

# **Undergraduate physiotherapy students' performance in theoretical and practical examinations: A correlational case study in the UAE**

Senthilnathan Ramakrishnan<sup>1</sup> Abdulai Abukari<sup>1</sup>

1. Faculty of Education, The British University in Dubai, Dubai, UAE

\*Corresponding author's email: [2015152014@student.buid.ac.ae](mailto:2015152014@student.buid.ac.ae)

## **Abstract**

The study aimed at finding the correlation between the theoretical and the practical examinations marks of first year physiotherapy students and explore the possible contributory factors for any differences in exam performances. Mixed approach was used and correlation was analysed using Microsoft excel 2013 and interviews were employed to explore the factors associated with good or poor performances in the written and objective structured clinical examinations. There were no significant differences in the scores of theory and practical exams for the whole participants as the means of the former (40.05) and later (40.03) were nearly equal and the r value (0.672) indicated moderate positive correlation but individual differences in performances between the written and objective structured clinical examination noticed. Students and lecturers were interviewed and the qualitative data analysis identified factors associated with assessment methods, instructional strategies and learning styles were contributing for good and poor performances in the theoretical and practical examinations.

**Keywords:** Physiotherapy students, theory-practice gap, learning styles, instructional strategies.

## **1. Introduction**

Health sciences education prepares graduates to become healthcare professionals who would work closely with patients which demands an array of skill sets that are associated with practical application of the core knowledge (Jones and Shepherd, 2012). This particular attribute requires the ability to interlink the theoretical concepts to clinical context which demands competence in practical skill. However, many students in healthcare education programs are often seen to read a lot and spend more time on academic tasks that are associate with theory building rather than focusing equally on practical skills (Eftekar et al. 2012). The physiotherapy undergraduate students are also not exempted from this approach to learning and the reason behind this attitude raised few questions, the major one being - what drove the students to be bookish?

Rodgers, Bhanji and McKee (2009) stated that both written and practical evaluation tests the cognitive knowledge but the practical evaluation additionally tests the psychomotor skills and affective behaviours. “The 2005 International Liaison Committee on Resuscitation (ILCOR) Consensus on Science and Treatment Recommendations noted that in Basic Life Support (BLS) there is little to no correlation between written and practical skills”. Informal discussions with the assessors of undergraduate physiotherapy program provided a notion that the undergraduate physiotherapy students are not

performing well in practical skills compared to theoretical testing. Numerous factors might have been responsible for such differences and this study was needed to test the validity of the assumption stated and explore the potential factors that might have contributed to the difference in students' performances in the written and practical assessment tasks. Teaching approach to physiotherapy practice module was both theoretical and practical that consisted of lectures, practical classes, self-directed sessions and interactive workshops. On completion of physiotherapy practice course students were expected to demonstrate range of skill sets related to diagnosis and treatment. The core objectives of this course were associated with practical skills and it was important to assess attainment of these outcomes by performance (Host Institution, 2015).

### **1.1 Main Aim**

The main purpose of this study was to find out the relationship of the students' marks in written and practical examinations of the physiotherapy practice musculoskeletal 1 module. In addition, the research also focused on finding if there was any difference in students' scores between the theoretical and practical examinations in the physiotherapy practice course. The other important purpose of this study was to understand the potential contributing factors for the difference, if any, in the students' performances as well as scores in the written and objective structured clinical examinations. Aims of the study are,

- To investigate the relationship between the summative written and practical

examination marks of undergraduate physiotherapy students' by finding the correlation of the grades in the two types of assessment.

- To find out if there was a significant difference between students' performances in the theoretical written and an objective structured clinical examination (OSCE) in the physiotherapy practice musculoskeletal 1 course.
- To explore the possible causative factors affecting the students' performances in the written and practical examinations of the physiotherapy practice course.

## **1.2 Research Context**

“Providing world-class healthcare is one of the six pillars of the National Agenda” of the United Arab Emirates in lines with its” Vision 2021”. Having sufficient number of healthcare workforce for the population of the country is one of the key performance indicators to measure the targets of 2021 for the country. The aim of the institution where this study was conducted is to meet the UAE’s growing needs for skilled healthcare professionals. Their physiotherapy program prepares its graduates to meet the demands of contemporary physiotherapy practice within the context of UAE as well as worldwide. The physiotherapy practice module that is based on the applied practice theme in which this research was interested ensures development of skills required to meet the standards of proficiency (Host Institution, 2015). OSCE is a standardized and valid tool that is similar to traditional methods in assessing the various competencies for course work. Amr,

Raddan and Afifi (2012) concluded in their study on medical students in psychiatry clerkship that there is a positive correlation between OSCE and other forms of exams, and they have reported that the OSCE is widely used in various disciplines of health education across many medical schools within the Kingdom of Saudi Arabia.

