Perception of clinical learning environment among undergraduate health-based students at Masinde Muliro University of Science and Technology, Kenya

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ABSTRACT

Improvements in the clinical learning environments of a health-based training institution depend on identification of gaps. There was need to conduct studies around clinical learning environments in Sub-Saharan Africa since they were rated low and because there were concerns on the adequacy and quality of healthcare services that were available. This study was anchored on the constructivist theory with underlying pragmatic approaches, the main objective being to examine the perception of clinical learning environment among undergraduate health-based students at Masinde Muliro University of Science and Technology (MMUST). Cross-sectional study design employing mixed methods was used. The population of the study included all second, third, and fourth-year students who were enrolled in the study during a period spanning from June 2024 to November 2024. Stratified random sampling technique was used to arrive at a sample size of 302 participants computed through Taro Yamane formula and purposive sampling used for the interviews with students' class representatives. Data was respectively collected by use of interview schedule and self-administered questionnaire; analyzed thematically, and through descriptive-inferential statistics using SPSS version 27, $P<0.05$. The questionnaire was found to be reliable with Cronbach's alpha coefficient of 0.830. The study realized a response rate of 90%. Majority (59.9%, n=272) of the participants were male, and persons aged between 18-23 years (87.9%), mean age of 21 years. Significant mean differences were realized on the bases of level of study and type of academic program. The overall clinical learning environment was found to be very good with a score of 84% (n=200), whereas perceptions on clinical teaching was at 86.29% (n=100). However, the psycho-social support system domiciled in the clinical teaching was rated low with a mean of 2.8(SD=0.23). Themes that emerged during the interviews were status, challenges, and proposed solutions to challenges of the clinical learning environment. It was concluded that the clinical learning/teaching environment was positively perceived by students despite having a psycho-social support system that was rated low. Recommendations were made on the need for strengthening the environment's psycho-social support system, and further series of research involving teachers.

Keywords: Clinical Learning/Teaching, Clinical Learning Environment, Health-Based Students, MMUST

I. INTRODUCTION

Clinical learning environment entails activities in the hospitals or ambulatory sites where patient care occurs along with learning (Barzegar *et al.*, 2023). It is a planned or unplanned space of acquiring skills, attitudes and knowledge while taking part in patient care; and may include defined methods, goals, assessment practices, and expected outcomes as prescribed in the curricula geared towards realization of quality health-based training (Nordquist *et al*., 2019). The learning may also involve simulated hospital set up where knowledge, attitudes and skills are applied (Saraswathy *et al*., 2021). A clinical learning environment is determined by interpersonal factors and should have well set expectations conjoined with standardized procedures, appropriate locations for learning, and clinical instructors who possess reflective practices (Cooper *et al*., 2020).

Broadly, learning environment is a wide term pointing to collection of activities and spaces within which learners acquire knowledge, skills, and attitudes with or without preferences and pleasures (Li & Xue, 2023). At the Macy Foundation conference of 2018 learning environment was defined as the social interactions, organizational structures and cultures, virtual and physical spaces which surround and shape students' learning, perceptions and experiences (Josiah, 2018). Learning environment can be categorized as physical or human, or virtual on the bases of infrastructure and persons, or technology involved respectively (Ojuka *et al*., 2021). Focus in this study was put on health-based students' perceptions toward their clinical learning environment with intent of relooking at various studies or works. Active and well documented investigations around the educational atmosphere of healthcare worker students across the world is over 11 decades, dating back to early years of 20th century (Cate, 2017).

Globally, Student's perception in the learning environment is a stronger motivation or determinant of learning outcome compared to other factors like age and prior achievements (Baber, 2020). It is noted that effectiveness of an

educational program on students' learning reflects the quality of learning environment which is enabled by viably integrated informational, communicational and technological systems (Cate, 2017). Hafizoglu and Yerdelen (2017) demonstrated that learning environment perception accounted for 42% of the variance in motivation scores (R2 =0.42), whereas prior achievement scores were predicted at 8%. Perception of an educational environment entails students' opinions on psychological aspects, curriculum, physical attributes, and social perspectives of their surroundings among other aspects (Kaneez *et al*., 2021). Learning styles develop through active involvement of students as they embrace metacognitive processes deployed in the environments and they include project-based learning, contextual learning, case studies, role playing and problem-based learning among others (Larsson *et al*., 2022).

