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Research Article

Physiotherapy Undergraduate Students' Perception About Clinical Education; A Qualitative Study

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Abstract

Background: Clinical education is an important component of physiotherapy education programs. It provides insights to the students in the fields of physiotherapy practice, develops leadership, and enhances their clinical skills in patient assessment, examination, diagnosis, treatment, planning, and intervention selection. The dimension of physiotherapy education is in the developing phase in Nepal. For further growth, the experience and the perception of the students are very important. Through this, the facilitators and barriers in physiotherapy clinical education need to be recognized. Therefore, this study aimed to explore the facilitators and barriers in physiotherapy clinical education in Nepal from a student's perspective.

Objectives: The main objective of this study was to identify the perception of physiotherapy undergraduate students about their clinical education and to find out the facilitators and barriers in clinical education.

Methods: A qualitative research using focused group discussion was conducted. Ethical considerations were taken from respective departments and IRC approval was taken. BPT 3rd year, 4th year, and intern students of KUSMS were called to participate in the study. After the consent from the participants, focus groups of 6 participants (2 participants from each 3rd year, 4th year, and intern) were formed. In five FGDs, data saturation was observed and no further FGDs were conducted. FGDs were collected with audio tape recordings. The data were transcribed verbatim and translated into the English language. Then data coding was done and themes and sub-themes were generated from the codes.

Results: Through the transcribed and translated data, seven themes were generated which were clinical education, student expectation, student attitude and behavior, roles and responsibilities of clinical educators, exposure, resources, and miscellaneous. These headings explained the perception of facilitators and barriers.

Conclusion: The facilitators and barriers to physiotherapy clinical education were identified through student's perspectives. These findings should be considered while preparing the guiding document for clinical education to enhance the quality of education.

More Information

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Keywords: Physiotherapy; Clinical education; Facilitators; Barriers

Abbreviations: BPT: Bachelor of Physiotherapy; DMI: Dhulikhel Medical Institute; FGD: Focus Group Discussion; IOM: Institute of Medicine; IRC: Institutional Review Committee; KU: Kathmandu University; KUSMS: Kathmandu University School of Medical Sciences; MPT: Masters of Physiotherapy; NHPC: Nepal Health Professional Council; PT: Physiotherapy; WCPT: World Confederation of Physical Therapy

Introduction

Background

Clinical education is the most important component of Physiotherapy (PT) education which combines both theoretical and practical knowledge [1]. Students apply this knowledge to a variety of disease conditions related to orthopedics, neurology, cardiopulmonary, pediatrics, and so on [2]. Clinical placement experience provides students with insights across PT practice fields, develops leadership, and also helps to enhance their clinical skills in assessment, examination, diagnosis, planning, treatment, and intervention selection [3]. It provides opportunities for PT students to learn things through practice, experience, and reflection.

PT education was formally started at the Institute of Medicine (IOM) from 1983 to 1990 at the certificate level. This certificate level of PT education was later commenced at Dhulikhel Medical Institute (DMI) under Kathmandu University (KU) from 2003-2009. With the demand to fulfill quality PT services in the country, the certificate level PT education was upgraded to bachelor level in 2010. The Bachelor of Physiotherapy (BPT) course duration is four and half years which includes four years of academics and six months of internship. World Confederation of Physiotherapy (WCPT) has recognized clinical education as an essential element of the BPT program [4]. Nepal Health Professional Council (NHPC) has recommended 1000 hours of clinical education from the first year to the fourth year and an additional six

months of internship after completing the fourth year as a requirement for enrolling as a professional physiotherapist [5]. Globally, WCPT continues to emphasize the need for standardized clinical education to ensure graduates possess the competencies required for safe and effective practice.

Many studies have already been conducted in other countries to assess the quality of PT programs [1,2,6]. They showed for effective PT clinical education, students need to have features like responsibility, willingness to learn, sufficient information, and high self-confidence [2]. Besides the student's role, many other factors like educator workload, teaching strategies, curricular knowledge, and clinical education model affect clinical education [7]. Adequate preparation for placement, sufficient staffing, and time allocation for the administrative work e.g. paperwork were reported as facilitators in clinical education whereas characteristics of clinical educators like irresponsibility, insufficient clinical skills, lack of paying attention to professional ethics, and lack of supervision over the performance of the students were reported as the barriers in clinical education [2,6]. Studies done in Nepal for nursing education reported the challenges faced were a lack of infrastructure, equipment, and skilled personnel which hindered effective clinical education [8]. A study conducted by SP Nair in 2021 perceived various organizational, training-related, and personal barriers to the use of evidence-based practice [9].