According to Wass et al., (2001) assessment is vital to measure the learning as well as a step forward in teaching of health sciences because it provides feedback for continuous improvement. Assessment is also the way to evaluate the attainment of learning objectives and check the progress. There are various assessment methods or tools such as multiple-choice questions (MCQ), extended matching questions (EMQ), modified essay questions (MEQ), essays, quizzes, oral presentations and practical examinations with short or long cases and/or objective structured clinical examinations (OSCE) are used to assess the physiotherapy students' performances in both the formative as well as the summative examinations for providing feedback and awarding grades. According to Jones and Sheppard (2012) to enhance the level of students' knowledge and skills, promote autonomous practice and to be a competent clinician who is responsible and accountable for the society it is important that the assessment of practical skills should draw a wider attention in physiotherapy education.

It is often expected that if a student performs well in a written examination the same could be expected in the physiotherapy practical exam as well. But from experience it

was noted that this was not true because the scope of these exam differs and tests two different domains. The written exam tests student's ability to retrieve information from memory but the practical examination demands a different skill in which students are expected to show range of skills such as communication, lateral thinking and application of knowledge and also safe handling of patients. It is important to develop the core skills as a part of physiotherapy practice module which means students' performance should match in two types of assessments to show that there is no theory-practice gap. This study was needed to explore the real picture of how the knowledge and skills are matched and to identify the gaps in these variables, if any, and to recommend for future research.

## **2. Literature Review:**

The theory-practice gap that is existing in the field of physiotherapy is not attracting wider attention and it is the right time to evaluate the implications of theory and how is it related to practice especially in the physiotherapy discipline. The gap between knowledge and skills is one of the major concerns for newly qualified physiotherapy practitioners which means there is a need to investigate the existing teaching and assessment strategies within the field of physiotherapy education ("Bridging the gap - physio theory and practice" 2018). This could be identified at early stage that is during the learning and assessment cycle to address it effectively before the transition to practice as a physical therapist. Reflective practice is proven to be an effective means to address this gap and

inculcating this attribute to students would promote critical thinking abilities which is the solution to link theory and practice (Roskell, Hewison and Wildman, 1998; Patrick et al. 2008; Andrews and Syeda, 2017).

## **2.1 Review of Literature**

OSCE, an abbreviation that stands for the objective structured clinical examination is a modern assessment method commonly used in medical and health sciences education. It is an approach to assessment of competence in which the components of competence are assessed in a structured or planned way with attention being paid to the objectivity of the examination (Harden, 1988). Students pass through series of stations in which different skill sets such as communication, physical examination, exercise prescription, patient education and documentation. Townsend et al. (2001) stated that OSCE is a useful tool for both formative and summative assessment because it will reflect the deficiencies in skills and provides a scope to improve variety of clinical skills. OSCE is a reliable tool as it evaluates an array of skill sets including but not limited to interpersonal communication, problem solving, clinical reasoning, judgement, assessment and education. According to Gormley et al (2013) practical examination predominantly assesses the clinical competence and the written examination usually tests the reproducible knowledge but the physiotherapy practice requires reflective thinking which could be tested better by means

of OSCE. It is necessary to test both knowledge of facts and clinical skills and the OSCE assesses both factors. Below par performance in OSCE in third year medical program is associated with poor performance at later stage.

Awaisu et al., (2010) concluded in their study on pharmacy students that there is a disparity in performance of top ranking students in class room and in clinical settings. They did not agree that the MCQ's and essay questions tests the skill mastery and cognitive learning of students. This led the scope for an assessment method which is truly based on performance and OSCE is an ideal instrument to achieve such kind of evaluation. Traditional assessment methods are no longer an ideal model to evaluate clinical skill sets and competencies. OSCE is an effective way to conduct a physical examination of patients and also to evaluate the mental health of clients. A study on nursing students proved that OSCE is reliable as well as valid means to perform assessment (Ryan, Stevenson and Hassell, 2007).

According to Kirton and Kravitz (2011) inclusion of OSCE as an assessment tool in addition to standard academic achievement measures is invaluable as they measure different competencies. Their study also concludes that students who attained high grades in written assessment did not match it in clinical component of the pharmacy practice course because they both tested different domains and experience. Dijkstra, Van der Vleuten and Schuwirth, (2009) concluded that assessment is essential to improve the

clinical performance and the constructive feedback it provides will deepen the students' learning. Healthcare context is unique and varying in nature which demands effective use of knowledge and demonstration of skills as well as appropriate behaviours. No single assessment tool could evaluate the combination of these factors. So it is vital to have an assessment battery which tests the "doing aspect" rather than just recollect, verbalize and write the information. OSCE can play a crucial role to assess this particular domain of learning (Khan and Ramachandran, 2012).