The African perspective of learning environment entails diverse formal or informal spaces, virtual or physical locations with contexts and cultures in which students acquire knowledge, skills, and attitudes (Shretha *et al*., 2019). For instance, in Sudan it was stated that learning environment is everything that exists and happens in an educational institution academically, physically, socially and psychologically affecting moral and professional developments of students (Mirghani & Elnour, 2017). For the case of Kenya, it was noted that there was increasing need for educators to get immersed in lifelong learning through creation of conducive learning environments as seen in the light of technology, pedagogy, and curriculum development (Mukhale & Hong, 2017). Educational institutions were still looking at learning environment majorly in the eyes of physical aspects (Chewen *et al*., 2020). This study was carried out at Masinde Muliro University of Science and Technology in the schools of Medicine, Nursing, and Public Health, Biomedical Sciences and Technology which were started in the years 2015, 2012, and 2013 respectively.

1.1 Statement of the Problem

Globally, there exists low levels of perceptions among health-based students towards the clinical learning-teaching environments (Wong & Bressington, 2021). The Sub-Saharan Africa is the most hit by the effects of low perceptions as reflected by a dismal health system performance score of 49% due to sluggishness in development, and failure to prioritize and implement good health policies (Ogun *et al*., 2018). Moreover, according to the World Health Organization (WHO), Africa had the highest disease burden at 24% (WHO, 2021; Schwartz, 2022). A study conducted at the University of Nairobi to assess the clinical learning environment there, gave a score of 46.7% (n=619), which pointed to numerous problems in the environment (Ojuka, *et al*., 2021). Moreover, there was rise in need for quality, adequacy and equity in distribution of human resources for health (HRH) in Kenya (Watembo *et al*., 2020); owing to the fact that healthcare workers are requisites for better health services and should deliver efficiently. However, majority of healthcare workers in Kenya were reportedly lacking effective training, general workforce development, and capacity building; with quality available being questionably unresponsive to clients' needs as supported by a patient satisfaction survey rating of 69%, a phenomenon that was related to poor upbringing as a result of low perceptions towards their learning environments (Mugo *et al*., 2018). Ascertaining the perception levels toward learning environments was deemed to be an effective means for diagnosing areas of weaknesses and strengths in the health-based trainings curricula (Cate, 2017). Therefore, the mentioned issues informed the decision to escalate the discussion through this study in regard to the laying of foundations for best practices going forward by continuously reviewing the clinical learning environments. This was a prime opportunity to help determine the situation at Masinde Muliro University of Science and Technology [MMUST], identify areas of weaknesses and strengths as reflected in the perception levels and opinions towards the clinical learning environment. The perceptions informed need for sustaining the clinical learning environment.

1.2 Research Objectives

The specific objectives were to

i. To examine perception of clinical learning environment among undergraduate direct entry Nursing, Clinical Medicine, Medicine, Optometry, Nutrition, Medical Laboratory, and Physiotherapy students at MMUST in Kenya.
ii. To determine perception levels on clinical teaching among undergraduate direct entry Nursing, Clinical Medicine, Medicine, Optometry, Nutrition, Medical Laboratory, and Physiotherapy students at MMUST in Kenya.

II. LITERATURE REVIEW

2.1 Theoretical Review

This mixed method research was developed in the philosophical premises of pragmatism which look at the world in connection with its problems, and where solutions are found by applying both objective and subjective strategies (Elgeddawy & Abouraia, 2024). This philosophical concept of pragmatism has given rise to dynamic learning approaches used by teachers to promote students' understanding of issues (Tome, 2023). The ensuing study determined perception levels towards clinical learning environment, reflecting constructivist theories which find themselves in pragmatism (Adom *et al*., 2016). Perception levels among students derived through the questionnaire formed the

objective arm, whereas perceptions derived from the oral interviews shaped the subjective component of the study. In order to achieve or sustain conducive learning environments which support constructivism, investigation around them should be perpetual. The constructivist learning theorists held that learning is at its best when done through constructivist pedagogy; basing on the context of learning, content of learning, and commitment to learning (Taber, 2019).

Knowledge should not be isolated from social and cultural contexts because peers and teachers are resource persons to provide guidance and motivation through strategies like multimedia usage, scaffolding, simulations, case studies, and role-play which facilitate active construction of knowledge and promote student centeredness (Dagar & Yadav, 2016). Health based students are encouraged to learn in both virtual and physical teams, interact with the versed world, and collaborate with teachers as they maintain automaticity. The desires for social interaction which forms the origin bases of knowledge construction, involve sharing, comparing, and debating among learners (Dada *et al*., 2022). Student's voice ought to be central to the learning experience through active use of language and socialization among learners and trainers (Dada *et al*., 2022). Knowledge development is a gradual process which ought to be autonomous; underpinning the need for students to become interdependent, work in teams and have the teacher as a facilitator (Srivastava *et al*., 2021). The student should be responsible for his or her decisions in learning all aspects of the environment with clear objectives and road map.