For the quality education system and to work as a health care professional in the future, clinical education is important in BPT education for PT students. PT education is in a growing phase, and the development of clinical education with proper guidelines will enhance the quality of ongoing PT education. As students are the main receivers of clinical education their experience and perception of clinical education should be valued for further development. Hence this study aimed to identify the perception of the students with their perceived barriers and facilitators in PT clinical education.

Statement of the problem

Clinical education in PT education helps to develop the skills among students [1]. PT is one of the specialized branches of medical sciences which require high academic and professional skills. PT education is in the developing phase as it has not been long since PT education commenced in Nepal [10]. For the betterment and quality of education, the strengths and weaknesses of the current clinical education system in PT should be identified [6]. One of the most effective methods to assess the quality of clinical education in PT is to visualize through the student's perspective as students are the main receiver of clinical education [2]. Some studies have shown facilitators and barriers in nursing clinical education in Nepal [11]. However, no studies have been done in Nepal to find out the facilitators and barriers in PT clinical education. Hence, this study aimed to explore the facilitators and barriers in PT clinical education in Nepal from the student's perspective.

Research question

- What are the perceptions of physiotherapy undergraduate students about clinical education at Kathmandu University School of Medical Sciences?
- What are the facilitators for physiotherapy undergraduate students during clinical education?
- What are the barriers for physiotherapy undergraduate students during clinical education?

Objectives

General objectives

- To study the perception of undergraduate physiotherapy students about their clinical education.

Specific objective

- To explore the facilitator in physiotherapy clinical education from a student's perspective.
- To identify the barriers in physiotherapy clinical education from a student's perspective.

Literature review

Clinical education

Clinical education is a key for the physiotherapy programs [1]. It allows students to integrate knowledge, skills, and professional behaviors and apply them in a clinical setting [4]. It is essential to prepare undergraduate physiotherapy students to gain profession-specific knowledge, develop technical skills, and become socially and ethically competent to practice independently [12]. Kathmandu University School of Medical Sciences (KUSMS) is the pioneer institution for bachelor of physiotherapy. Students get exposure to clinical settings from the first year to the internship. During the first and second year, students have observational placement where they observe the clinical setting visiting various departments, looking at the areas of physiotherapy practice, assessment and interventions, documentation, multidisciplinary approaches, ethical regulations, and so on. From the third year to the internship, students assess the patients, plan and make goals and provide the treatment interventions, learn the patient's documentation process critical thinking, and clinical reasoning under the guidance and supervision of clinical educators [13]. A study conducted among nursing students in Iran (2015) on factors affecting the quality of clinical education showed accurate and concise implementation of the curriculum is required to improve the quality of clinical education which includes providing an appropriate educational atmosphere and giving awareness to instructors and hospital personnel about their responsibility regarding students and their duties [14].

Student's perception about clinical education

Student's perceptions of learning are important and have been found to have a greater impact on clinical learning [15]. Perceptions affect how learners view materials, their learning approaches, and outcomes [16]. Positive perceptions are vital for learning and improvement in performance. Learners with negative perceptions may not develop the skills or use them in clinical practice. A study of the physiotherapy students' and clinical educators' perceptions of teaching and learning conducted in Australia mentioned students' perceptions in clinical education must be understood and addressed necessarily [17]. A study on voluntary communication skills in clinical education conducted in Pokhara Nepal in 2006 showed predominantly positive attitudes among the students [18].

A study on barriers and facilitators for undergraduate physiotherapy clinical education in the primary care setting among students and clinical educators conducted in Ireland in 2014 reported enthusiastic and motivated students adequately prepared for placement, staff willing to be involved in student education, having enough staff to take a student and enough time allotted for dealing the paperwork, tutor availability to support the staff taking the student and other adequate facilities were the facilitators for the clinical education [6]. Mandatory training, workshops, rewarding and motivating, provision of funding, educational updates, and access to resources were the facilitators for clinical education as shown by the study done in 2014 on nursing students in Nepal [11].