OSCE replacing the standard laboratory examinations showed positive impact on students clinical and communication skills (Gallimore, Thorpe and Trapskin 2011). Stanley et al., (2015) challenged that learning was positively affected by structured practical teaching with less focus on theory by enhancing the competence in assessing and managing acute care patients. OSCE comprehensively evaluates students' clinical competence, skills and proficiencies that are directly associated with safe practice thus provides the learners' with an opportunity to fine tune these skills. Medical and allied health sciences moved forward from knowledge-based to skill-based applied sciences and this raised concerns over the students learning from the teaching provided. OSCE found to be a useful tool than conventional measures in assessing this particular context.

OSCE is a useful measure to predict future performances as well as to provide constructive feedback to the students and identifies students who might benefit from

remedial teaching (Martin and Jolly, 2002). Students' learning must target competencies in problem-solving and physical assessment of patients which could be measured by OSCE. There are variety of assessment strategies available to examine the factual knowledge and clinical competence such as essay writing, multiple-choice questions, short cases, and long cases etc. But the OSCE is proved to be an effective method to assess the clinical skills as it tests various domains (Konje, Abrams and Taylor, 2001).

McRobbie et al. (2006) on their study which evaluated the pre-registration pharmacy practitioners by means of OSCE and MCQ's and concluded that MCQ pattern did not test the competencies in depth. OSCE is also shown to be an appropriate method to assess the "show how" level of Miller's pyramid and this particular aspect is very much important in dealing with patients who are at health concerns. This means an assessment must include this component as a part of evaluation strategy. Though the OSCE had the privilege of being a strong predictor of performances than the written examination, it was a combination approach to assessment which was rated with higher validity in predicting the performance of the learning which should have been performance oriented (Wilkinson and Frampton, 2004). Hodges (2013) claimed that OSCE is a gold standard tool used in medical colleges across the world to measure clinical skills and competencies.

Goud et al. (2015) conducted a study at RAK Medical and Health Sciences University in the UAE to determine the undergraduate medical students' perception and satisfactory

levels regarding the use of objective structured practical examination, a similar tool of OSCE that assessed the students' clinical competence in a course work. The findings of their study concluded that the objectives of the assessment were clear, unbiased, covered a broad range of course learning outcomes and tested psychomotor skills. Their study also concluded that the OSCE is reliable and valid measure of students' performance.

## **2.2 Theoretical underpinnings**

The way healthcare professionals' and students' competence and practice are assessed have significantly changed over the last three decades. For an example, the practice standards of the modern day nurses compared to olden days have taken surge and the newly qualified nurses are expected to provide a comprehensive care and deal with complex situations. Therefore the onus is on the universities to develop the core skill sets required for independent practice from day and the educators were forced to come up with new instructional and assessment methods (Fukada, 2018). However, there is no corresponding change in the theories of assessment, instead they have merged and the horizon of assessment in medical and allied health education became wider (Schuwirth and Vleuten, 2004). Even though both the old and new theories have differing opinions, they also have some similarities (Kirton and Kravitz, 2012). For many years, psychometric theories dominated the assessment strategies (Khan and Ramachandran, 2012). Assessment which is mainly a psychological measure had many implications and

the main one was numerical description of the value of assessment. The other contrasting theoretical view on assessment is not in favour of pass/fail or numerical representation of performances. This theory in particular supported the view that assessment was the way to determine the strengths and weakness of individuals so that their learning process is optimised. The later theory calls for research on the areas of assessment to understand how it drives the students' learning and also the educators' process the development of knowledge.

Ringstead et al. (2004) thought that assessment should build confidence and be a positive driving force for their learning. The theoretical underpinning of this study would be a cognitive constructivist approach to learning and assessment because the students are required to learn not only by searching information but also transforming the complex ones to meaningful information as well as refer the existing rules and replace if they are no longer valid (Slavin, 2014). Constructivism asks the teachers to consider the learners' knowledge and facilitate them to put the existing knowledge into practice (Amineh and Asl, 2015). In addition, the motivation theories also play a key role here as the motivation factor is important to succeed in assessments. Since the focus of this research was on assessing the applied practice aspects of a particular module, the constructivism theory of education underpins theoretical framework for this study.

### **3. Methodology**

This study used a mixed research design which initially started with a correlational research approach with an explanatory design mainly to answer the question on the relationship between students' marks in written examination and practical examination. It started as a retrospective study based on the records of students' marks in theoretical and objective structured clinical examinations (OSCE). No intervention was used in this study. The study looked at the students' cumulative marks in written and practical (OSCE) examinations on the musculoskeletal physiotherapy practice module in the first year physiotherapy program. A formal ethical approval was obtained from the physiotherapy department. To the best of researcher's knowledge there was no risk and harm for the participants of this study. All participants were assured of their anonymity. The data collected for the purpose of this study was kept confidential and the name of the institution where the study took place and students' names are not disclosed for ethical reasons. There were a total of 38 students who have taken this course and their grades in written and practical examinations were retrospectively analysed. First set of data was collected from the gradebook of physiotherapy practice module; a 5 credit hours course which is assessed by both written and practical examinations. The two variables on focus were marks obtained in written examination and practical (OSCE) examination to explain their relationship to each other and identify if there is was any significant differences

between scores of theory and practical examinations. Then the study analysed the potential causes for such differences through qualitative approach by exploring the students and faculty experiences to those two assessment methods.

