



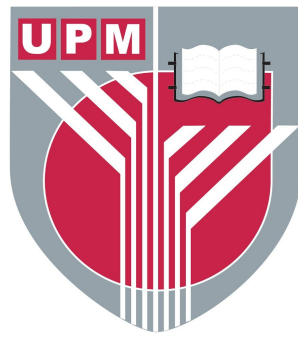
UNIVERSITI PUTRA MALAYSIA

***FACTORS ASSOCIATED WITH LECTURERS' AND STUDENTS'
PERCEPTIONS AND PERCEIVED PRACTICES OF FORMATIVE
ASSESSMENT IN UNIVERSITI PUTRA MALAYSIA (UPM)
UNDERGRADUATE MEDICAL PROGRAMME***

GROUP 7

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FPSK1 2021 9**



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**SECOND YEAR RESEARCH PROJECT (MDR 3901)
FACULTY OF MEDICINE AND HEALTH SCIENCE,
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FACTORS ASSOCIATED WITH LECTURERS' AND STUDENTS' PERCEPTIONS AND PERCEIVED PRACTICES OF FORMATIVE ASSESSMENT IN UPM UNDERGRADUATE MEDICAL PROGRAMME

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ABSTRACT

Introduction: Formative assessment is considered to be crucial in education for the development of soft skills and improvement in learning progress in the classroom. Previous studies showed that formative assessment allows continuous improvement within the context of teaching and learning and provides regular feedback to both teachers and students for effective learning. However, the practice of formative assessment is often undervalued and given less attention in higher education. Studies have found that students and lecturers of different gender and academic phases have different perception and perceived practice of formative assessment. Lecturers of different duration of service were shown to have different views and practices on assessment methods probably due to their teaching experience.

Objective: This study was aimed to determine the factors (gender, medical academic phases and duration of service) associated with lecturers' and students' perceptions and perceived practices of formative assessment in UPM undergraduate medical programme.

Methodology: This cross-sectional study was conducted using online questionnaires that were distributed to medical students and lecturers of Faculty of Medicine and Health Sciences (FMHS) UPM in academic session 2020/2021. Samples recruited for this study included 326 undergraduate medical students and 62 medical lecturers identified through stratified sampling technique. Data was analysed using SPSS version 26. Mann-Whitney U and Kruskal Wallis tests were conducted to identify the factors associated with the perceptions and perceived practice of formative assessment.

Result: There is a significant association between the role of individual and academic phases with their perception and perceived practice of formative assessment. Significant differences were found in the score of perception and perceived practice of formative assessment (monitoring & scaffolding) between medical lecturers and students ($p<0.001$). Only the score of perceived practice (monitoring) showed significant difference between preclinical and clinical students ($p=0.023$). There was no significant association found between gender, lecturers' academic phases and lecturer's duration of service with the perception and perceived practice of formative assessment. Around an equal percentage of lecturers and students perceived that both summative (70% perceived assessment is frequently carried out at the end of module) and formative (70% perceived feedback improves learning process) assessment were carried out in the programme.

Conclusion: Both lecturers and students have a positive perception towards formative assessment importance in education and perceive the practice of formative assessment often in terms of monitoring and scaffolding. Their difference in the role and phases of academics influenced the perception and perceived practice of formative assessment. Both parties perceived that the practice in UPM includes both formative and summative assessment with a slightly higher frequency for the implementation of summative assessment in the curriculum. It is therefore important to acknowledge new learning methods that might help students cope with the ongoing syllabus in the UPM medical program and strengthen lecturers' understanding towards their students' capability. Thus, being able to provide a more effective learning or teaching experience and subsequently strengthen the foundation of medicine in a future doctor.

Keywords: Assessment, formative assessment, medical student, medical education.

FAKTOR-FAKTOR YANG BERKAITAN DENGAN PERSEPSI DAN AMALAN PENSYARAH DAN PELAJAR TERHADAP PENILAIAN SECARA FORMATIF DALAM PROGRAM PERUBATAN SARJANA MUDA UPM

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ABSTRAK

Latar belakang: Penilaian formatif dianggap penting dalam pendidikan untuk pengembangan kemahiran insaniah dan kemajuan dalam pembelajaran di bilik darjah. Kajian terdahulu menunjukkan bahawa penilaian formatif membenarkan peningkatan secara berterusan dalam konteks pengajaran dan pembelajaran seterusnya memberikan maklum balas secara berkala kepada guru dan pelajar untuk pembelajaran yang berkesan. Walau bagaimanapun, amalan penilaian formatif sering dipandang enteng dan kurang diberi perhatian di peringkat pengajian tinggi. Kajian mendapati bahawa pelajar dan pensyarah yang berlainan jantina dan fasa akademik mempunyai persepsi dan praktik penilaian formatif yang berbeza. Pensyarah dengan tempoh perkhidmatan yang berbeza turut mempunyai pandangan dan amalan yang berbeza mengenai kaedah penilaian mungkin disebabkan oleh pengalaman mengajar mereka.

Tujuan: Kajian ini bertujuan untuk mengetahui faktor-faktor (jantina, fasa akademik perubatan dan tempoh perkhidmatan) yang berkaitan dengan persepsi and amalan pensyarah dan pelajar terhadap penilaian secara formatif dalam program perubatan sarjana muda UPM.

Kaedah: Kajian keratan rentas ini dilakukan dengan menggunakan soal selidik dalam talian yang telah diedarkan kepada pelajar perubatan dan pensyarah Fakulti Perubatan dan Sains Kesihatan (FPSK) UPM pada sesi akademik 2020/2021. Sampel yang diambil untuk kajian ini merangkumi 326 pelajar perubatan sarjana muda dan 62 pensyarah perubatan yang telah dikenalpasti melalui teknik pensampelan berstrata. Data dianalisis menggunakan aplikasi SPSS versi 26. Ujian Mann-Whitney U dan Kruskal Wallis dilaksanakan untuk mengenal pasti faktor-faktor yang berkaitan dengan persepsi dan amalan penilaian secara formatif.

Keputusan: Terdapat perkaitan yang signifikan antara peranan individu dan fasa akademik dengan persepsi dan amalan terhadap penilaian formatif. Perbezaan yang signifikan didapati dalam skor persepsi dan amalan terhadap penilaian formatif (pemantauan & perancah) antara pensyarah perubatan dan pelajar ($p < 0.001$). Hanya skor amalan (pemantauan) menunjukkan perbezaan yang signifikan antara pelajar preklinikal dan klinikal ($p = 0.023$). Tiada hubungan yang signifikan antara jantina pensyarah atau pelajar, fasa akademik pensyarah dan tempoh perkhidmatan pensyarah dengan persepsi dan amalan penilaian formatif yang dirasakan. Sekitar peratusan yang sama antara pensyarah dan pelajar berpendapat bahawa kedua-dua penilaian sumatif (70% berpendapat bahawa penilaian sering dilaksanakan pada akhir modul) dan formatif (70% berpendapat sesi maklum balas dapat meningkatkan proses pembelajaran) sering dijalankan dalam program.

Kesimpulan: Pensyarah dan pelajar mempunyai persepsi positif terhadap kepentingan penilaian formatif dalam pendidikan dan menganggap praktik penilaian formatif sering dari segi pemantauan dan perancah. Perbezaan peranan dan fasa akademik mereka mempengaruhi persepsi dan amalan penilaian formatif. Kedua-dua pihak berpendapat bahawa praktik di UPM merangkumi penilaian formatif dan sumatif dengan frekuensi yang lebih tinggi terhadap pelaksanaan penilaian sumatif dalam kurikulum. Terbuktilah bahawa betapa pentingnya untuk mengetahui kaedah pembelajaran baru yang dapat membantu pelajar mengatasi sukatan pelajaran yang berterusan dalam program perubatan UPM dan memperkuat pemahaman pensyarah terhadap kemampuan pelajar mereka. Dengan itu, dapatlah memberikan pengalaman belajar atau mengajar yang lebih berkesan dan seterusnya memperkuat asas perubatan kepada bakal-bakal doktor pada masa akan datang.