2.2 Empirical Review

Demographically, this study has drawn participants of both gender, seven health-based programs, and three academic years. Globally, some studies stated that there were no significant differences between male and female students on perception towards clinical learning environment (Singh *et al*., 2021; Behkam *et al*., 2022). Similar findings were revealed in Kenya through a mixed method design using a self-administered questionnaire with a Likert's scale to collect data (Kabanya *et al*., 2017). However, Atwa *et al*. (2020) revealed that there were significant gender differences in the educational environment with females showing higher perception levels. Bakhshialiabad *et al*. (2015) found out that the total Dundee Ready Educational Environment Measure [DREEM] scores varied significantly between programs ($P<0.01$) through a descriptive cross-sectional study at Rafsanjan University in Iran. In Ghana, a cross-sectional study conducted to assess perceptions of undergraduate students towards the clinical learning environment at the University of Ghana showed that differences among health-based programs were statistically significant ($p=0.028$) (Quartery *et al*., 2022). Earlier studies have demonstrated significant differences across levels of study. However, a research conducted in India showed no significant differences ($P>0.05$) in all DREEM domains in respect to year of study (Singh et al., 2022). Shah *et al*. (2019) also conducted a study that showed no significant difference between fourth year and fifth year medical students. Ojuka (2021) showed significant differences through a cross sectional study at the University of Nairobi School of Medicine where fourth year students had the lowest perception levels towards the clinical learning environment ($P<0.05$).

Globally, concerning students' perception on clinical learning/teaching, failure by students to regularly attend clinical sessions has been shown to be a pointer to loss of motivation and interest towards their field of study; there is a direct relationship between overall performance and attendance in the clinical areas (Araujo *et al*., 2022). As demonstrated by Mohammed and Ahmed (2020) in Saudi Arabia, a hospital as a learning environment is an important factor when placing queries concerning trainee's perceptions in the clinical learning environment. Hongkan *et al*. (2018) conducted a cross-sectional study in 34 Thailand's teaching hospitals where the DREEM tool was employed and showed overall students' satisfaction towards their clinical learning environment to be more positive than negative (65.6%, n=200). However, the social self-perception and atmosphere in Thailand's medical schools were found to be issues of concern. In this ensuing study the DREEM tool was adapted in the Kenyan context.

In Brazil, Damiano et al. (2020) assessed students' perceptions of the medical school learning environment through a cross-sectional study at Federal University of Juiz de Fora (UFJF) where there was excellent satisfaction with the learning environment as demonstrated by a medical school learning environment score of 64.1%. In another cross-sectional study using DREEM tool in Iran, Bakhshialiabad *et al*. (2015) found out that the perception of the learning environment among students in medical science courses was more positive than negative with a DREEM mean score of 113.5 out of 200 (56.74%). In contrast to the studies by Damiano et al. (2020) and Bakhshialiabad *et al*. (2015), this study entailed methodological triangulation of the process since data was collected using a structured self-administered questionnaire adapted from the DREEM tool and interview schedule. According to Noble and Heale (2019), triangulation increases validity and credibility or trustworthiness of the research findings.

In China the clinical learning environment was rated to be positive despite showing low scores for the teaching atmosphere (3.77/5) in a cross-sectional observation study by Zhang et al. (2022) who used Clinical Learning Environment, Supervision and Teacher Scale (CLES+T), involving nursing students with advanced diploma and those with bachelor's degree. Another study indicated low satisfaction with the clinical education processes among medical students (38.5%, n=161) (Ayatollahi *et al*., 2021). This was a case of Yazd University of Medical Sciences in Iran; calls were made towards improvement of the quality of clinical education. In contrast Singh *et al*. (2021) in South Delhi

through a cross-sectional study, found medical students to have 75% (n=100) social self-satisfaction with their lives in the clinical areas. While evaluating satisfaction of undergraduate radiological sciences students in their clinical experiences at King Saud University, Al-Rammah (2018) found that they were less satisfied (40.2%, n=92) with the clinical teaching at the government hospital as compared to teaching at the university hospital.

In Africa, Kamphinda and Chilemba (2019) noted the need for clinical supervision as a key element in ensuring adequate social support system for health-based students. In a study conducted across Zimbabwe and Tanzania, Team Based Learning was found to be an effective strategy to learn with and perceived to be more stimulating than lectures in medical schools (Odongo & Talbert-Slagle, 2019). In another study, the clinical environment in a Tanzanian medical training college was found to be conducive for clinical teaching with an approval of 84.4% (n=208) among students (Gemuhay *et al*., 2019). Still on the situation in Africa, Challa et al. (2021) conducted a review of literature using PubMed and EBSCO on modern techniques of teaching and learning in Medical Education, and enlisted a few examples including Team Based Learning (TBL). TBL is associated with positive learning environment among students and points to social constructivism.