A study in 2014 on barriers and facilitators in providing clinical education to physiotherapy students showed no tradition of taking students, not enough staff, prepared in terms of pre-reading and goal setting, lack of tutor support, unrealistic expectations from clinical educators, no support from universities and short placement duration were the barriers in clinical education [6]. According to the students' perceptions, incompetent clinical educators, clinical educators with inadequate clinical skills, and a lack of observing professional ethics were reported as the barriers to clinical education [3]. Barriers due to clinical education systems like inappropriate planning and inappropriate management of clinical education courses were identified [2]. Low funding from the government in health and education, limited availability of clinical education placement, and high workload of clinical physiotherapists were found as the difficulties in clinical education in New Zealand [19].

Recommendations for clinical education

A study conducted on the physiotherapy clinical education model in Scotland suggested judgment about the consistency, generalizability, applicability, and clinical impact of evidence were required for the uptake of clinical education [20]. A study on evidence-based medicine (2004) recommends integration of the evidence-based practice encourages the integration of the best available evidence with the clinical experience of those who seek to utilize the information [21]. A study in Australia in 2007 on physiotherapy clinical education recommended maximum time should be given by clinical educators to students, clinical educators should attempt to match students' practical experience and provide multiple opportunities for learning including caseloads and case variations and adequate preparation for clinical education [22].

Methodology

Study methods

Study design: A qualitative research-phenomenological approach using focused group discussion (FGD) was conducted to find out the physiotherapy undergraduate student's perception of clinical education.

Focus group discussion: A focus group discussion is a widely used qualitative data collection approach where a researcher assembles a group of individuals to discuss a specific topic aiming to draw from personal experience, beliefs, perceptions, and attitudes of the participants through a moderated interaction [23]. We have chosen this method as there was inadequate existing knowledge of a subject and elaboration of relevant issues [24]. Based on research objectives, a list of questions was prepared as guiding questions for FGDs. Thereafter, participants were selected and recruited [23]. FGDs were run until the principle of theoretical data saturation was achieved [25]. One facilitator conducted and facilitated the group discussion and one analyzer observed the non-verbal interactions like behavior and actions of the participants [26]. For data collection during FGD, audio tape recording is essential [27]. The collected data was transcribed verbatim and translated into the English language. Then data coding was done which involved two steps. The first step was initial coding which involved the generation of numerous category codes without limiting the number of codes. The second step involved focused coding by limiting the number of codes where the researcher eliminated, combined or sub-divided the codes identified in initial codes [25]. Once all the data are analyzed, the researcher needs to consolidate the result into a coherent report for dissemination [23].

Study population and sampling: BPT 3rd year, 4th year, and intern students of KUSMS were included in this study. All the student participants were informed via their group email about the study mentioning that only two students are required from each batch for one focus group discussion. The principle of the purposive sampling method was used.

Selection criteria

Informed consent was obtained before performing the discussion. The study included

I. BPT 3rd year, 4th year students and interns.

II. Enrolled at KUSMS for the physiotherapy program.

III. Students who responded to the mail and showed willingness to participate.

Exclusion criteria

I. Students who do not provide consent.

Data collection procedure

First of all, permission was taken from the Director of the physiotherapy program of KUSMS. The ethical approval was taken from the Institutional Review Committee (IRC) of KUSMS. Permissions were taken from BPT 3rd year, 4th year, and intern coordinators of KUSMS for the participation of students in the study. For the inclusion of participants, an email was sent to their class group email, and through the email they selected the representatives from the class and participated in the FGDs. Two students from each 3rd year, 4th year, and interns had formed the group for each FGD. Before conducting FGDs, objectives, and details about the study were explained to participants and written informed consents were taken. The venue for all the FGDs was the physiotherapy academic meeting room where there was a low level of distraction, access to all participants, and a comfortable environment. All the participants were kept in round tables where they could see each other clearly. The facilitator was not from the physiotherapy faculty but from the medical faculty, the same faculty facilitated all the FGD, and one analyzer among physiotherapy students noted the activities during FGD and was audio recorded. After data collection, all participants were given a code like (p1, p2…), and the FGD was conducted until the principle of data saturation was noted and a total of five FGDs were conducted. Then recorded audio data was transcribed verbatim. The transcribed data were translated into the English language. To maintain the consistency of translated data, the researcher read the data multiple times. Then data coding was done which involved two steps i.e. initial coding and focused coding. From the extracted codes themes and sub-themes were generated.