Kata kunci: Penilaian, Penilaian formatif, Pelajar perubatan, Pendidikan perubatan

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LIST OF ABBREVIATION

UPM - Universiti Putra Malaysia
FMHS - Faculty of Medicine and Health Science
PBLC - Problem-Based Learning Curriculum
MCQ - Multiple Choice Questions
PBL - Problem Based Learning
SGT - Small Group Teaching
MTF - Multiple True False
SBAQ - Single Best Answer Question
EMI - Extended Matching Items
SAQ - Short Answer Questions
MEQ - Modified Essay Questions
OSCE - Objective Structured Clinical Examination
OSPE - Objective Structured Practical Examination
EMQ - Extended Multiple Questions
CVI - Content Validity Index
FVI - Face Validity Index
SPSS - Statistical Package for Social Sciences

CHAPTER 1 : INTRODUCTION

1.1 Background

Assessment is generally known as any activities conducted by educators and learners to revise teaching and learning strategies mutually (Black & William, 1998). In simpler terms, assessment can be considered as a method in assessing or evaluating the overall learning process of an individual. There are two different types of assessments that can be conducted, which are summative assessment and formative assessment. According to the study done by Ajuonuma (2007), formative assessment or also known as continuous assessment and 'assessment for learning' plays a crucial role in students' development of soft skills and improvement in learning progress in the classroom. It is also seen as an adjunct or complementary preparation for high-stake assessments or summative assessment as a way to improve academic performance (USAID, 2003). The major purpose of formative assessment provides rational and beneficial feedback to redesign teaching, learning and educational opportunities for teachers and students. Thus, formative assessment allows continuous improvement within the context of teaching and learning and helps to diagnose the students' difficulty in learning as well as providing feedback to teachers or students to help students learn more effectively (Dixson and Worrell, 2016). Moreover, Njabili et al. (2015) pointed out that conducting an assessment to students apparently should not be considered as an end however as a way to a reasonable understanding of learning throughout the course.

On the other hand, summative assessment, also known as 'assessment of learning', can be interpreted as "cumulative assessment" which can be considered as one of the oldest assessment methods to grade and rank individuals. Summative differs from formative assessment in a way that it focuses more on a final examination to grade the students progress at the end of the year. The end results of summative assessment aim to determine whether the student is able to advance to the next stage in their studies or fail to do so (Harlen & Gardner, 2010). The grades are also important for the purpose of academic qualifications and awards. Thus, summative assessment is used to assess the students' learning outcome rather than improving their skills throughout their studies.

In medical school settings, formative assessment plays an important role for learning improvements as it provides feedback on the student's understanding regarding a particular subject in the syllabus. Formative assessment is also applicable in clinical settings as it provides interactive sessions, motivates learning and makes education more interactive with patients in the clinical settings. However, an overall grading system in final assessment is still needed at the end of the year for the purpose of making recommendations about the academic performance of students. In UPM, both formative assessment and summative assessment are implemented in the undergraduate

medical programme. For instance, the students are required to undergo bedside teaching and PBL which are considered as formative assessments as an evaluation to their medical knowledge and skills, while the summative assessments are conducted through professional examination which determines their qualification to progress to clinical phase and graduation.

Perception towards assessment plays an important role to influence one's understanding and basic concept on the learning course. With a clear perception, students and teachers are more able to perform well, for the advancement and enhancement of their knowledge. Therefore, it is important to identify the students' and teachers' perception of formative assessment and observe its relationship with their practice.

1.2 Problem statement

Asian students had learning conflicts with the principles of formative assessment especially in self-assessment and peer-assessment (Quyen & Khairani, 2016). One of the major obstacles to the application of formative assessments in Asia is the teacher's values in teaching, learning and evaluation. Asian teachers assumed that by memorizing and drilling, and by choosing the "only-right-answer" approach, students need to master the fundamental knowledge in the textbook (Quyen & Khairani, 2016). On the other hand, since formative assessment is considered as low-stakes compared to summative assessment, students have decreased pressure and stress therefore reducing their motivation to learn. Although Asian students are somewhat encouraged to do peer assessment, they still prefer teacher feedback as they believe it is more reliable and comprehensive than peer assessment. Learners may lack experience or do not know how to prevent subjectivity in delivering effective, insightful feedback. Therefore, students rely on teacher feedback rather than peer assessment. In addition, depending on individual preferences, they may be biased or find it difficult to trust or rely on their peers who are not in the authoritative role (Tepsuriwong & Bunsom, 2013).

According to Graham et al. (2011), if close consideration is not given to what is measured, how it is evaluated, and how it is graded, the trustworthiness of formative assessment may be undermined. Lack of student's understanding on formative assessment can also cause misunderstanding of the practices in assessment and may lead to ineffective learning. Hence, lecturer's and student's awareness of formative assessments may affect the learning outcomes. Due to these barriers and challenges related to formative assessment, it could be observed that its practices are undervalued and given less attention in UPM undergraduate medical programme. While classroom practices are usually associated with students' and teacher's perceptions and perceived practices, it is crucial to identify what are their perceptions that hold on the importance of formative assessment and their current practice.

Therefore this study is planned to identify the students' and lecturers' perceptions of formative assessment in undergraduate medical programme. This study is also to investigate the relationship between sociodemographic of students and lecturers and their perceived practices of formative assessment. How do students of UPM's undergraduate medical programme who are enrolled in session 2020/2021 view formative assessments applied in assessing their knowledge in the medical field? How is formative assessment being practised in the programme? Is there any difference between students' and lecturers' perceptions and perceived practice of formative assessment? This study attempts to answer these questions.

1.3 Significance of study

This study helps to discover the students' and teachers' perceptions and their practices towards formative assessment. Advantages of efficient formative assessment can improve greatly in students' performance through improving student's confidence (Ogange et al. 2018). This study provided an insight of the association between gender and academic phase of both UPM medical students and lecturers, as well as the lecturer's duration of service with their perception and practice of formative assessment. The information gained from the study can then provide a better understanding to what extent formative assessment is practised in the programme. This is important for the improvement of current practice and therefore improved student's academic performance and lecturer's teaching strategies.

1.4 Research questions

- I. What are the factors associated with lecturers' and students' perceptions and perceived practices of formative assessment in UPM undergraduate medical programme?
- II. Is there any significant differences between students' and lecturers' perceptions and perceived practices of formative assessment in UPM undergraduate medical programme?
- III. Is there any significant differences between the gender of UPM undergraduate medical students and lecturers on the perceptions and perceived practices of formative assessment?
- IV. Is there any significant differences between different academic phases of UPM undergraduate medical students and lecturers on the perceptions and perceived practices of formative assessment?
- V. Is there any significant differences among UPM undergraduate medical lecturers' duration of service on the perceptions and perceived practices of formative assessment ?
- VI. Is there any significant differences between the proportion of students' and lecturers' perceived practices of formative assessment in UPM undergraduate medical programme?

1.5 Study objectives

1.5.1 General objective

To determine the factors associated with lecturers' and students' perceptions and perceived practices of formative assessment in UPM undergraduate medical programme.

1.5.2 Specific objectives

- i. To describe the frequency in percentage of lecturers' and students' sociodemographic profile (gender, academic phases, lecturers' duration of service) and the score of perceptions and perceived practices of formative assessment in UPM undergraduate medical programme.
- ii. To determine the significant difference of the mean score of perceptions and perceived practices of formative assessment between UPM undergraduate medical students and lecturers.
- iii. To determine the significant difference of the mean score of perception and perceived practice of formative assessment between UPM undergraduate medical lecturers and students of different gender.
- iv. To determine the significant difference of the mean score of perceptions and perceived practices of formative assessment between preclinical and clinical UPM undergraduate medical lecturers and students.
- v. To determine the significant difference of the mean score of perceptions and perceived practices of formative assessment among UPM undergraduate medical lecturers' duration of service.
- vi. To determine the proportion of students' and lecturers' perceived practices of formative assessment in UPM undergraduate medical programme.

1.6 Research hypothesis

- I. There is a significant difference between UPM undergraduate medical students' and lecturers' perceptions and perceived practice of formative assessment.
- II. There is a significant difference between different genders of UPM undergraduate medical students' and lecturers' perceptions and perceived practices of formative assessment.
- III. There is a significant difference between clinical and preclinical UPM undergraduate medical students' and lecturers' perceptions and the perceived practices of formative assessment.
- IV. There is a significant difference between the UPM undergraduate medical lecturers' duration of service and the perceptions and perceived practices of formative assessment.