Written examination was composed of multiple-choice questions, extended matching questions and modified essay type questions. This particular type of exam covers core learning objectives of the theoretical components of physiotherapy practice course. It accounted for 50% of the overall course weightage. Marking was done by the course instructors and course coordinator. The practical examination was conducted in the form of objective structured clinical examination (OSCE) which consisted of 4 stations and was assessed by internal and external examiners. This component had equal weightage as the theory part. Across the four stations students were in need to demonstrate range of skills which included interview and assessment of patients, sound clinical reasoning and effective hands-on skills to treat the clients. They were also required to show good skills in education their patients and families. So the OSCE provided a comprehensive and in-depth evaluation of students' performance in the physiotherapy practice course.

The theoretical and practical examination marks of the academic year 2014 – 2015 for the musculoskeletal physiotherapy practice course were compared. To understand the relationship between the written and objective structured clinical examination marks the individual students, the scores of the two types of assessment were presented by means of

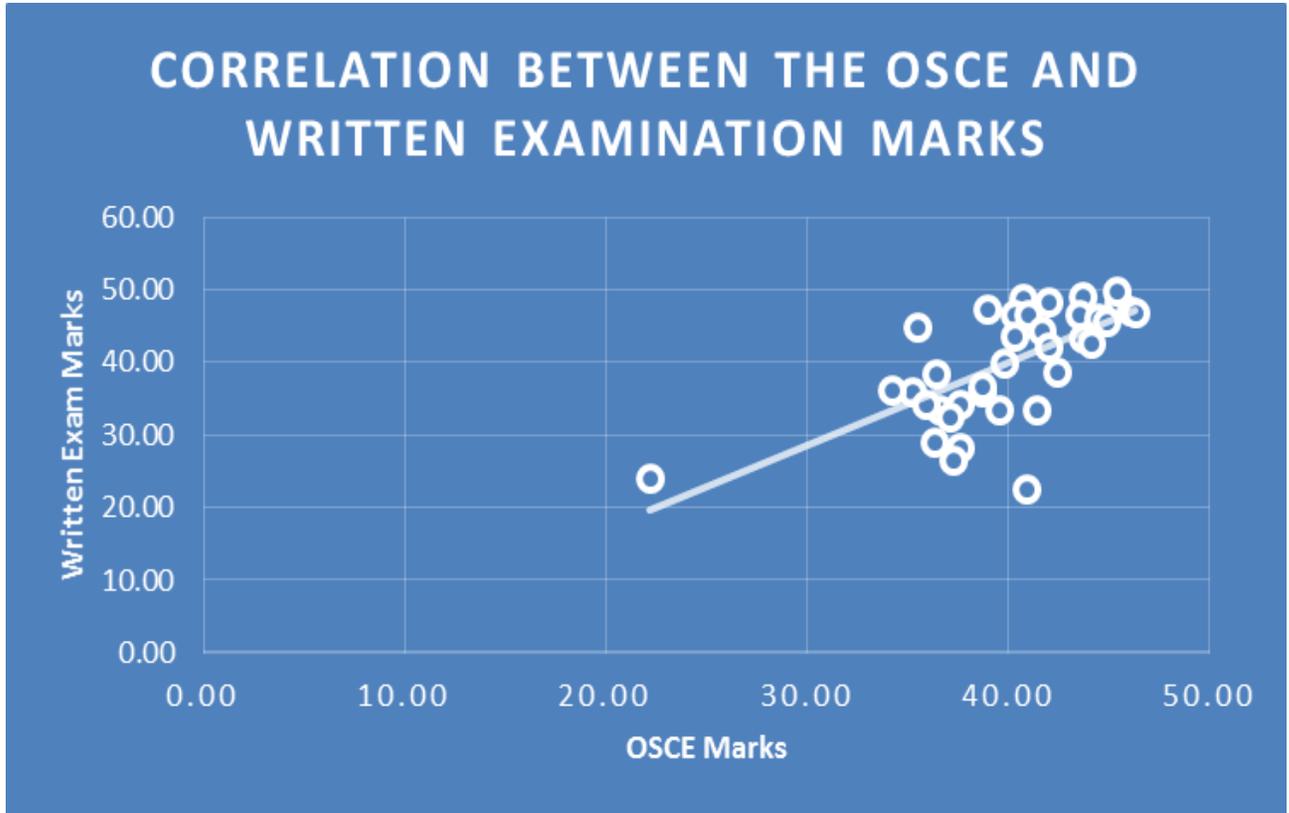
bar chart on the y axis. Each student was assigned with student number according to their alphabetical order which was represented in the x axis. This allowed a better visualisation of the data (Murdan, 2005). The students who completed both written and practical examinations were only included in the study so there was equal number of written and practical examination scores in the chart. Analysis of the bar chart provided an understanding that more number of students (21) scored high in theory examinations than the practical. The remaining students (17) scored more in practical examination than the theoretical examination. Correlation between the two variables that is the written and objective structured clinical examination marks were calculated using the Microsoft excel 2013 version to explain the relationship.