Outcome measure

Open-ended questions generated for the focus group were from the experience interviews of the previous batch interns and also through the available literature. The questions asked during the focused group discussion are shown in **Annexure 5**. The verbal cues used during the facilitation of the focus group by the facilitator are shown in Table 1.

Ethical consideration

Approval from IRC with approval number 17/15, Kathmandu University School of Medical Sciences was taken before conducting this research. There was no risk recorded for and from the involved participants which were well explained in information sheets as well as verbally during data collection time.

Table 1: Verbal cues used during FGDs.

Can you describe your experience?
Could you elaborate further on this?
Can you provide some examples?
Are there any things left out to be discussed?
What's your opinion on this?

Data analysis

Data analysis was done by content analysis method. Initially, 258 color codes were extracted from the translated FGD data using Microsoft Word and Microsoft Excel. After eliminating, combining, and sub-dividing the initial codes, 86 codes were extracted by focused coding. Thematic analysis was conducted for the focused codes and 7 main themes and 26 sub-themes were generated. The process of theme generation is shown in Table 2.

Results

In five FGDs, 30 participants were included with a mean age of 23.5 years. The demographics of the participants included in the FGDs are shown in Table 3.

Demographics of participants *n* = 30

Through the FGDs, the experience and the perception were recorded which were shown in Table 4 with the themes and sub-themes.

The descriptions of the following themes were described below with the findings received from the FGDs.

1. **Clinical education:** Clinical education was reported as the clinical experience gained during student life where they learned skills associated with assessment, diagnosis, and treatment. While describing it placement duration, learning environment, means of learning, modes of learning, preparation, multidisciplinary knowledge, and communication are found as the sub-themes accordingly.

    a) Placement duration: Participants reported standing the whole day during the clinical education was difficult leading to back pain, leg pain, and dizziness. They have had clinical exposure since the first year. They have observational placement in the first two years and in the remaining years, they assess, evaluate, diagnose, and provide interventions under the guidance and supervision of educators. The observational placement made them oriented in a clinical setting. Throughout the study period (first year to internship), students got enough exposure in clinics.

    P5: *"Whole day placement was really tiring and we don't get a chance to rest. That caused us back pain and leg cramps and sometimes dizziness too."*

    b) Means of learning: Participants have reported implementation of gained theoretical knowledge in a clinical setting occurs through practical skills like history taking, intervention selection, patient handling, and rapport building with patient and peer groups. This

Table 2: Theme generation process.

Content area	Codes	Categories	Descriptive themes
What is your experience about your clinical education and how should it be? How do you prepare for your clinical education? How do you expect your clinical educator should be? What are the factors that affected you learning during clinical education? What difficulties did you face during clinical education? According to you, how can clinical education be more effective?	Data were coded with different colors. Yellow color: data related to exposure Red color: data related to clinical learning Light blue color: data related to COVID-19 Green color: data related to teaching approaches Gray color: data related to expectations of student. Pink color: data related to preparation for clinical education Blue color: data related to academic factors Dark blue color: data related to discussions Dark Yellow color: data related to clinical educator Purple color: data related to student's personal factors Dark red color: data related to equipments Total initial codes: 258 Total focused codes: 86	From the color codes categories were extracted. The codes that match with one another were kept together. Those matching codes were given a suitable word as a sub-themes or categories. Total of 26 categories were extracted.	The categories were kept under the broader heading as main themes. Themes were generated from the categories. Total of 7 themes were generated through thematic analysis.

Table 3: Academic year and gender percentile of participants.

	Gender		Age(years)
Academic Years	Male	Female	
3rd Year	40%	60%	21-23
4th year	10%	90%	22-25
Intern	50%	50%	23-26
In the fourth year, there were fewer male participants because there were only 3 male students enrolled out of 27 total students.			

Table 4: List of themes and sub-themes.