- V. There is a significant difference between the proportion of students' and lecturers' perceived practices of formative assessment in UPM undergraduate medical programme.



CHAPTER 2 : LITERATURE REVIEW

2.1 Assessment

Assessment is widely used in every institution and it plays a significant role in education. Assessment definitions and concepts were described differently by various scholars. Assessment in terms of education, refers to the broad range of strategies or methods used by educators to evaluate, measure, and record students' academic performances or educational needs (Great School Partnership, 2015). This shows that it plays a key factor in the teaching and learning process. Assessment also commonly puts the spotlight on the performance of teachers and tells the students about their acquisition level of learning goals and expected aptitudes (Yigzaw, 2013). In addition, assessment is important to produce graduates who have a high level of ability and expertise who can respond to the current evolving economy and growing demands of advanced industrial society (Guadu & Boersma, 2018).

Assessment can be broadly categorised as summative and formative assessment. There are many concepts and differences found to distinguish between both types of assessment. Summative assessment is typically conducted at the end of course or module (Guadu & Boersma, 2018). Teachers will evaluate student learning achievements through scores or grades from the tests and examinations that propose students' mastery and knowledge of the content of the course. An example of summative assessment includes portfolios, projects and final examinations (Dixson & Worrell, 2016). Summative evaluation data provides information to teachers about how effective teaching strategies have been. However, Tsheko (2018) claims that terminal assessment lacks transparency for enhancing education and student learning.

In contrast, formative assessment is a continuous process that is frequently conducted by teachers to monitor students' performance, where students are able to focus on and track their own progress. Examples of formative assessment in essays, oral presentations, assignments, laboratory reports and quizzes. The purpose of these tasks is to analyze the understanding of students' learning (Ozan & Kincal, 2018). Moreover, it assists students to learn through the feedback process which gives them opportunities to plan better learning refinement and strategies (Guadu & Boersma, 2018).

2.1.1 Formative assessment

In medical education, Schuwirth and van der Vleuten (2012) claimed that continuous assessment should consist of questions covering a wide domain of applicable medical information. Ababa (1994) suggested that significant efforts should be made to integrate instruction and formative

assessment to achieve these critical thinking capabilities. Moreover, it helps teachers to improve the psychological, academic, physical, and social skills of students. Formative assessments are the indicator used to tell the students about their level of understanding of a particular topic for their preparation on summative assessments. Moreover, its purpose is not only to achieve the students' needs but also to meet the duties of an instructor to the student by having sufficient tools to assist in learning (McNulty et al., 2014). Formative assessment also has been demonstrated to refine learning outcomes as accompanied by gaining students' feedback and remedial actions (Kibble, 2007). Therefore, formative assessment is said to encourage 'deep learning', an ideal learning approach, as frequent, cumulative testing and after test feedback influence greatly the performance of individual students (Rushton, 2005).

In 1997, the Faculty of Medicine in University of Hong Kong introduced a problem-based learning curriculum (PBL) and it has been proved to have a huge impact on the teacher-student relationship in the learning process (Nandi & Chan, 2000). Generally, PBL allows a more interactive session and two-way communication rather than the old conventional format, which has little interaction and is tutor-centered with big group lectures and focus on test achievement. PBL is considered to be one of the examples of formative assessment that can be done in class to offer higher-order learning outcomes especially in the health sciences domain (Kelly, 2019). Students in PBL were shown to be more independent, self-centered, show more initiative and have a highly positive attitude on preclinical training. They are more likely to ask questions and attend a deeper learning which emphasises on a better understanding (meaning) rather than memorising (reproductive). Thus, formative assessment is shown to have a positive impact on student learning, preparation and performance of assessment as routine practice reduces stress and pressure when facing assessment.

Conducting a formative assessment has its own benefits and drawbacks. Alausa (2006) found that assessing students continuously is likely to be benchmarked since it collects practicing data over time and helps redesign the pedagogy. The study also mentioned that the diagnosing and mediating of learners' weaknesses could demonstrate a fundamental role if the educator is concerned about everything happening in the classroom. Additionally, Yigzaw (2013) claimed it motivates students and encourages teachers to provide valuable responses and comments. Not just that, continuous assessment gets students acquainted with self-assessment and peer-assessment, helps them set realistic expectations and objectives and regularly track progress and improve teacher self-esteem through the use of successful evaluation techniques. Students and lecturers should have a good understanding on formative assessment to be maximally effective. As pointed out by Bennett (2011), formative assessment requires the interaction of

general principles, strategies, and techniques with reasonably deep cognitive-domain understanding.

On the other hand, there are many studies proving that some shortcomings are associated with the competence and management of the instructor in order to conduct the formative assessment. Along with that the teachers should be trained with complex skills. This clearly proves that continuous assessment requires significant preparation for teachers, who can evaluate their students from different aspects (Yigzaw, 2013). Yigzaw (2013) also added that it is highly challenging for the teachers as they have to devote themselves to carry out multiple tests, grading regularly and maintaining records. In order to accomplish competent and hard-working teachers, teachers must be conscious of their value and application approach. In addition, it demonstrates that formative assessment is very time consuming and burdensome for the educators to conduct. Although, there are numerous problems of formative assessment, preparation and knowledge of the technique for evaluation could change the way continuous evaluation is performed consistently.

Undergraduate medical education along with any other educational programmes, have to plan ongoing improvements to satisfy the updated medical practice criteria especially in the 21st century (Nandi et al., 2000). Nowadays, Kahoot platform has been broadly used by educators during feedback sessions in the classroom as an alternative to formative assessment (Ismail & Mohammad, 2017). It reveals that the learning progress of students changed significantly by enhancing the students' motivation and making education more interactive (Yien et al., 2011). Moreover, mind mapping approaches, case presentation, constructing a flow chart and structured patient-based assessment are the common formative assessment that is used in clinical practice (Arja et al., 2018).

2.1.2 Summative assessment

Summative assessment could vary greatly to formative assessment as explained by Dixon & Worrell (2016), compared in terms of its purpose, formality, time of administration and level of stakes. The purpose of summative assessment is evaluation of learning outcomes, placement and promotion decisions. Summative assessment could be defined as cumulative evaluations, typically at the end of the coverage of a unit or subject, intended to capture what a student has learned or the level of learning and judge success against certain criteria (Classroom Assessment and the National Science Education Standards, 2001). While summative assessments are often thought of as traditional objective tests, this need not be the case, as it can be a compilation of student work, summative evaluations may follow from an accumulation of evidence gathered over time, however, very little feedback is done after assessment has completed. Most of the

time, summative evaluation is intended to make recommendations about the academic performance of students, including pass/fail decisions or licensing eligibility. This decides whether the aims of education are being followed (Das et al., 2017).

Summative assessment is usually conducted formally and it is done after instruction is given or performed at the end of the learning module or course (Das et al., 2017). It has a higher level of stakes compared to formative assessment. Examples of summative assessment include projects, performance assessment, portfolios papers, in-class examination, state and national test (Dixson & Worrell, 2016). Other examples include Education in health professions has often emphasized student performance appraisal, with a conventional emphasis on "live patient oral exams," and so-called "vivas," during which in the classic long and short cases students were orally questioned (Downing & Yudkowsky, 2009).

Summative assessments come with some disadvantages. Waldvogel (2013) pointed out that too much use of multiple choice tests may mislead education into undesirable ways. Teachers and students, for instance, may be forced to put a lot of energy into learning certain "skills" to make a "right" response, but not knowledge exploration. The development of knowledge by students is often ignored. Therefore, performance in summative assessment could not be used as a benchmark in assessing abilities in individuals. For example, a study showed some students who scored high have actually poor ability of speaking English and less participation in classroom discussion, and some with good speaking ability have low marks on paper-and-pencil tests (Waldvogel, 2013). This shows that the performance of students during summative assessment does not necessarily correlate with their in-class performance. Therefore, achieving a balance in formative and summative assessments is important for a better understanding in learning to improve the final performance in assessments.