Academics are central to the success of these learning strategies and teachers should therefore facilitate the learning of concepts, initiate arguments and facts within instructional materials, and stimulate prompt reflection upon practice. The teachers should also negotiate a learning agenda with students, provide guidance and counseling services, and assist students to develop study skills as student teachers (Burgess *et al*., 2020). These objective areas can only be achieved if students' academic and social self-perceptions are well anchored as pre-requisites for life-long learning (Alizadeh *et al*., 2024). The promotion of learner-centered and problem-centered approaches to learning in health training institutions targets at producing competent health practitioners equipped with the adult learning skills which will ensure they withstand and handle the ever-changing needs of the communities they serve (Gonzalez-Argote & Castillo-Gonzalez, 2024).

This study developed an understanding of the strengths, weaknesses and opportunities that could help sustain a conducive clinical learning environment which would eventually promote lifelong learning and wellbeing. Amoo *et al*. (2022) conducted a descriptive qualitative study using phone call interviews on nursing students' perception of clinical teaching and learning in Ghana and found that teaching students new things and promoting autonomy were some of the most significant factors that fostered clinical learning; but lack of adequate clinical supervision, lack of equipment, poor students' attitude, and poor staff attitude were among challenges that faced learning in the clinical environment. To improve trustworthiness of the findings, this current situation employed both qualitative and quantitative methods in data collection.

In Kenya, a study conducted by Otunga *et al*. (2021), professional socialization and close supervision of clinical practices were found to be among the most important aspects of psychosocial support mechanisms to students while in the clinical areas. That was a cross-sectional study and only 47.4% of clinical teachers believed that the psychosocial support was satisfactory at Kenyatta National Hospital, concurring with Kaloki *et al*. (2015) whose study revealed that majority of clinical instructors were unfriendly and difficult to approach, leading to poor performances among health-based students. However, on the contrary Mugoh and Kamau (2020) while utilizing a quantitative approach conducted a cross-sectional study on perceptions and factors influencing students' learning in the clinical placement at Mathari Teaching and Referral Hospital and found that the overall rating was good, at 63% (n=54). In yet another scenario, Tuitoek *et al*. (2022) also found a positive perception towards overall clinical learning environment at Kenya Methodist University (61.7%, n=115) but had 54.8% (n=115) dissatisfaction with lecturers' involvement in the clinical training. The study recommended that institutions should employ more clinical instructors to assist students in their learning. The small sizes of the study populations might have however interfered with reliability and validity of the findings (Samuels, 2017; Datau *et al*., 2022). The studies did not employ universally standard measurement tools yet they failed to indicate reliability of the questionnaires used. The ensuing study increased population of study, involved comparisons and adapted a standardized tool.

III. METHODOLOGY

3.1 Study Area

This study was conducted at Masinde Muliro University of Science and Technology [MMUST] located within Kakamega Town, western part of Kenya at an altitude of between 1240 to 2000 meters above sea level. The area was purposively sampled because it harbored the population of interest with over 1200 students, who were available, not dispersed over wider geographical range yet exhibited varied characteristics in terms of academic programs, age, and gender among other factors. The university then known as Western College of Arts and Applied Sciences [WECO], was introduced in the year 2002 as a constituent of Moi University by legal notice number 373 under the Moi University Act (Cap 210A). According to the January 2024 Webometrics Ranking Web, the university was among top ten universities in Kenya and the best in Western region (Ochieno, 2024).

3.2 Research Design

This study adopted cross-sectional study design which entailed use of both qualitative and quantitative methods, and enabled the researcher to determine status of affairs of the clinical learning environment (Wang & Cheng, 2020). With the intention of achieving triangulation, the researcher narrowed down to convergent design by collecting quantitative and qualitative data concurrently and interpreting them together. Study design points to the philosophical assumptions informed by the procedures of inquiry and objectives brought to the study by the researcher (Ranganathan, 2019).

3.3 Study Population

Health-based students at MMUST drawn from respective Bachelor of Sciences programs namely, Medicine and Surgery, Clinical Medicine, Surgery and Community Health, Medical Laboratory Sciences, Nursing, Optometry and Vision Science, Nutrition and Dietetics, and Physiotherapy constituted the study population upon meeting the inclusion criteria. Consent was sought from every participant.