1. Clinical education	Placement duration Means of learning Modes of learning Learning environment Preparation Multidisciplinary knowledge and communication
2. Student's expectation	Achieve goals and objectives Teach and supervise Guidance Implement knowledge
3. Student's attitude and behavior	Friendly Enthusiastic Fear Confidence Mood Negligence
4. Roles and responsibilities of clinical educator	Characteristics Facilitator Teaching approaches Feedback
5. Exposure	Conditions Areas of placement Multidisciplinary Clinical sites
6. Resources	Infrastructure Equipment
7. Miscellaneous	Pandemic

builds confidence among students for a professional career which was difficult in the initial days of clinical placement as all the theoretical knowledge was not gained but with continuous exposure, and repeated practice, gained more clinical knowledge through active learning. Active learning helped them to practice evidence-based learning. This helped them build habits for searching the recent evidence and the available treatment approaches for the cases seen in the ward. The cases that the students get to see were discussed so the knowledge was circulated. If some students did not get a chance to see some cases, they were discussed through presentation. Sometimes educators bring the case in class and discuss the case in real scenarios. The presentation of a case or a topic in each department helped in learning. At the same time sometimes, the presentation made them feel overloaded though they learned.

A4:*"Every day one person used to come with recent evidence and present after seeing the case. I don't know how much prevalent is that practice now but it has helped us a lot till now and we remember many things."*

c) Modes of learning: Learning was expected to be from clinical educators but through the peer group discussion it was more fruitful. The seniors in the placement added the space for discussion and made clinical education more fruitful. Learning was obtained through the reflection on the activities done during their education while preparing for a reflective diary which even helped them to identify their own strength and overcome their weakness. The learning in clinical education was enhanced with the habit of searching and reading on the internet at the point of doubt.

d) Learning environment: For effective learning, the environment plays a vital role. While doing the clinical placement, proper space in the wards to conduct discussions, keep belongings, space to do some recreational activities, and rest were essentials. Different medical students in the same place at the same time makes it more crowded which made difficult for effective communication and discussion for learning. This also hampers the interdisciplinary relationship. Instead of fulfilling the objectives, they were pressurized by giving unnecessary tasks, completing the cases rather than learning, collecting signs, and going here and there. They focused calm and free environment was good for learning and it would have been better if they had a space in wards.

B2: *"There is no proper space to hold a discussion in wards. Too many people discussing is not appropriate in wards. It'd be nice to have a proper place for discussions."*

C6: *"Physiotherapy students come in bulk like 12-13 persons and while doing discussion it seems like making noise. If we stand there for a while nurses used to shout saying physiotherapist students have made crowd in ward. That's not a good point."*

B4: *"Some factors like the hospital staff also affect our clinical education. For e.g. don't know much about other faculties but even if a small thing happens, physiotherapy students get blamed every time. Even if it actually didn't happen, physiotherapy students will be the ones getting the blame. That makes us not want to go there and even if we do, we can't focus because of it. The blame comes from the staff, the patients and we don't know if it's from misunderstanding or others."*

e) Preparation: Before clinical placement, students need to do preparations such as looking into the objectives of the placement, goal setting, revision of the theory knowledge, arrangements of the tools and the accessories required during assessment like the stethoscope, goniometer, inch tape, workbook, logbook, etc. Orientation provided in the clinical setting to know the workplace was better which saved time as well as in efficiency of the students. Not all the students prepare prior, few students preferred to know the clinical placement site and prepare accordingly.

f) Multidisciplinary knowledge and communication: Working in a multidisciplinary team during clinical education enhanced student's communication skills. Among the various forms of communication skills, documentation of the patient assessment is one of the key learning during clinical education. These documents should be transparent to all as it was the mode of communication between the multidisciplinary team and the patient. The referral system formalizes interdepartmental communication which was observed during the clinical education. During clinical education, small communication between interdisciplinary teams demands time. So, basic knowledge from the other specialties will lessen the time demands during clinical education.

P3: *"We have full five- six weeks placement and in that we need to encounter a lot of referral cases from orthopedic ward to OPD so, basic nursing care, medical care are important to us like using head plug, bandaging, etc so that we don't need to call nurse every time we assess patient. We can do dressing in basic ways after taking range of motion in OPD which could save our time as well as of patients. In just 2 hour also, these basic knowledge could be taught which are really helpful in clinical education enhancement."*

2. **Student's expectations from the educator:** During clinical education, students look for the availability of their educators to moderate the objectives and goals. Many educators showed concern for the achievement of goals but not all. The educators who provided supervision and guidance for the implementation of the theory knowledge in a practical setting, motivated students to achieve goals with fruitful clinical education.