2.1.3 Feedback

Feedback is one of the strongest indicators on teaching and learning performance, which can have favorable or unfavourable impacts (Jamshidian et al., 2019). Feedback is mainly generated internally and externally. The internal feedback comes from the student him/herself, who appraises his/her tasks or assignments based on the goals and performance standards previously set. Meanwhile, external feedback comes from other reviewers such as peers reading and reviewing this job, the teacher and many more (Guadu & Boersma, 2018). Moreover, feedback can also be achieved in summative and formative assessment but the purposes of feedback are different. Formative feedback aims to improve educators' and learners' performance before the summative evaluation is carried out. Descriptive feedback offers students an appreciation of what they are doing well, links to learning in the classroom, and provides clear guidance on how to

take the next step in the advancement of learning (Graham et al., 2011). Meanwhile, summative feedback helps learners to strive for better results in upcoming modules or syllabuses. In a safe and nonjudicial environment, formative feedback can be obtained, whereas in summative assessment, feedback is bound with teachers' judgment (Jamshidian et al., 2019). This shows that summative feedback may create some misunderstandings among students and educators as it yields scores or grades that may affect students' performance in the classroom.

The discontentment of students and educators about feedback implementation however demonstrates as a big issue especially in higher education (Henderson et al., 2019). There were generally differences between student and educator perceptions and understanding of feedback approaches in past studies that considered both target groups prospects. Particularly, in Hong Kong, a study was conducted by giving identical questions regarding feedback. As a result, educators tend to show favorable impressions compared to students (Carless, 2007). This shows that the educators more appreciate the purpose of feedback compared to students. Haghani and Fakhari (2014) claim that feedback also represents a mirror as students can keep track of their progress and see their accomplishments as a reflection. Unfortunately, feedback seems to be one of the most underrated aspects in medical education. But in reality, we need to take into account the processes and strategies of feedback especially during the clinical setting (Haghani & Fakhari, 2014).

2.2 Perceptions of assessment

Van de Watering et al (2006) described perception of assessment to be the act of students perceiving about the assessment in their course under investigation. Perceptions play an important role to visualize students' and lecturers' understanding on the importance of assessment and are able to reflect the misconceptions implanted in them. Perceptions on assessment are crucial for the amendments and improvements of learning (Leahy et al., 2005). Subsequently, this helps to evaluate students' learning skills and lecturers' roles in creating a better version of their students.

Scouller and Prosser (1994) mentioned that most students have a misconception on the basic idea of the assessment consisting predominantly of reproductive-oriented multiple choice questions (MCQ), which aimed to test students' recalling skill, their study strategies and their general direction towards their studies. However, misunderstanding between the students' perception on the questions and the main purpose or aim of the assessment questions, led to an incorrect diagnosis between understanding and reproduction, especially in students with only surface approach of the concept. Additionally, in a later study done by Scouller (1998), the debate of the level of thinking skill between MCQ and essay questions revealed that students often interpret MCQ needing a higher order thinking skill while a lower order thinking skill is required in

answering essay questions. Both studies showed that incorrect perception of assessment methods and the general concept behind it resulted in an overall poorer performance of students. Similarly, MacLellan (2001) also proved there was a disagreement of students on the concept of assessment in comparison to commitment and engagement of academic staff towards assessment formats. When asked about the purposes of assessment and the level of cognitive measures of questions asked, the results showed that the students perceived that the reproduction of knowledge was more likely to be assessed, while application and synthesis of knowledge were less likely to be assessed, which actually opposed the initial intentions of their lecturers. Students claimed that assessment does not help in their overall learning process while academic staff declared effort in portraying the purpose of formative assessment. Conversely in the Van de Watering (2008) argued that in their 'traditional' assessment, containing MCQ and essay questions, the instructors' intentions and students' perception were aligned, where both interpret assessment to be focusing on the evaluation of application of knowledge, problem solving, analysing and interpreting rather than the reproduction of knowledge. The researcher noted that students need to be shown the means of assessment formats to help them have a clearer view on the questions they are facing and preferably practiced in the regular learning process for better interpretation.

2.2.1 Factors associated with perception of formative assessment

2.2.1.1 Perception on formative assessment between lecturers and students

Based on Guadu (2018) study, they came to a conclusion that "formative assessment is important for maximizing instruction and student learning". Results showed that 86.5% of the lecturers agreed on the statement above. Black and William (2009) proposed a theory where formative assessment is concerned with the building of future events for the purpose of the learning process. In a different study done by Black & Wiliam (1998b), it stated that formative assessment approach to integrate interaction within the classroom, implementing that instructional design of formative assessment is (Black & Wiliam, 2009) integrated with the process of instruction as well (Clark, 2011). It is important to note that formative assessment should not be viewed as a rigid and static form of assessment, and should be understood as a learning process involving both teachers' and students' interactions during the classroom learning process (Young & Kim, 2010). The problem begins when one is unable to visualise the concept of formative assessment. Teachers often perceived formative assessment to benefit in advancing their professional growth, teaching skills and enhancing students' learning ability in classroom settings (Lee, 2019). Yau (2004) also found that teachers perceived formative assessment to be a productive tool in better learning experience for students and helping them to achieve good examination results.

Besides that, formative assessment is assumed to be able to help poorer grades students in achieving a better score rather than the other students (Black & Wiliam, 1998b). Likewise, Lee (2019) also made a point that weaker learners, with difficulty in grasping a topic, are able to show more interest in their learning process following goal settings and reflection practice in formative assessment. This is due to the basic concept of formative assessment in providing feedback and self-improvement of their weaknesses. By utilising teachers' monitoring in their learning, they are able to score better than the more proficient student. The concept of peer review also helped the students, developing a better appreciation in the work they do and shaped them for a better outcome. Another review done by Struyven, Dochy, and Janssens (2005) mentioned that students actually preferred to be assessed through innovative methods, instead of 'traditional' closed-book assessment, and to use an easier assessment process that allows grading and accumulation of marks. When asked about the perception towards summative assessment, students voiced out that 'traditional' assessment limits their engagement in a particular subject and it is irrelevant in aids to develop skills needed in the future workplace (Traub & MacRury 1990). Similarly, medical students in Pakistan also believed that formative assessment could enhance their learning progress and motivate them to learn (Zulfiqar et al., 2017).

2.2.1.2 Perception on formative assessment between gender

Besides that, different genders also seem to have different perceptions towards formative assessment. A research done by Adams et al. (2000), stated that males are more interested in a final mark as assessment results while females consider feedback and cumulative results are more important. The researchers believed that the significant difference in the results for males and females might be due to the difference in study approach and their general idea on assessment practice. Females tend to favour feedback settings with one-to-one tutoring, continuous assessment with weekly tests, courseworks and presentations rather than a one-off year end examination with markings like males.

Similarly, Furnham and Chamorro-Premuzic (2005) also pointed out that females showed a more repulsive attitude towards exams than males whereas males showed a more repulsive attitude towards continuous assessment. The study presented that individuals who perceived themselves to have a higher level of intelligence and a higher confidence level tended to favour 'traditional' examinations as they believed that it is the best method to assess themselves. Thus, results showed that males have a more positive attitude than females towards summative assessment rather than formative assessment due to these reasons.

2.2.1.3 Perception on formative assessment between academic phases

A study performed by Srivastava et al. (2017) shows that formative assessments are used to get the preclinical students to think critically about their scientific theories, to reveal preexisting ideas that can be used as building blocks, and to measure how well they are progressing toward establishing scientific understanding. In addition, preclinical students are quickly attuned when they get into the clinical setting by implementing the objective structured clinical examination (OSCE) in their formative assessments (Furmedge et al., 2016). Both studies reveal that the formative assessment gives benefits to the preclinical students for their preparation for their clinical settings later during the clinical years by strengthening their basic knowledge and theories during the preclinical years.

Besides, a study also found that formative assessments are popular among clinical students as it is an efficient tool for learning purposes. The summative assessment is crucial however formative assessment functions are supplying students with cognitive skills and alluring empowerment of professional skills in order to amplify student's ability in preparing themselves as a future doctor as formative assessment in regard involves both students and lecturers to communicate. Despite the fact that summative assessment is fundamental in determining competence and eligibility to proceed to subsequent semesters, it does not help the teachers to evaluate the student's performance (Cox et. al., 2007). On the other hand, the formative assessment supplies the students with cognitive skills and alluring empowerment of professional skills in order to amplify student's ability in preparing themselves as a future doctor as formative assessment in regard involves both students and lecturers to communicate (Rudolph et. al., 2008) as the clinical students favored more on receiving feedback throughout their learning. So, it provides clear outcomes and expectations from their teachers based on their practices compared to preclinical students (unpublished data, 2019).