3.4 Sample Size

The accessible population was 1233 students. This population was used to develop the study's sampling size. Taro Yamane formula was used since it is recommended for survey researches where the population is known (Uakarn *et al.,* 2021). As demonstrated in Table 1, the sample size for the study was 302 students. The sample size for each stratum was determined using proportionate stratification approach. With proportionate stratification, the sample size of each stratum is proportionate to the finite population size (Ozturk, 2019).

Table 1

Sample Size Determination

Course	**YEAR 2**			**YEAR 3**			**YEAR 4**			**Totals**		
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**
Clinical	8	5	13	5	3	8	11	5	16	24	13	37
Nursing	14	15	29	9	8	17	8	7	15	31	30	61
Medicine	8	3	11	8	4	11	4	3	7	20	10	30
Optometry	14	6	20	7	4	11	6	4	10	27	14	41
Laboratory	15	7	22	10	6	16	10	6	16	35	19	54
Physiotherapy	13	8	21	6	4	10	7	7	14	26	19	45
Nutrition	8	9	17	2	3	5	5	7	12	15	19	34
Sample size	**80**	**53**	**133**	**47**	**32**	**78**	**51**	**39**	**90**	**178**	**124**	**302**

KEY: M- Male, F- Female, T- Total

3.5 Data Collection and Analysis

The researcher notified the respective leaders in their departments regarding purpose and nature of the study. Thereafter, arrangements about time, venues, and other logistics were made in conjunction with the students' class representatives. On the action days the researcher reached participants and their class representatives, availed an explanatory statement detailing the study. The data collection process took about six months, spanning from June 2024 to November 2024. In order to achieve triangulation strategy, the study entailed qualitative and quantitative data collection instruments. Qualitative data was collected using interviews, where interview schedules were utilized. The tool had 11 semi-structured questions. Quantitative data on perception levels towards the clinical learning environment were obtained using a self-administered structured standardized questionnaire.

The questionnaire had two sections: Section A entailed the demographic information, whereas section B was the adapted Dundee Ready Education Environment Measure (DREEM) score template. The DREEM was originally developed at Dundee University, adopted, and validated across the world as a tool for assessing quality of educational environment (McAleer & Roff, 2001; Noreen *et al.,* 2018). The adapted DREEM score had three sub-sections (perception on clinical teaching, perception on clinical skills, and perception on clinical assessments) with a total of 50 statements assigned with strongly disagree, disagree, unsure, agree, and strongly agree ratings (Rada, 2019). Responses to each individual item in the DREEM survey were scored on a five-point Likert type scale from zero to four respectively. The maximum possible scores were 200 for the overall DREEM, 100 for perception on clinical teaching, 56 for perception on clinical skills acquisition, and 44 for perceptions on clinical assessments; with 50, 25, 14, and 11 items respectively. The overall total scores and total scores for each subscale were calculated separately, with average scores tabulated for each group.

The total scores, subscale scores and individual item scores were expressed as means and standard deviation. Adaptation of a research tool to fit in the culture or prevailing circumstances is commendable and should involve

discussions with experts (Vallejo-Medina *et al.*, 2017). Perception of students as determined by DREEM was classified as "very poor" for a score of 0 to 50, "Significant problems" for a score of 51 to 100, "more positive than negative" for a score of 101 to 150 and "very good" for a score of 151 to 200. The adapted DREEM tool's overall internal consistency was found to have a Cronbach's Alpha Coefficient of 0.830, which is acceptable (Taber, 2017) (Table 2).

Table 2
Reliability of the Questionnaire

Variable	n (items)	Cronbach's alpha
Overall DREEM	200	0.830
Perception on Clinical Teaching	100	0.804
Perception on Clinical Skills Acquisition	56	0.771
Perception on Clinical Assessments	44	0.712

Quantitative data was coded in statistical package for social sciences (SPSS) version 27 for descriptive and inferential analyses. Determination of the perception levels employed calculation of percentages, means and standard deviation, whereas comparisons between groups was achieved through analysis of variance [ANOVA] with statistical significance level at P <0.05. The quantitative data were presented in tables and pie chart.

IV. FINDINGS & DISCUSSION

4.1 Response Rate

As shown in Figure 2, there was a response rate of 90.0% (n=272). This high response rate was attributed to strategies employed by the researcher; a response rate above 60% in social sciences is acceptable (Holtom, *et al.*, 2022).