   P3: *"I expect my clinical educator to help me achieve the goals and objectives and I have got that in more extent. Sometimes there is gap because of their busy schedules, and we become alone without supervision. So, I want them to help me move ahead toward my goals."*

3. **Student's attitude and behavior:** Student's personal factors such as fitness, fear, confidence, and mood also affect clinical education. Positive attitudes, enthusiasm to learn, and friendly nature were stated as the behaviors required among the students. Preference for the utilization of the time during clinical placement varies among students such as doing recreational activities, reading in the library, and having small group discussions rather than just standing in the corridor.

   a. **Fear:** Participants reported fear of questions being asked in rounds and about the cases from seniors and educators present during the clinical education. They were worried about making mistakes or raising questions in a clinical setting. This should not produce anxiety among students instead students should have taken it positively for productive learning.

      A2: *"We always had fear on us regarding the questions that teacher would counter to us. As we move naive we had fear of making mistake, fear of raising question."*

   b Confidence: Participants have reported practical demonstrations from educators and attending similar cases boosted their confidence. Due to a lack of confidence, students were usually upholding themselves from the interaction in clinical placement.

   c) Mood: The student's mood also determines the learning in a clinical setting. The good mood demonstrated interest in learning. Similarly, when they were disturbed, it affected their learning.

   d) Negligence: Students neglected to learn new things and avoided discussions and interaction. The negligence among the students hampered their performance and learning.

4. **Roles and responsibilities of clinical educator:** Clinical educators had certain roles and responsibilities which were described under characteristics, facilitator, teaching approaches, feedback, evaluation, and time.

a) **Characteristics:** According to the student's perception, clinical educators should follow characteristics like availability, interaction, and professionalism. Educators should be friendly, approachable, curious, and interested in teaching.

Educators should consider the time and hold the discussion, take the presentation, and evaluate the students according to the schedule. Clinical educators should start the interaction in the form of case discussion or reporting. In this way, students would have ease in approaching the educator. They shouldn't be biased and show favoritism during clinical education. Visiting rounds and clinic on time, guiding and supervising the students, and doing other responsibilities show the professionalism of the educator. Evaluation on time and on the basis of day-to-day performance should be done by the educator. The perception of students from their class performance should not hamper their evaluation.

C5: *"Another thing is they shouldn't be biased. They also have their favoritism. They give less mark due to their biasness. Loser person can also be talented in some topic. But due to biasness, that doesn't matter at all. Losers are always loser and talents are always talent."*

b) **Facilitator:** Clinical educators should facilitate students' learning in terms of patient assessment, and treatment, interlink the theory with practical, and discuss the case, recent evidence, and new approaches and techniques. Students thought practical demonstrations by clinical educators were always more insightful and memorable. Demonstration of the patient during the teaching was also an effective method for teaching and learning.

P6: *"Few teachers from some departments have focused more on practical knowledge. They have utilized lecture hour for practical and theory classes simultaneously. They have even demonstrated practically in patient by co-operating with patient party in even during class hour."*

c) **Teaching approaches:** Variation in clinical educators adds an opportunity to learn different perspectives at the same time confusion was created for not having the proper protocol or guidelines in treatment. Due to the rotation of clinical duty hours, educator exchange and treatment protocols were changed so, students had difficulty in clinical learning.

d) **Feedback:** Student's feedback should be based on the evaluation of their performance in the clinic. Both the strengths and weaknesses of the students should be identified by educators and well explained to have better learning. The feedback from students also should be considered for betterment. It shouldn't be taken personally and vent their anger and frustration or dismissed with funny comments.

5. **Exposure:** There was good exposure to a variety of cases as the main placement site was a tertiary-level hospital. They got a chance to visit multiple hospitals, different clinical settings, outreach centers, and rural communities. It helped them to know about the differences between rural communities and urban areas in terms of health-related awareness and knowledge. They got the opportunity to see the various cases and conditions in different departments like orthopedics, neurology, cardio-pulmonary, pediatrics, and women's health. They worked in a multidisciplinary team so they got an opportunity to learn in broader aspects including medical and nursing disciplines. In round discussions, physiotherapy educators, interns, and students share their perspectives with other medical staff.

D4: *"Clinical placement went pretty well in many departments but was not the same with all. We also got opportunity to visit different hospital and got good exposure in this journey."*

6. **Resources:**

a) Infrastructure: For effective teaching and learning, good infrastructure should be there like proper discussion rooms for students, proper classrooms, internet facilities, and skills lab.

b) Equipments: Teaching hospitals should have access to the latest equipment. Available equipment and electrotherapy modalities should be in proper use and maintained. They should not be as decorative pieces so that students have less access to operate them. The theoretical knowledge could not be incorporated into practical aspects in this context.