2.2.1.4 Perception on formative assessment between lecturer's duration of service

Duration of service in teaching which can be translated to the level of knowledge and experience as a lecture can be a factor associated with perspective on formative assessment. As explained Izci (2016), teachers with more teaching experience on a topic are more likely to adopt formative assessment while a teacher who has more experience in summative assessment is less likely to use formative assessment. Therefore, teachers with more experience were found to promote change in assessment towards formative assessments. Teacher's experience are important factors in formative assessments as they possess skill, attitude, awareness of standards and expertise in evaluative skills, therefore, able to provide helpful insights in feedback (Rushton, 2005).

Through all these studies, there is a need to think over the role of assessment and to improve the old 'traditional' method of assessing through cumulative examination. But instead move towards an era of application and innovation in assessing skills.

2.3 Practices in assessment

Practice of assessment is the implementation of judgement for the purpose of generating information about achievement (Knight, 2007). The earliest form of practices in formative assessment started in 1989 under the auspices of the British Educational Research Association by a group of educational evaluation scholars who have been involved and influential in promoting the philosophy and practice of evaluation for learning (McDowell et al., 1989). Formative assessment has been implemented in Western countries by encouraging schools to improve assessment practices (U.S. Department of Education, 2010). However, Asian region faced challenges in implementing formative assessment (Quyen & Khairani, 2016). Some of the difficulties faced during the conduct of formative assessment was due to time constraint and a heavy workload required. The difficulties in implementing formative assessment has caused a gap and limited the potential of formative assessment has to offer.

The purpose of assessments in medical schools is to grade students on their level of understanding and to assess if the requirements to be a certified doctor are met. Medical school assessments vary throughout different universities where practices in different forms of assessment take place. In UPM undergraduate medical programme for example, the assessment includes both summative and formative assessment. Examples of formative assessment that are practiced are assignments, PBL, blended learning, small group teaching (SGT) as well as peer/self-assessment and feedback sessions after every examination. However, various methods are applied during summative assessment (final examinations) which consist of multiple true false (MTF), single best answer question (SBAQ), extended matching items (EMI), short answer questions (SAQ), modified essay questions (MEQ), OSCE, objective structured practical examination (OSPE), long case and short case.

2.3.1 Factors associated with perceived practice of formative assessment

2.3.1.1 Perceived practice on formative assessment between lecturers and students

Lecturers' perceived practice in teaching and the effects towards student's academic performance is greatly influenced by the extent of lecturer's perception of how their teaching process should be conducted (Miller and Satchwell, 2006). A clear picture emerges of where a student is relative to learning objectives and norms when a comprehensive appraisal program at the classroom level balances formative and summative student learning/achievement knowledge (Garrison &

Ehringhaus, 2011). Van der Vleuten (2005) describes five criteria for determining the usefulness of a particular method of assessment: reliability, validity, impact on future learning and practice, acceptability to learners and faculty, and costs. Newer advances surrounding evaluation methods in relation to validity have generally been correlated with the intention to attain a more precise assessment of clinical competence by increasing the authenticity of the measurement (Vleuten & Schuwirth, 2005). Hence, medical schools are improving assessment tools to maintain the reliability and validity in accordance with modern day technology depending on the validity of a certified doctor competent for the medical field.

A research regarding teacher's belief and perceived practice in traditional and constructivist teaching by Kaymakamoğlu (2007) showed that it is surprising that none of the teachers perceived their practice as constructivists and tended to perceive traditional assessment in their practices. Constructivism can be defined as a new learning approach which encourages active participation in small group teaching, emphasises on learning process, learning skill, self inquiry and focuses on process-oriented approach with reflection and self-assessment. Constructivist teaching approaches are able to enhance the use of formative assessment which encourage the values of formative assessment, such as reflection, self-assessment, self-centered learning and feedback. Whereas, in traditional methods which are more teacher-centered, where the approach is more towards summative assessment rather than formative assessment. Even though learner-centered learning was introduced in the new curriculum of education, the result of study indicated that teachers were aware that their perceived practice was not constructivist, opposing their good perception towards it. This might be due to the lack of exposure, knowledge and skills as a constructivist pulling them away from the practice of it.

2.3.1.2 Perceived practice on formative assessment between gender

Turner and Gibbs (2010) presented that females agree to a greater extent that they often receive feedback and make great use and improvement in learning from it. This showed that females perceived themselves to practice formative assessment methods more often which allows them to learn from these examinations. Similarly, another study found out that most females, compared to males, agreed that feedback was frequently used in assessment although the quality and quantity of feedback were lacking (unpublished data, 2019). Feedbacks are said to play an important role in their learning for subsequent assessment and they agreed that feedback should be given after an assessment for better understanding and corrections. Both studies indicated that females have a more positive practice towards formative assessment in education.

Besides that, a study done by Alkharusi (2011) stated that male pre-service teachers tend to perceive themselves to implement more communication in assessment results rather than female

pre-service teachers. The study showed that male teachers provided more feedback sessions and communicated with the students themselves and their parents regarding their assessment performance. This proved that male pre-service teachers leaned more towards formative assessment implementation in their teaching. However, there were no significant differences in the practice of male and female teachers in the grading system, where both genders agreed that assignments are made explicit to students and the classroom behavior, attendance rate and routine effort of students in studies are all taken into account in the overall assessment results. Thus, indicating that teachers of both genders implemented formative assessment in their practices.

2.3.1.3 Perceived practice on formative assessment between academic phases

A previous study was done by Preston et al. (2019) discovered that the pre-clinical understudies had essentially better scores in their multiple-choice questions (MCQ), Extended Multiple Questions (EMQ) and continuous assessment while the clinical understudies had higher scores in their OSPE and OSCE. In addition, the undergraduates desired summative assessments as a means of distinguishing themselves, but they can not really comply with the impact on their long term effectiveness in future (Al Kadri et al., 2019). So, the study reveals the hesitation and uncertainty of summative assessment were felt by the students as it did not put the spotlight on the efforts they put in or the practises approach across the semesters (Al Kadri et al., 2019).

Therefore, they believed that incremental implementation to formative evaluation, as well as alignment of learners and teachers to the method and its target are significant. Adequate time allocation is recognised as necessary prior to the introduction of formative assessment (Al Kadri et al., 2019). More clinical and problem-based questions were proposed by the preclinical students as preclinical teaching also requires clinical exposure simultaneously in their curriculum in order to embrace for their preparation facing the clinical years later (unpublished data, 2019). This is because formative assessment reflects the journey of abilities and capabilities of a student to handle a simulation throughout the year or within the allocated period helps students to recognize their own skills and knowledge through feedback from the lecturers.

Other than that, formative assessment is known as a process by which the learning process and improvising period is interrelated because they are able to refine their skills after a session and this goes on for the whole period. The clinical students informed that their interaction with patients helps them to improve their confidence levels and lead to clinical experience. The engagement with patients triggers them to have a deep approach to their learning. They were able to apply their theoretical knowledge to clinical practices by performing a physical examination or history-taking of the patient and discussing the condition of their patients even though in a stressful situation as the patient's safety plays a crucial concern (Al Kadri et al., 2011). The study reveals that formative

assessment exposes the students to a situation akin to a real situation where they are able to learn the common cases and rare cases which are likely to be encountered nowadays and hence enhance them to engage with the latest trend of cases and new environment.