To explore the potential causes for the differences in the theory and practical marks two students and faculty members who taught and assessed students' performance in this course were invited for an informal interview. Purposive sampling was used to identify the participants for this interview as it was essential to understand the significant variations in performance in the two different types of examinations. Therefore, the selection included one of the student who scored significantly higher in the theory component than the practical exam and the other student scored significantly high in practical exam compared to the theory exam. Participants were explained about the purpose of the study to obtain their informed consent. Both were individually interviewed

face to face in an informal way using an open ended questions attached in the annexure. In addition, the views of few other students were sought informally by a brief small group conversation in which 6 participants from remaining 36 students were randomly grouped. The two course instructors who were also the examiners were invited for an interview. They took part in a semi-structured interview via Skype using a predeveloped questionnaire. Probes was picked from their individual responses as well as some student responses have been used as probes while interviewing the lecturers. All the above mentioned interviews were digital audio recorded with the consent of the participants. Data triangulation was done at the end of data collection. The data collected from all the interviews were transcribed and the meaning of the same was interpreted. Finally, the data were coded, themes were identified and condensed for analysing the results.

#### **4. Findings and Discussion**

One of the objective of this study is to analyse if there was a significant difference between students' performances in the theoretical written and an objective structured clinical examination (OSCE) in the physiotherapy practice musculoskeletal 1 course. The



**Figure 1: Correlation between the OSCE and Written Examination Marks**

quantitative data gathered from students' gradebook helps to address the above objective. Analysis of the mean scores of written and OSCE showed no gross variation in performances (mean theory mark = 40.05 and mean practical mark = 40.03). This was a bit surprising because group students had significant difference in their individual marks between the theory and practical examinations. There was a moderate positive correlation ( $r = 0.672$ ) between the written and OSCE scores. However, at one point of time the assumption that was originally expressed might have been true but since the research was

carried out at the end of the semester and only looked at the cumulative grades no significant difference was found. Perhaps if the performance at the midway was tested for correlation the findings might have been on the lines of assumption.

The finding of Eftekhar et al. (2012) study suggests that there is a high degree of correlation between the written exam and the OSCE as the knowledge is interwoven to the skills by nature so to perform well in the OSCE students need certain level of knowledge as well. Also they concluded that neither OSCE nor written examination could replace each other instead the both techniques would complement each other and adding up additional measurement ways is only going to improve the standard of assessment as in this approach multi domains are tested. However, results of Salinitri et al. (2012) showed no correlation between the performance on the OSCE and written examination. This is because the former tested the skills such as communication, clinical, social as well as the ability to solve problems but the later addressed mainly the knowledge aspect and to an extent the problem solving skill. These varying findings necessitated a qualitative analysis of students' performances which differed between the groups of students.

Another objective of the study is to explore the possible causative factors affecting the students' performances in the written and practical examinations of the physiotherapy practice course. Analysis of the qualitative data obtained from participant interview identified three main factors influencing the students' performances in the written and

practical examinations. Those were assessment methods, learning styles/skills of students and the instructional strategies which will be discussed as themes.

***Assessment methods:***

“Most of the students perform well in written because they have clear understanding of what is required”. - Faculty 1.

“Theory is easier for me than practice. Not prepared enough for practical. No sufficient time to practice the practical skills taught because there are many assignments in other courses and the exams. I feel scared by seeing a new examiner and not feel comfortable. I spend little in time practice than the theory”. – Student 1.

“Students are not native English speakers who struggle language barrier made an impact in the practical. Perhaps the concept is in their head but when they speak in front of the examiner they get nervous, mentally blocked, intimidation from staff would have affected their performance” – Faculty 2.

A student participant who scored high in written examination expressed that the OSCE was a stressful assessment method as they have to face the examiners and required good thinking and communication skills which was affected by the examiners and the student was unable to express in a clear way. This student felt that the practical examination tested the core curriculum and included vast syllabus. Also it demanded skills to integrate their theoretical knowledge into a clinical situation which was not easy which was

highlight by the student in the interview which is quoted above. The course instructors view was almost similar as highlighted in the quote by a faculty.

The OSCE was subjected to criticism by Hemingway et al. (2014) for its context as it is not a real-world experience instead an assessment in a simulated environment which was stressful for the learners. This particular discussion led them to recommend OSCE being a preparatory evaluation for clinical practice not a measure of formative or summative assessment of competence. The outcome of Faramarzi et al. (2013) research on the use of OSCE in bachelor degree midwifery students showed and reinstated that the tool is credible and consistent. Also the measure is reliable and possess an attribute of enhancing the level of teaching. However, the nature of OSCE makes it a stressful experience for students during the assessment process. The faculty who was a participant in the study also expressed this in the interview.