7. **Miscellaneous:** During clinical placement, students have even experienced with pandemic and the following changes felt during the pandemic:

- Though the student's clinical placement was continued, there was less exposure.
- The schedule could not continue according to the plan.
- There was less contact so even classes were conducted online.

The summary of the major facilitators and barriers found in this study were explained in the themes and sub-themes as shown in Table 5.

Discussion

This study determined the perception of physiotherapy undergraduate students in clinical education along with the facilitators and barriers. Participants shared their perceptions about clinical education as well as their learning experiences through the FGD. The data extracted from the FGDs were

Table 5: List of facilitators and barriers in physiotherapy clinical education.

Facilitators	Barriers
Adequate exposure	Longer placement duration
Orientation before placement	Interlink theory and practical
Active learning	Lack of confidence
Practical demonstrations	Overload
Peer group discussions	Infrastructure and equipments
Reflective practices	Basic knowledge of other disciplines
Calm and free environment	Time of educators
Preparedness	Student's attitude and behavior
Communication skills	Favoritism and biasness
Multidisciplinary team approach	Interdisciplinary relationship
Supervision and guidance from educators	
Attitude and behavior of educator	

discussed under seven main themes which were clinical education, student expectation, student attitude and behavior, roles and responsibilities of clinical educators, exposure, resources, and miscellaneous.

In this study, students reported regular placements kept them oriented to learn the skills through clinical settings though, the health issues such as dizziness, back pain, and leg cramps were associated with the whole-day placement. The health issues among the students could be due to the lack of infrastructure such as lack of space for discussion, unavailability of room to rest, and no space to sit during clinical education in wards as mentioned by them in FGDs. Hence, the barriers recorded in this study were infrastructure, crowded clinical sites, and uncooperative interdisciplinary relationships which were similar to the findings reported in a study done by M Naidoo, et al. as institutional barriers [11]. Similarly, Menatnia F, et al. also described inappropriate interpersonal communication and lack of facilities in clinical settings under the heading of inappropriate clinical education environment [2]. They mentioned it as a barrier for physiotherapy education in their study which coincides with our findings. Active learning, case/topic presentations, technique demonstration in real patients, and round discussions were the means of learning as reported by students in our study. They were aware of active learning and believed it helped students to broaden their knowledge, even while finding recent evidence and practicing evidence-based learning approaches. A study by C. Delany and P. Bragge showed active learning encouraged students to plan and rationalize their decisions [17]. Peer group discussion, reflective practices, and internet search were perceived as the modes of learning in this study. They believe through peer group discussion, students share their knowledge, raise queries, and clear doubts. This might be an effective mode of learning for students in clinical education. A similar result was published in the study done by Ramakrishnan and Bairapareddy [7] where factors affecting physiotherapy clinical education in the United Arab Emirates were evaluated through perceptions of students and clinical educators. A study done by Oyeyemi also mentioned reflection on the surroundings and the learning process was an effective practice for learning during clinical practices [28].

In our study, students set their goals and objectives in the logbook as preparation for clinical education, in addition, they undergo revision of theory knowledge and arrange the materials required during placement whereas a study done by Paul Chesterton, et al. 2023 [29] showed students felt sufficiently prepared for practice but not physiotherapy related clinical skills. Preparation usually depends upon a student's interest, enthusiasm, and motivation for learning. Student's enthusiasm for learning builds confidence and patient handling. Delany C. and Bragge P [17] showed presented of self-confidence leads to anxiety and depression which ultimately affects their clinical performance. In our study, these subheadings were described under the heading of the student's attitude and behavior. This was even described in the study done by S. McMahon, et al. [6] where they mentioned students were inadequately prepared for clinical placements in terms of knowledge relating to the primary cases. This is supported by the study done by Deborah Gallasch, et al. 2022 [30] which has demonstrated highly variable stress and anxiety levels during clinical placement which negatively affected their academic performance. Our study also highlighted the benefits and drawbacks of working in a multidisciplinary team, the results were similar to the study by Menatnia F, et al. [2] which showed inappropriate interactions with other staff can turn clinical placement into an unattractive environment.