2.3.1.4 Perceived practice on formative assessment between lecturer's duration of service

Yan and Cheng (2015) stated that self-efficacy can be enhanced by equipping teachers with necessary knowledge and skills, therefore strongly suggests that practices and adaptation of formative assessment are influenced by experiences and level of knowledge. Unsuccessful initiatives in formative assessment can be supported for improving self-efficacy by experiences of failure (Yan & Cheng, 2015). Hence, depending on the teacher's level of experience, the adaptation of formative assessments into practices is to improve as they have better self-efficacy in practicing formative assessment, reducing time and energy consumption. Teachers may face difficulties in implementing formative assessment as it requires external knowledge of assessment techniques leading to negative perspectives and perceptions (Popham, 2011; Volante & Beckett, 2011). Studies show teachers in China are unlikely to implement formative assessment due to student and teachers perceptions on knowledge transmission and cultural scripts for teaching. (Poole, 2016)

To our best of knowledge, there are no studies showing the comparison between gender, lecturers' duration of services and academic phases with students' and lecturers' perceived practices in formative assessment. Thus, we hope to carry out this research to understand more about the factors contributing to perceived practices in formative assessment among students and lecturers in undergraduate medical programme.

2.4 Conceptual framework

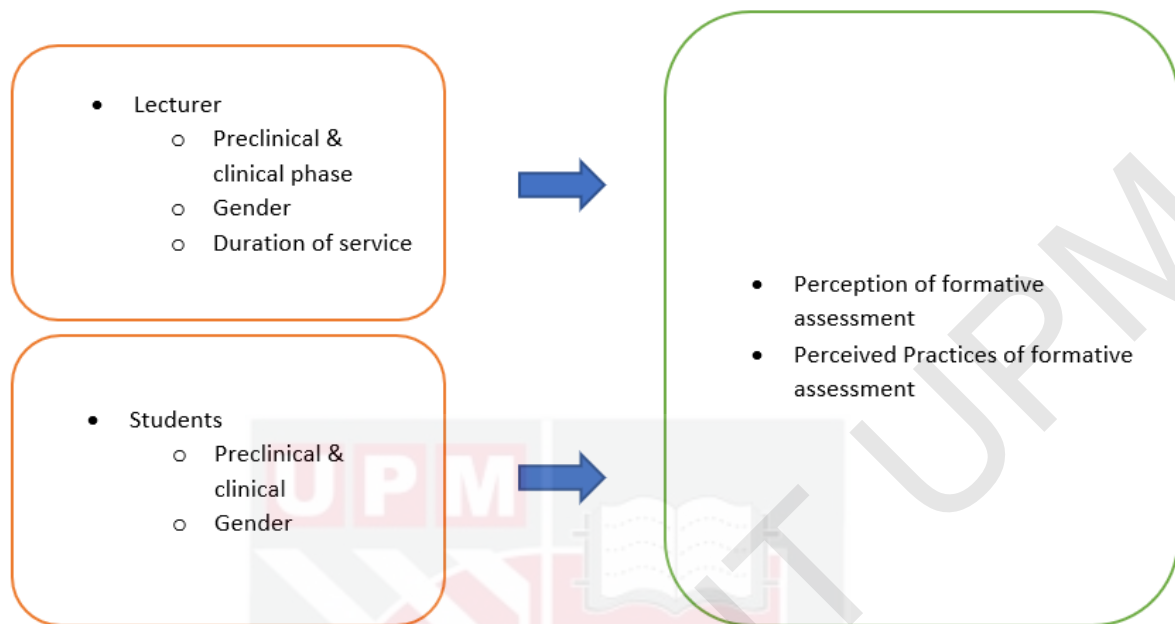


Figure 1. Conceptual framework of factors associated with lecturers' and students' perceptions and perceived practices of formative assessment in UPM undergraduate medical programme.

CHAPTER 3 : MATERIAL AND METHODS

3.1 Study location

This study was conducted in the FMHS at UPM, Serdang.

3.2 Study design

This study was based on a cross-sectional study design.

3.3 Study duration

This study was carried out from 20th December 2021 until 31st May 2021. The data collection, analysis and reporting were done from 1st March 2021 until 31st May 2021.

3.4 Sampling

3.4.1 Study population

The study population involved medical lecturers and students of UPM from both preclinical and clinical phases of the medical programme.

3.4.1.1 Inclusion criteria

- i. Preclinical and clinical medical lecturers involved in teaching UPM undergraduate medical programme.
- ii. UPM medical students from Year 1 to Year 5 registered under the 2020/2021 academic session.

3.4.1.2 Exclusion criteria

- i. Lecturers who were on extended leave or on post-graduate studies during the data collection period.
- ii. Medical students who were sitting for their examination during the data collection period.

3.4.2 Sampling frame

The sampling frame was a complete list of medical students and lecturers of FMHS, UPM in session 2020/2021 who fulfilled the inclusion criteria.

Table 1. Total medical lecturer in UPM

No.	Teaching Phase in Medical Programme	Number of Lecturers
1	Preclinical Phase	118
2	Clinical Phase	173

Table 2. Total medical students in UPM

No.	Year of Study	Number of Students
1	Year 1	107
2	Year 2	102
3	Year 3	113
4	Year 4	113
5	Year 5	83

3.4.3 Sampling unit

Sampling unit was a medical lecturer or medical student of FMHS, UPM that fulfills all inclusion and exclusion criteria.

3.4.4 Sampling size estimation

The minimum sample size, n for cross sectional study was calculated using the formula derived from Designing and Conducting Health Surveys: A Comprehensive Guide (Lu Ann Aday, 2006)

$$n = \frac{2\sigma^2 [z_{1-\alpha/2} + z_{1-\beta}]^2}{(\mu_1 - \mu_2)^2}$$

$$n = \frac{2(1.1283)^2 [1.96 + 0.84]^2}{(3.9703 - 3.7073)^2}$$

$$n = \frac{17.7170}{0.0692}$$

$$n = 256.03 \approx 256 \text{ subjects per group}$$

$$\text{For 2 groups: } n = 256 \times 2$$

$$n = 512 \text{ subjects}$$

Table 3. Sample size estimation calculation

Adjust for size of population	$n = \frac{n}{1 + \frac{(n-1)}{N}}$ (Lu Ann Aday, 2006, p178) $n_{new1} = \frac{512}{1 + \frac{(512-1)}{809}}$ $n_{new1} = 313.79 \approx 314$
Adjustment for estimated design effect for stratified sampling	Design effect = 1.3 $314 \times 1.3 = 408.2 = 408$
Adjustment for response rate	Response rate = 80% = 0.80 Non Response rate = 20% = 0.20 $\frac{408}{0.8} = 510.25 = \mathbf{510 \text{ subjects}}$
n	Number of sample size estimate
σ	Standard deviation for score of <i>perception of social interaction skill in purpose of assessment in developing a whole person</i> (Abiy Yigzaw, 2013) $\sigma = \sqrt{\frac{\sigma_1^2 + \sigma_2^2}{2}}$ $\sigma = \sqrt{\frac{1.18085^2 + 0.92854^2}{2}}$ $\sigma = 1.0622$
$Z_{1-\alpha/2}$	The standard error associated with 95% confidence interval is 1.96 (Lemeshow, Klar, & Lawanga, 1990)
$Z_{1-\beta}$	The standard error associated with power of 80% is 0.842. (Lemeshow, Hosmer, Klar, and Lwanga, 1990; Lipsey, 1990)
μ_1	Mean score for <i>perception of social interaction skill in purpose of assessment</i> in students ; 3.9703 (Abiy Yigzaw, 2013)
μ_2	Mean score for <i>perception of social interaction skill in purpose of assessment</i> in teachers ; 3.7073 (Abiy Yigzaw, 2013)

3.4.5 Sampling technique

In our study, Stratified Sampling, a type of probability sampling techniques, and Probability Proportional to Size (PPS) of medical students from Year 1 to Year 5 and lecturers from preclinical and clinical phases in the Faculty of Medicine and Health Science (FMHS, UPM) were used. Table 4 summarised the number of samples required for the respective academic phase and year of medical students and lecturers.

Table 4. The number of samples required for the respective academic phase and year of medical students and lecturers.