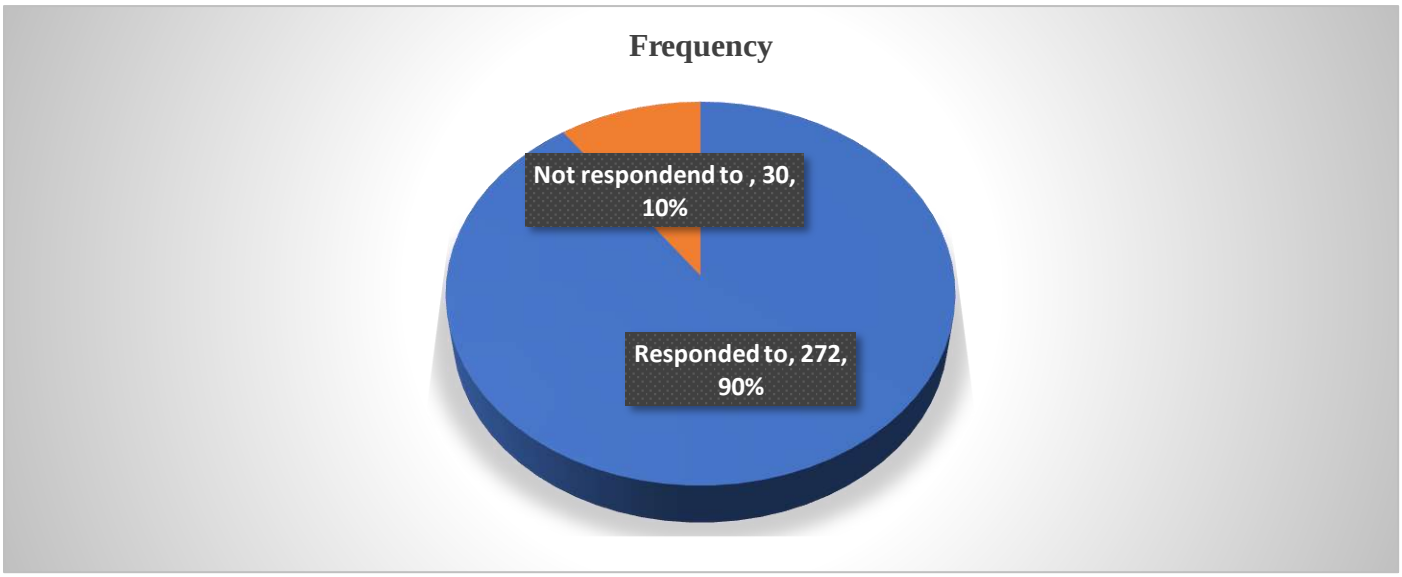

Figure 1
Questionnaire Response Rate

4.2 Demographic Characteristics of the Respondents

Majority of the respondents 163(59.9%) were males. Previous studies had demonstrated mixed gender distribution in regard to dominance (Singh *et al.*, 2021; Kabanya *et al.*, 2017). The study also revealed that majority of the respondents 239(87.9%) were aged between 18 and 23 years, with those aged above 30 years 5(1.8%) being the least. On the year of study, the results showed that majority of the respondents 136 (50%) were in their second year of study followed by 93(34.2%) who were in third year. Furthermore, the results showed that majority of the responses 55(20.2%) were enrolled in nursing followed closely by medical laboratory sciences 48(17.6%)
(Table 3).

Table 3
Demographics

Characteristic		Frequency	Percent (%)
Gender	Male	**163**	**59.9**
	Female	109	40.1
Age	18-23	**239**	**87.9**
	24-29	28	10.3
	30-35	5	1.8
Year of study	2	**136**	**50.0**
	3	93	34.2
	4	43	15.8
Name of program	Clinical Medicine	33	12.1
	Nursing	**55**	**20.2**
	Medicine and surgery	27	9.9
	Optometry and vision science	37	13.6
	Medical laboratory science	48	17.6
	Physiotherapy	41	15.1
	Nutrition and Dietetics	31	11.4
	Private/self-sponsored	65	23.9
	Other sources of funding	6	2.2

4.2.1 Effect of Gender on Perception Levels

The two groups perceived their environment positively. No statistically significant difference was demonstrated between male and female genders for the perception on clinical teaching domain (Table 4). This phenomenon concurs with a study conducted at Tehran University of Medical Sciences, Iran where gender was found to be a non-determinant factor when assessing the clinical learning environment ($p>0.05$) (Behkam *et al.*, 2022). However, Atwa *et al.* (2020) findings gave a varying state of affairs with significant gender differences in students' perception towards clinical learning environment. Gender is an important aspect to consider since it might have affected how students looked at their clinical learning environment depending on cultural backgrounds and past experiences including and not limited to historical injustices.