The student who did not score heavily in theoretical component felt that many multiple choice questions had two very similar answers which confused the selection of right choice and was unable to recall the stored knowledge from the memory and below excerpts from the interviews justified it.

“Physiotherapy is mainly practical not theory. I spent lot of time for practical with the group in practicing the skills. I did not focus much in theory. Theory was not interesting.

In the written part there were indirect questions” - Student 2.

But the faculty had different view on this aspect and asked students to increase their skills to meet the challenges of written exams according to the below quote from the interview.

“There are 4 or 5 distractors. Students must enhance their testmanship. We are not tricking them.” –

Faculty 1.

“Students didn't understand the questions. It was difficult for them as we followed the Monash University examinations which were structured very difficult especially for our students whose English language proficiency is weak” – Faculty 2.

During the informal chat with the group of students which had mix of high theory or practical performers some students who aggregated high in OSCE expressed that they did not had enough time to revise the syllabus for the written exam as they had other course works to for difference courses which affected their performances. They also stated that the practical examination was easy as they do not need to recall stored information. The opposing category students within the group had a different opinion and they felt the written examination was the more objective measure and accurately reflected their performances and rewarded their hard work whereas the practical exam was short in duration approximately 30 to 40 minutes which was not sufficient for them to express their skills in-depth. Faculty had some similar views to the student opinions where a course instructor expressed that the duration of the OSCE was too short for the students

to express their practical skills.

“They only have about 50 minutes in an OSCE to show range of skills which may be not sufficient for them” – Faculty 1

It can be concluded that the written examination usually tests the reproducibility of core subject knowledge. But a supreme assessment method should test core cognitive skills not the ability to recall and the multi-stationed OSCE has the attributes to test this particular domain which links knowledge, skills and stance.

***Learning styles and skills:***

“For those students who score high in practical I would say that the learning style of the students is highly contributory to this factor”. - Faculty 1.

“Some students are visual and tactile learners’ means they have to see and feel in order to learn. Lecture is hard for them to grasp but once they see it in practical then it is easy for them.” - Faculty 2.

“In practical something we touch and feel to do but in theory we just memorise. Sometime I did not understand the sentences but I just memorise it like that. I would like to learn by doing. Sometimes I feel nervous in practical but generally it is okay and better than theory” – Student 2.

On the other hand, the student who scored high on the practical examination thought the written examination was very difficult and needed lot of text book knowledge which was

not a preferred learning method for this student. The examiners and course instructors had a different perspective of the potential factors contributed for varying performances in written and practical examinations. Their main argument was the difference in marks was mainly because of the students learning style and preference. One interviewee argued that every student learns in different way and it will be impossible for all students to score equally in written as well as in practical examinations because those two measures tests different skills. Objective structured clinical examination in particular demanded sound clinical reasoning skills which most of the students' lack and it was not a surprise for them as they are still in the first year of the program. It will be interesting to see how these students will progress through the physiotherapy program.

“Having exited the high school most of the time performances are tested by written. The assessment methods differ and they need to adjust and grasp this change. Students ignore pre-reading especially for practical session. The scheduled hours might be enough for some but may not be enough for others” – Faculty 2

OSCE is a widely accepted tool to assess the abilities to integrate the theoretical knowledge and practical skills and it complements the traditional assessment methods such as paper or computer-based tests in a robust manner. Apart from testing the communication, interpersonal and clinical reasoning skills it also looks at students' stand on the moral and ethical dilemmas.

***Instructional strategies:***

“The practical experience is new for us. More nerve reckoning in the first semester. We don’t have enough time to practice. Theory hours were more than practical. Theory was focused more than practical. Sometimes we get different information from different teachers about the practical concepts. This is conflicting in practical” – Informal group.

During the small group discussion students’ criticised the instructional method as most of time is spent on the classroom instruction and limited opportunities were given to them for developing the practical skills. Stanley et al., (2015) emphasised that the practical teaching which is well structured and had less importance to theory affected the students learning positively. However, both instructors did not agree to the students’ comments on the instructional methods as they felt that the timetable had sufficient time for this five credit hours course with equal emphasize on theory and practical. It was expected from the students to be involved in plenty of self-directed practice sessions after they learn a particular skill which most student did not do as the attendance was voluntary.

“They listen well to lectures, they review well at home, and they can clearly or adequately grasp the concept of theory. They observe the demonstration but not apply it in on their peers. So there is clearly a gap between what they know and how to do.” – Faculty 1.

“We had too many lectures scheduled every week. Lot of written assignments so we

could not focus in practical learning. Also more weightage to written exams” – Informal group.