				Number of Sample needed
Number of Medical Students (Year 1 to Year 5) and Lecturers (Preclinical and Clinical) needed 510 subjects	Lecturers (0.360) 184 Lecturers	Preclinical (0.405)	-	75
		Clinical (0.595)	-	109
	Students (0.640) 326 Students	Preclinical (0.403) 132 Students	Year 1 (0.512)	68
			Year 2 (0.488)	64
		Clinical (0.597) 194 Students	Year 3 (0.366)	71
			Year 4 (0.366)	71
			Year 5 (0.269)	52

Number in bracket: Proportion

Proportion of **medical preclinical and clinical lecturers** needed:

$$\begin{aligned}
 & \frac{\text{Medical Lecturer (Preclinical and Clinical)}}{\text{Total of Medical Lecturer (Preclinical and Clinical) and Students (Year 1 to Year 5)}} \\
 &= \frac{291}{291 + 518} \\
 &= \frac{291}{809} \\
 &= 0.360
 \end{aligned}$$

Number of lecturers needed (preclinical and clinical phase)

$$0.360 \times 510 = 184$$

Proportion of preclinical lecturers needed:

$$\frac{\text{Medical Lecturer (Preclinical)}}{\text{Total of Medical Lecturer (Preclinical and Clinical)}}$$
$$= \frac{118}{291}$$
$$= 0.405$$

Number of Lecturers needed (Preclinical Phase)

$$0.487 \times 184 = 75$$

Proportion of clinical lecturers needed:

$$\frac{\text{Medical Lecturer (Clinical)}}{\text{Total of Medical Lecturer (Preclinical and Clinical)}}$$
$$= \frac{173}{291}$$
$$= 0.595$$

Number of Lecturers needed (Clinical Phase)

$$0.595 \times 184 = 109$$

Proportion of **medical Year 1 to Year 5 students** needed:

$$\frac{\text{Medical Students (Year 1 to Year 5)}}{\text{Total of Medical Lecturer (Preclinical and Clinical) and Students (Year 1 to Year 5)}}$$
$$= \frac{518}{291 + 518}$$
$$= \frac{518}{809}$$
$$= 0.640$$

Number of students needed (Year 1 to Year 5)

$$0.640 \times 510 = 326$$

Proportion of **preclinical medical students** needed:

$$\frac{\text{Year 1 + Year 2 Medical Students}}{\text{Total of Medical Students (Year 1 to Year 5)}}$$
$$= \frac{209}{518}$$
$$= 0.403$$

Number of students needed (Preclinical phase)

$$0.403 \times 326 = 132$$

Proportion of Year 1 medical students needed:

$$\frac{\text{Year 1 Medical Students}}{\text{Year 1} + \text{Year 2 Medical Students}}$$

$$= \frac{107}{209}$$

$$= 0.512$$

Number of students needed (Year 1)

$$0.512 \times 132 = 68$$

Proportion of Year 2 medical students needed:

$$\frac{\text{Year 2 Medical Students}}{\text{Year 1} + \text{Year 2 Medical Students}}$$

$$= \frac{102}{209}$$

$$= 0.488$$

Number of students needed (Year 2)

$$0.488 \times 132 = 64$$

Proportion of **clinical medical students** needed:

$$\frac{\text{Year 3} + \text{Year 4} + \text{Year 5 Medical Students}}{\text{Total of Medical Students (Year 1 to Year 5)}}$$

$$= \frac{113 + 113 + 83}{518}$$

$$= \frac{309}{518}$$

$$= 0.597$$

Number of students needed (Clinical phase)

$$0.597 \times 326 = 194$$

Proportion of Year 3 medical students needed:

$$\frac{\text{Year 3 Medical Students}}{\text{Year 3} + \text{Year 4} + \text{Year 5 Medical Students}}$$

$$= \frac{113}{309}$$

$$= 0.366$$

Number of students needed (Year 3)

$$0.366 \times 194 = 71$$

Proportion of Year 4 medical students needed:

$$\frac{\text{Year 4 Medical Students}}{\text{Year 3} + \text{Year 4} + \text{Year 5 Medical Students}}$$
$$= \frac{113}{309}$$
$$= 0.366$$

Number of students needed (Year 4)

$$0.366 \times 194 = 71$$

Proportion of Year 5 medical students needed:

$$\frac{\text{Year 5 Medical Students}}{\text{Year 3} + \text{Year 4} + \text{Year 5 Medical Students}}$$
$$= \frac{83}{309}$$
$$= 0.269$$

Number of students needed (Year 5)

$$0.269 \times 194 = 52$$

Therefore, 75 preclinical medical lecturers and 109 clinical medical lecturers, 68 students in Year 1, 64 students in Year 2, 71 students in Year 3, 71 students in Year 4 and 52 students in Year 5 were needed to conduct this research by stratified random sampling.

3.5 Variables

The variables involved in this study are depending on the objectives of the study (Table 5).

Table 5. Variables involved in this study according to each objective.

No.	Objectives	Independent variable	Dependent variable
1	To determine factors associated with lecturers' and students' perceptions and perceived practices of formative assessment in UPM undergraduate medical programme.	-	-
2	To describe the frequency in percentage of lecturers' and students' sociodemographic profile (gender, academic phases, lecturers' duration of service) and the score of perceptions and perceived practices of formative assessment in UPM undergraduate medical programme.	-	-
3	To determine the significant difference of the mean score of perceptions and perceived practices of formative assessment between UPM undergraduate medical students and lecturers.	Lecturers and students	Mean score of perceptions and perceived practices of formative assessment
4	To determine the significant difference of the mean score of perception and perceived practice of formative assessment between UPM undergraduate medical lecturers and students of different gender.	Gender of lecturers and students	Mean score of perceptions and perceived practices of formative assessment
5	To determine the significant difference of the mean score of perceptions and perceived practices of formative assessment between preclinical and clinical	Academic phases (preclinical and clinical) of lecturers and students	Mean score of perceptions and perceived practices of formative assessment

	UPM undergraduate medical lecturers and students.		
6	To determine the significant difference of the mean score of perceptions and perceived practices of formative assessment among UPM undergraduate medical lecturers' duration of service.	Lecturers' duration of service	Mean score of perceptions and perceived practices of formative assessment
7	To determine the proportion of students' and lecturers' perceived practices of formative assessment in UPM undergraduate medical programme in different gender, academic phases and lecturer's duration of services.	Students (gender and academic phases) and lecturers (gender, academic phases and duration of service)	Proportion of perceived practices of formative assessment

3.6 Instruments of study

3.6.1 Questionnaires

Questionnaires were used as the instrument of study for data collection in this study. Questionnaire was adapted from Guadu (2018) and MacLellan (2010). Two different sets of questionnaires were prepared for students and lecturers respectively which consist of similar items. Each questionnaire included 51 adapted items, all close-ended questions. The close-ended questions were divided into three different sections in the questionnaire and eight sub-scales. The questionnaire is attached in Appendix. The questionnaire consisted of the following scales:

Perception and perceived practice of formative assessment (Guadu, 2018)

1. Perception About The Importance of Formative Assessment
2. Perceived Practice of Formative Assessment: Monitoring
3. Perceived Practice of Formative Assessment: Scaffolding

Perceived practice of assessment (MacLellan, 2010)

4. Mode of assessment
5. Purpose of assessment
6. Marking of assessment

7. Timing of assessment
8. Value of feedback

For the second section, respondents were required to respond to each individual item from a five-point likert scale (*strongly disagree, disagree, undecided, agree, strongly agree*). The responses were converted into numeric, 1 for *strongly disagree* while 5 for *strongly agree*. The negative statements were scored in reverse which indicated that the higher the score, the more the participants agreed with the statement. Data collected was discrete data with a range of values from 1 (minimum score) to 5 (maximum score) for each scale.

For the third section, respondents were required to respond to each individual item from a 4 point likert scale (*frequently, sometimes, never, don't know*). The percentage of each category was summed up to indicate the frequency of formative assessment practice. Data collected was continuous data with a range of values from 0 to 100%.

3.6.2 Quality control

3.6.2.1 Validity and reliability of questionnaire

The validity test for questionnaires were done in two steps: content validity and face validity. The validity test was done to validate the questionnaire since it was adapted and amended to suit our study context. The content validity test was done to ascertain the relevance and representativeness of each item towards the study (Polit & Beck, 2006). The recommended panel experts of content validity is a minimum of 3 and up to 10 experts. Therefore, 6 lecturers who have an expertise in formative assessment were recruited as panels in order to rate the questionnaire based on the relevance of each item. Each item of the questionnaire was rated using a four-point Likert scale ranging from 1 (not relevant) to 4 (very relevant).