Research studies have warranted the need for clinical educator's time, they have also mentioned it enhances the learning of students [2,3,7]. This was even noted in our study, the busy schedule of the clinical educators and absence in the clinical sites were issues faced by students in the clinical sites. Menatnia F, et al. reported a lack of responsibilities in clinical supervisors was the reason for their unavailability [2]. Our study shows the attitudes and behavior of clinical educators which has affected the evaluation of students. A study by V Chetty, et al. showed a similar result that the behavior of educators like biasness and favoritism has affected the learning of students [12]. Similarly, a study by Nodehi A, et al. showed personal and professional characteristics of clinical educators like lack of responsibility and insufficient clinical skills as the barriers to clinical education [31].

Overall students showed satisfaction with the clinical exposure they got from the initial first year to the internship. They got an opportunity to observe and assess a variety of conditions by visiting many hospitals in urban and rural areas from tertiary level hospitals to primary health care settings. Good exposure to clinical education was a key facilitator but a study conducted by Melaku Hailu, et al. in 2021 showed lower satisfaction in clinical learning in Ethiopia [32]. A study by Dean CM showed wider placement exposure prepared better graduates and focused on the need for additional placement sites [1].

Lack of electrotherapy modalities and knowledge about using the basic equipment has been reported as barriers in our

study. The equipment and instruments should be changed/updated with respect to the need and the time frame but in the scenario of Nepal, the maximum utilization of the available equipment was not much concern, and upgrading it only with time frame is not at all custom. This result is supported by Menatnia F, et al. with the findings that students have major dissatisfaction as they lack infrastructure and equipment in their study under the main heading of inappropriate clinical education environment [2]. Therefore, the physiotherapy department should keep updated with the latest equipment and needs to bring them into clinical practice.

Strengths and limitations of the study

Students' perceptions were derived through FGDs in a calm and free environment with the same facilitator and analyzer throughout all FGDs was the strength of this study. Data transcription and translations were reviewed multiple times.

The limitation of this study was all the participants included in our study had faced COVID-19 which changed the practiced education system. So, the actual quality of the education could not be concluded through this study.

Recommendations for future studies: Through the perception of physiotherapy undergraduate students in clinical education, the facilitators and barriers were identified which warranted future researchers to evaluate the quality and outcome of physiotherapy clinical education.

Significance of the study:

- The study findings should be incorporated while making a guiding document for clinical education.
- The barriers identified need to be overcome for quality education.

Conclusion

Our study showed the perception of physiotherapy undergraduate students in clinical education. Various factors like adequate exposure in a clinical setting, active learning, evidence-based practice, discussions among peers and educators about cases and topics, practical demonstration, self-reflection, appropriate learning environment, healthy interdisciplinary relation and knowledge, communication skills, constant supervision and guidance from educators, proper evaluation of students, preparation before placement and good behavior and characteristics of both educators and students were found as the facilitators in clinical education. Whereas, placement duration, learning environment, overload, communication skills, and confidence, student's mood and negligence, fear, basic knowledge, time of clinical educator, biasness and favoritism, lack of supervision and guidance, lack of infrastructure and equipment, covid-19 pandemic were identified as barriers in clinical education. The barriers identified in the study should be taken care of for quality education.

Summary

Clinical education is the essential component of a physiotherapy education program which enhances students' clinical skills in assessment, examination, diagnosis, and treatment. This study aimed to know the perception of physiotherapy undergraduate students about clinical education and to identify the facilitators and barriers in clinical education. IRC approval and permissions from respective departments were taken. A focus group discussion method was used and data collection was done accordingly after obtaining consent from the participants. The data were transcribed verbatim, translated into English language and coding was done. Seven main themes were identified which include clinical education, students' expectations, students' attitudes and behaviors, roles and responsibilities of clinical educators, exposure, resources, and miscellaneous. The major facilitators identified were adequate exposure, good curriculum, feedback, preparation for clinical education, good characteristics of clinical educators, and good attitude and behavior of students. Similarly, major barriers identified were inappropriate clinical learning environment, lack of knowledge of other disciplines, interdisciplinary relationships, student negligence and fear, educator unavailability, favoritism and biasness, lack of infrastructure and equipment, and the impact of the pandemic. This study suggests overcoming the barriers to developing the quality of clinical education and preparation of guidelines.

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