Other interesting factors were also revealed in the informal group discussion. The students stated that in a semester they registered for four different courses and three out of the four were assessed predominantly by written means such as assignments, course works and reflective portfolio etc. This ultimately drove the students to be more bookish and did not push them for a practical learning as almost all students were concerned of their cumulative grade point average which depends lot on written component of the assessment. From this study it can be concluded that more than one factor that determines the students' assessment and learning in physiotherapy education.

### **5. Implications of this study:**

From the findings of this study it is understood that the instructional strategies, learning styles and skills of the learners and assessment method were the main factors have an influence on the students' performance in the written and practical examinations. Physiotherapy education plays a vital role in developing graduates who are capable of delivering physiotherapy services to their clients in a competent and safe manner with a degree of autonomy. Ability to link and apply the knowledge is essential during patient encounters and bridging theory practice gap should be the goal of all physiotherapy education providers. Moreover, the assessment strategies adapted should produce a true

reflection of student performance and eliminate any ambiguities. Both the written and practical examinations should aim to test range of skills including cognitive, psychomotor and affective domains. Curriculum developers must consider these factors and ensure that the physiotherapy program develops independent practitioners to meet the contemporary healthcare needs of the society.

## **6. Limitations**

The sample size was small and the focus was on the entry-level students at the first semester. It would be appropriate to conduct further studies on how these students progress through the second semester and so on to find the progressive learning opportunities. Study included only female participants which was inevitable as there were only female students enrolled in the program. It will be interesting to research how both gender students would perform in the course which has emphasis on practical skills perhaps with a larger sample size to bring in generalisability.

## **7. Conclusion**

Study established a moderate positive correlation between the written and OSCE marks of the physiotherapy students in the physiotherapy practice musculoskeletal 1 module. Results indicated that there was no difference in students' marks between the written and practical examinations of the same course as the mean values were nearly equal for both

variable. Further the research identified few students who were performing unequal in theory and practical examinations and explored the causative factors behind such difference. The study concludes that the students learning style is mostly leaning towards marks not towards the learning itself. Few recommendations were made in the study to shift the students focus towards learning especially in practical skills and remove their focus from marks and/or grade point average.

## **References**

- Amineh, R. J., & Asl, H. D. (2015). Review of constructivism and social constructivism. *Journal of Social Sciences, Literature and Languages*, 1(1), pp.9-16.
- Amr, M., Raddad, D. and Afifi, Z., 2012. Objective structured clinical examination (OSCE) during psychiatry clerkship in a Saudi university. *Arab J Psychiatry*, 23, pp.69-73.
- Andrews, J. and Syeda, M. (2017). Clinical reasoning in school psychology: From assessment to intervention. *Canadian Journal of School Psychology*, vol.32 (1), pp.3-15.
- Awaisu, A., Abd Rahman, N., Nik Mohamed, M., Bux Rahman Bux, S. and Mohamed Nazar, N. (2010). Malaysian Pharmacy Students' Assessment of an Objective Structured Clinical Examination (OSCE). *American Journal Pharmaceutical Education*, Vol.74 (2), p.34.
- "Bridging the gap - physio theory and practice". (2018). [Accessed 18 October 2018]. Available at: <https://www.csp.org.uk/frontline/article/bridging-gap-physio-theory-and-practice>
- Dijkstra, J., Van der Vleuten, C. and Schuwirth, L. (2009). A new framework for designing programmes of assessment. *Advances in Health Sciences Education*, Vol.15 (3), pp.379-393.

- Eftekhari, H., Labaf, A., Anvari, P., Jamali, A. and Sheybaee-Moghaddam, F. (2012). Association of the pre-internship objective structured clinical examination in final year medical students with comprehensive written examinations. *Medical Education Online*, Vol.17 (0).
- Faramarzi, M., Pasha, H., Bakhtiari, A., Salmalian, H., Delavar, M., Amiri, F. and Nikpour, M. (2013). Test anxiety in objective structured clinical examinations (OSCEs) compared with traditional assessment methods in undergraduate midwifery students. *Health*, 05(12), pp.2204-2209.
- Fukada, M. (2018). Nursing Competency: Definition, Structure and Development. *Yonago Acta Medica*, 61(1), 1–7.
- Gallimore, C., Thorpe, J. and Trapskin, K. (2011). Simulated Medication Therapy Management Activities in a Pharmacotherapy Laboratory Course. *American Journal of Pharmaceutical Education*, Vol.75 (5), p.95.
- Gormley, G., Menary, A., Layard, B., Hart, N. and McCourt, C. (2013). Temporary tattoos: a novel OSCE assessment tool. *The Clinical Teacher*, Vol.10 (4), pp.251-257.
- Harden, R. (1988). What is an OSCE?. *Medical Teacher*, vol. 10 (1), pp. 19-22.
- Hemingway, S., Stephenson, J., Roberts, B. and McCann, T. (2013). Mental health and learning disability nursing students' perceptions of the usefulness of the objective structured clinical examination to assess their competence in medicine administration. *International Journal of Mental Health Nursing*, Vol.23 (4), pp.364-373.
- Hodges, B. (2003). Validity and the OSCE. *Medical Teacher*, Vol.25 (3), pp.250-254.
- Host Institution (2015) Physiotherapy Practice Musculoskeletal 1 course guide. Physiotherapy Syllabus. Host Institution.
- Jones, A. and Sheppard, L. (2012). Developing a measurement tool for assessing physiotherapy students' self-efficacy: a pilot study. *Assessment & Evaluation in Higher Education*, Vol.37 (3), pp.369-377.
- Khan, K. and Ramachandran, S. (2012). Conceptual framework for performance assessment: Competency, competence and performance in the context of assessments in healthcare – Deciphering the terminology. *Medical Teacher*, Vol.34 (11), pp.920-928.
- Kirton, S. and Kravitz, L. (2011). Objective Structured Clinical Examinations (OSCEs) Compared With Traditional Assessment Methods. *American Journal of*

