation and concretisation of the research idea, the design of the study and writing of the manuscript.

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## Tables

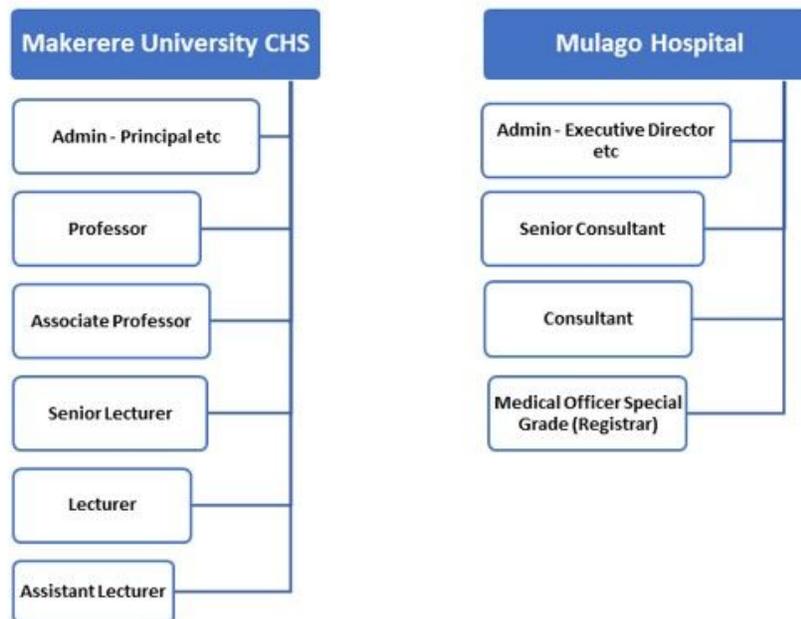
**Study Title:** Workplace Learning for Undergraduate Medical Students at a National Referral and Teaching Hospital as Perceived by Lecturers, Administrators and Students of a Contemporary Medical Training University in Uganda.

**Table 1: Themes and Subthemes from the data collected**

THEME	SUBTHEMES
1. Resources available to the students	<ul style="list-style-type: none"> <li>· Patient numbers and case mix</li> <li>· Access to patients</li> </ul>
2. The learning experience	<ul style="list-style-type: none"> <li>· Career choices</li> <li>· Use of spare moments</li> </ul>
3. Challenges at work	<ul style="list-style-type: none"> <li>· Infrastructure, equipment and supplies</li> <li>· Lecturer availability</li> <li>· Learner agency</li> <li>· Practice opportunities</li> </ul>

## Figures

**Study Title:** Workplace Learning for Undergraduate Medical Students at a National Referral and Teaching Hospital as Perceived by Lecturers, Administrators and Students of a Contemporary Medical Training University in Uganda.



**Figure 1**

Hierarchy of clinical staff at MakCHS and MNRTH