Table 4
Effect of Gender Differences

		Sum of Squares	df	Mean Square	F	Sig.
Perception on Clinical Teaching	Between Groups	.277	1	.277	.002	.963
	Within Groups	34639.355	270	128.294		
	Total	34639.632	271			

4.2.2 Years of Study and Perception Levels

Shah (2019) in Nepal revealed no mean differences across levels of study. This present study concurred with Ojuka *et al.* (2021), showing significant statistical difference in means across years of study ($p=0.025$) (Table 5).

Table 5
Effect of Years of Study on Perception Levels

		Sum of Squares	df	Mean Square	F	Sig.
Students' Perception on Clinical Teaching	Between Groups	934.999	2	467.500	3.731	.025
	Within Groups	33704.633	269	125.296		
	Total	34639.632	271			

4.2.3 Association between Programs and Perception Levels

Statistically significant difference was demonstrated among the seven academic programs in the DREEM scores for perception on clinical teaching ($p = 0.001$) (Table 8). Singh *et al.* (2021) in India showed statistically significant differences across programs, supported by earlier studies in Iran where significant differences were found (Bakhshialiabad *et al.*, 2015). Quartery *et al.* (2022) in Ghana also revealed differences across five medical related programs ($p<0.05$). The influence of health professional tribalism cannot be underrated when assessing perception levels on clinical learning environment across the health-based programs.

Table 6

Differences among Programs

		Sum of Squares	df	Mean Square	F	Sig.
Students' Perception on Clinical Teaching (SPCT)	Between Groups	4082.948	6	680.491	5.901	.000
	Within Groups	30556.684	265	115.308		
	Total	34639.632	271			

4.3 Overall Perception of Clinical Learning Environment

The overall clinical learning environment at MMUST was found to be good with 84% (n=200) rating (Table 9). These phenomena concurred with findings in earlier studies across the globe and locally (Mugoh & Kamau, 2020). The findings were however in contrast to a few studies. For instance, Ojuka *et al.* (2021) found the clinical learning environment at the University of Nairobi school of Medicine to have had many problems with a DREEM score of 46.7% (n=200). These varying findings pointed to different circumstances at play.

Table 7

Overall Scores

Objectives	Maximum score of the scale	Mean (SD)	Percentage of maximum score
Perception on Clinical Learning Environment	200	168.00(20.040)	84.00
Perception on Clinical Teaching	100	86.29(11.306)	86.29

4.4 Perceptions on Clinical Teaching

Clinical teaching is one among the pillars of a clinical learning environment, where the clinical teachers are tasked with the duties of supervising and facilitating learning after setting the stage in the classroom (Araujo *et al.*, 2022). The health-based students' perceptions on clinical teaching was rated and interpreted to be very good, with a score of 86.29% derived from a mean of 82.29/100. During the interviews the clinical learning environment was largely perceived to be good but with a few areas like psycho-social support which needed attention. These findings concurred with Hongkan *et al.* (2018) who found the clinical teaching environment across medical teaching institutions in Thailand to be more positive with a DREEM mean score of 131.1 (65.6%). Similarly, Damiano et al. (2020) in Brazil found a positive satisfaction among students towards clinical teaching in their respective universities (64.1%, n=248). However, on the contrary, less satisfaction was observed in studies conducted by Ayatollahi *et al.* (2021) at Yazd University of Medical Sciences in Iran and Al-Rammah (2018) at King Saud University in Saudi Arabia, where the ratings were 38.5% (n=161) and 40.2% (n=92) respectively.

Majority of the participants perceived the clinical teaching at the university to be encouraging, stimulating, and student-centered giving means corresponding with percentage scores above 72% (n=4); a phenomenon resonating with Alizadeh *et al.* (2024) who advocated for problem-based and learner-centered approaches to clinical teaching in order to realize growth in perception among students. Additionally, the health-based programs were found to be well planned and updated, providing an experience that was not disappointing, and perceived to be in a relaxed atmosphere with scores above 84% (n=4). These concurred with Amoo *et al.* (2022) who called for promotion of updated ideas and self-direction among students in order to improve performance in the clinical learning environment. Still on the same agenda, the clinical teaching was perceived to be less focused on laying emphasis on factual learning and rote learning as demonstrated by a mean score of 87.5% (n=4).

The clinical teaching facilitated students to be empathetic and professional in their practices since topics were integrated with clinical problems encountered in the hospital and community; all points gave an equivalent score of 87.5% (n=4). It was also noted that objectives of the health-based programs were highly rated as clear with a 95% (n=4) approval among students who also felt that there were opportunities for them to develop interpersonal skills and that teachers gave clear examples. These findings concurred with Otunga *et al.* (2021) who found close supervision and professional socialization to be ingredients of improving performance among students in the clinical area.