*Pharmaceutical Education*, Vol.75 (6), p.111.

- Konje, C., Abrams, K. R., and Taylo, J. (2001). How discriminatory is the objective structured clinical examination (OSCE) in the assessment of clinical competence of medical students?. *Journal of Obstetrics & Gynaecology*, Vol.21 (3), pp.223-227.
- Martin, I. and Jolly, B. (2002). Predictive validity and estimated cut score of an objective structured clinical examination (OSCE) used as an assessment of clinical skills at the end of the first clinical year. *Medical Education*, Vol.36 (5), pp.418-425.
- McRobbie, D., Fleming, G., Ortner, M., Bates, I. and Davies, J. (2006). Evaluating skills and competencies of pre-registration pharmacists using objective structured clinical examinations (OSCEs). *Pharmacy Education*, Vol.6 (2), pp.133-138.
- Murdan, S. (2005). Exploring relationships between coursework and examination marks: A study from one school of pharmacy. *Pharmacy Education*, 5(2), pp.97-104.
- Newble, D. (2004). Techniques for measuring clinical competence: objective structured clinical examinations. *Medical Education*, Vol.38 (2), pp.199-203.
- Patrick, C-j., Peach, D., Pocknee, C., Webb, F., Fletcher, M., Pretto, G. (2008, December). The WIL [Work Integrated Learning] report: A national scoping study [Australian Learning and Teaching Council (ALTC) Final report]. Brisbane: Queensland University of Technology. Available online at: [www.altc.edu.au](http://www.altc.edu.au) and [www.acen.edu.au](http://www.acen.edu.au)
- Ringsted, C., Pallisgaard, J., Ostergaard, D. and Scherpbier, A. (2004). The effect of in-training assessment on clinical confidence in postgraduate education. *Medical Education*, Vol.38 (12), pp.1261-1269.
- Rodgers, D., Bhanji, F. & McKee, B. (2010). Written evaluation is not a predictor for skills performance in an Advanced Cardiovascular Life Support course. *Resuscitation*, vol. 81 (4), pp. 453-456.
- Roskell, C., Hewison, A. and Wildman, S. (1998). The theory-practice gap and physiotherapy in the UK: Insights from the nursing experience. *Physiotherapy Theory and Practice*, Vol.14 (4), pp.223-233.
- Ryan, S., Stevenson, K. and Hassell, A. (2007). Assessment of clinical nurse specialists in rheumatology using an OSCE. *Musculoskeletal. Care*, Vol.5 (3), pp.119-129.
- Salinitri, F., O'Connell, M., Garwood, C., Lehr, V. and Abdallah, K. (2012). An Objective Structured Clinical Examination to Assess Problem-Based Learning. *American*

*Journal of Pharmaceutical Education*, Vol.76 (3), p.44.

Schuwirth, L. and van der Vleuten, C. (2004). Merging views on assessment. *Medical Education*, 38(12), pp.1208-1210.

Slavin, R. (2014). *Educational Psychology: Theory and Practice: Pearson New International Edition*. Harlow: Pearson Education Limited. pp.429-430

Stanley, L., Min, T., Than, H., Stolbrink, M., McGregor, K., Chu, C., Nosten, F. and McGready, R. (2015). A tool to improve competence in the management of emergency patients by rural clinic health workers: a pilot assessment on the Thai-Myanmar border. *Conflict and Health*, Vol.9 (1).

Townsend, A., McIlvenny, S., Miller, C. and Dunn, E. (2001). The use of an objective structured clinical examination (OSCE) for formative and summative assessment in a general practice clinical attachment and its relationship to final medical school examination performance. *Medical Education*, Vol.35 (9), pp.841-846.

Wass, V., Van der Vleuten, C., Shatzer, J. and Jones, R. (2001). Assessment of clinical competence. *The Lancet*, Vol.357 (9260), pp.945-949.

Wilkinson, T. and Frampton, C. (2004). Comprehensive undergraduate medical assessments improve prediction of clinical performance. *Medical Education*, Vol.38 (10), pp.1111-1116.