The clinical teaching was significantly found to be strong in encouraging students to be active learners (92.5%, n=4) in agreement with Gonzalez-Argote and Castillo-Gonzalez (2024) who advocated for student centeredness and self-direction. Again, there was a good number of students who felt that the enjoyment of the course outweighed its stress (90%, n=4) despite having a significantly lower ratings for the social support systems (70%, n=4). This situation related to the atmosphere ratings of Thailand's medical schools among students which were found to be low despite experiencing high overall DREEM scores (Hongkan *et al.*, 2018). The phenomenon also reflected the situation in China where the pedagogical atmosphere had the lowest score of 3.77/5 compared to other domains (Zhang *et al.*, 2022).

Singh *et al.* (2021) demonstrated high social self-satisfaction among health-based students to be at 75% (n=100). Clinical supervision and Team Based Learning were fronted to be more stimulating strategies to consider in handling the social dissatisfaction among students (Kamphida & Chilemba, 2019; Odongo & Talbert-Slagle, 2019). When asked

about what should be done to improve clinical teaching environment during the interviews the students' responses pointed to preexisting gaps in the psycho-social support system within the clinical learning environment. The summary of scores for individual statements are shown in Table 10.

Table 10

Students' Perceptions on Clinical Teaching

Response	Means	%	SD
I am encouraged to participate during clinical teaching sessions	3.7	92	0.30
The clinical teaching is often stimulating hence aid in my learning	3.2	80	0.25
The clinical teaching is student-centred	2.9	72	0.23
The clinical teaching helps me to develop my clinical skills competence	3.4	85	0.27
This program is well time-tabled with clear learning outcomes	3.7	92	0.30
The clinical teaching is well focused and updated	3.5	87	0.28
The clinical teaching helps to build my confidence	3.4	85	0.27
The clinical teaching time is put to good use	3.7	92	0.30
The clinical teaching does not overemphasize factual learning	3.5	87	0.28
I have learnt a lot about empathy in my profession	3.5	87	0.28
I am clear about the learning objectives of the course	3.8	95	0.31
The clinical teaching encourages me to be an active learner	3.7	92	0.30
Long-term learning is emphasized over short-term learning	3.6	90	0.29
The clinical teaching is not teacher-centred	3.2	80	0.25
There are opportunities for me to develop interpersonal skills	3.3	82	0.26
Topics are integrated with clinical problems we encounter in the community and hospital	3.5	87	0.28
The atmosphere is relaxed during tutorials	3.7	92	0.30
I find the experience not disappointing	3.4	85	0.27
I am able to concentrate well	3.7	92	0.30
The enjoyment outweighs the stress of the course	3.6	90	0.29
The teachers give clear examples	3.6	90	0.29
The atmosphere motivates me as a learner	3.2	80	0.25
I feel able to ask the questions I want	3.7	92	0.30
There is a good support system for students who get stressed	2.8	70	0.23
I am not too tired to enjoy the course	3.3	82	0.26

4.5 Emerging Themes from the Interviews

4.5.1 Status of the Clinical Learning Environment

The students felt that the clinical learning environment was fair, neither perfect nor bad. The equipment in the environment was however said to be inadequate. Some students applauded the environment to be meeting their expected needs, whereas some students felt that the patients' privacy was not guaranteed, thus affecting their confidence and cooperation.

4.5.2 Challenges in the Clinical Learning Environment

The psycho-social support system to students in the clinical teaching environment was said to be inefficient. Interviewees expressed themselves on the need for the University to relook at the welfare of the students. Travelling expenses and meals were perceived to be affecting students' wellbeing and performances. The interviewees also pointed to challenges associated with language barrier, physical space, inadequate equipment, and competition involving students from allied training institutions. The skills lab was said to be worn out and the equipment it occupied needed repairs. The anatomy lab was said to be inadequately staffed and unable to serve all students who needed it.

4.5.3 Proposed Solutions to the Challenges

They suggested need for mentorship programs that will identify students' social and welfare issues. They also advocated for need of more time for participation in the clinicals and having good mentors who are dedicated. They recommended need to improve on skills lab services and more staffing towards the Anatomy lab.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The clinical learning/teaching environment was perceived to be very good. It facilitated students to be professional and empathetic in their practices. The psycho-social support system was however perceived to be inefficient to a few students who got demotivated and discouraged.

5.2 Recommendations

Recommendations for Action: The University should strengthen the clinical teaching psycho-social support system by providing mechanisms for identification and management of those in need. Recommendations for Further Research: Future research on the perception of clinical teaching should involve teachers. Further studies on psychosocial support systems in the learning institutions are also recommended.

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