The raw data from the panel experts were gathered and entered into a spreadsheet and analysed using Microsoft Excel software. The calculation of item-level content validity index (I-CVI), scale-level content validity index (S-CVI), scale-level content validity index based on universal agreement method (S-CVI/UA), and scale-level content validity index based on average method (S-CVI/Ave) were estimated manually using a formula as follows (Polit & Beck, 2007):

$$\begin{aligned}
\text{I-CVI} &= (\text{agreed item}) / (\text{number of expert}) \\
\text{S-CVI/Ave} &= (\text{sum of I-CVI scores}) / (\text{number of item}) \\
\text{S-CVI/UA} &= (\text{sum of UA scores}) / (\text{number of item})
\end{aligned}$$

From the initial 64 items in the original questionnaire, 13 items were eliminated with I-CVI value less than 0.83. The I-CVI value of the remaining 51 items was 1 except for item 1, 2, 3, 6, 28, 29, 38 and 45. Since the I-CVI value for these items was 0.83, it was considered as acceptable (Polit & Beck, 2006). Hence, no correction was done on the items. Meanwhile, the S-CVI value for 51 items was 0.97. Based on Polit et al. (2007), the S-CVI value of 0.83 or higher is considered as acceptable. All 51 items met a satisfactory level of universal agreement between experts, S-CVI/UA was 0.83.

Face validity test is a subjective assessment for a questionnaire in terms of feasibility, readability, formatting and also the clarity of the language used in the questionnaire (Furr, 2011 & Yousefi et al, 2013). Face validation will be carried out with not less than 10 participants (Ozair et al, 2017) to get feedback regarding the questionnaire. A total of 10 UPM Health Science students and non-medical UPM lecturers volunteered and participated in the face validity test. All the items were rated using a four-point Likert scale ranging from 1 (not clear and not comprehensible) to 4 (very clear and very comprehensible).

To calculate the face validity index value, the raw score from the participants were entered in the Microsoft Excel and calculated for the item-level face validity index (I-FVI), scale-level face validity index based on the universal agreement method (S-FVI/UA), and scale-level face validity index based on average method (S-FVI/Ave) for each clarity and comprehensibility using the following formula (Yusoff MSB, 2019):

$$\begin{aligned}
\text{I-FVI} &= (\text{agreed item}) / (\text{number of rater}) \\
\text{S-FVI/Ave} &= (\text{sum of I-FVI scores}) / (\text{number of item}) \\
\text{S-FVI/UA} &= (\text{sum of UA scores}) / (\text{number of item})
\end{aligned}$$

As a result, the value of S-FVI/Ave of item clarity and comprehensibility was 0.99 for both students and lectures while the S-FVI/UA values were 0.92 for student's

questionnaire and 0.94 for lecturer's questionnaire. Based on Polit et al. (2007), the S-CVI of 0.83 or higher is considered as acceptable. The FVI score was interpreted based on CVI guidelines where the S-FVI of 0.83 or higher was considered as acceptable. Therefore, our face validity test was acceptable for both questionnaires.

A pilot testing was carried out among undergraduate medical students and lecturers of other universities, who fulfilled the inclusion criterias, to determine the best way to conduct the research. The questionnaires that are refined from the face and content validation were given to the participants. The range of Cronbach's alpha should be between 0 to 1, the higher the alpha gained, the more reliable the scales will be. The recommended and acceptable alpha value should be 0.70 and above to be considered as a sufficient measure of reliability or internal consistency of an instrument (Taber, 2018). This pilot test was conducted to acquire the overall internal consistency of the questionnaire using Cronbach's alpha reliability coefficient. The recommended participants for the pilot test is between 20-40 participants (Kieser & Wassmer, 1996). The raw data were then entered in SPSS version 26 to be calculated.

19 participants had participated in the lecturer's questionnaire while 40 participants had participated in the pilot test for the student's questionnaire. As a result, the alpha value of both questionnaires for 51 items met the satisfactory level ($\alpha = 0.875$) for lecturers and ($\alpha = 0.887$) for students.

3.7 Operational definition

Table 6. Operational definition

No.	Terms	Definition
1	Formative assessment	Contextual : Continuous process of assessment that involves teachers and students engagement in order to improve learning and teaching strategies by providing feedback (Brookhart, 2013) Operational : A low-stake continuous assessment with feedback with the aim to provide assessment for learning. It helps students identify their strengths and weaknesses and provides information to the faculty about the areas students are struggling for better improvement in education. It is usually carried out throughout a module and does not carry a grade. Examples are assessment through presentation, lectures, peer assessment, self

		assessment, PBL, SGT, bedside teaching, reflective writing and labs.
2	Summative assessment	Contextual: Cumulative evaluations, typically at the end of the coverage of a unit or subject, intended to capture what a student has learned or the level of learning and judge success against certain criteria (Classroom Assessment and the National Science Education Standards, 2001) Operational: A high-stake end of module assessment which provides a final grade with a lack of feedback. It does not provide sufficient help for students to realise their strengths and weaknesses for self-improvement before the final assessment. Examples are written and clinical examinations.
3	Perception of assessment	Contextual: The act of students perceiving about the assessment in their course under investigation. (Van de Watering et al, 2006) Operational: The interpretation or point of view of the academic learning process and the importance of assessment in UPM undergraduate medical programme by students and lecturers.
4	Perceived practice of assessment	Contextual: Practice of assessment is the implementation of judgement for the purpose of generating information about achievement (Knight, 2007) Operational: The perceived or interpretation of practices of assessment in UPM undergraduate medical programme by students and lecturers.
5	Gender	Contextual : Sex; the category to which individual is allocate on sex basis (Dorland's Pocket Medical Dictionary 29th edition, 2015). Operational : Gender of students and lecturers whether female or male.
6	Academic phases	Contextual: The phases of education which seek to develop knowledge and learning and can be categorised as primary, secondary or tertiary phases of education. (S. Hegarty, 2010) Operational: Phases of academic in undergraduate medical

		programme whether clinical or preclinical.
7	Preclinical phase	Contextual : Relating to or denoting the first, chiefly theoretical, stage of a medical education. (Oxford Dictionary, 2021) Operational : An academic phase where students are exposed to the basic theory of medicine and not treating real life patients. Examples are medical students from Year 1 and Year 2. It also includes lecturers who are teaching these preclinical students, which includes medical lecturers from the Department of Human Anatomy, Department of Pathology, Department of Medical Microbiology & Parasitology, Department of Community Health and Department of Biomedical Sciences.
8	Clinical phase	Contextual : Relating to the observation and treatment of actual patients rather than theoretical or laboratory studies. (Oxford Dictionary, 2021) Operational: An academic phase where students are exposed to real life patients in hospitals and physically practising medicine. Examples are medical students from Year 3, 4, and 5. It also includes medical lecturers who are teaching these clinical students, which includes medical lecturers from the and the Department of Nutrition and Dietetics, Department of Family Medicine, Department of Medicine, Department of Psychiatry, Department of Radiology, Department of Paediatrics, Department of Surgery, Department of Obstetric and Gynaecology and the Department of Orthopaedics.
9	Lecturer's duration of service	Contextual : The length of time between the service commencement date and last service date. (Australia Institute of Health and Welfare, 2021) Operational : The duration of lecturer's service in UPM and involvement in teaching undergraduate medical programme. It can be defined according to the level of experience as a lecturer practicing formative assessment in medical curriculum.

3.8 Data collection technique

The questionnaires were constructed via Google Form and both sets of questionnaires were distributed to the target respondent groups, which are the medical lecturers and undergraduate medical students from UPM respectively. The questionnaires were answered and collected during the data collection period which started from 1st March 2021 until 19th May 2021. Questionnaires that were not returned before the deadline were deemed to be non-response.

3.9 Data analysis

The data were analysed using descriptive and inferential statistics. Data analysis was carried out using IBM Statistical Package of Social Science (SPSS) version 26. The missing data, errors and outlier were checked. Kolmogorov-Smirnov test was used in assessing the normality test statistically. In this study the data were not normally distributed. For descriptive statistics, the variables for categorical data were shown as percentage and frequency while interquartile range and median was used to describe continuous data. For inferential statistics, Mann Whitney U Test was used for three categorical data (role of individuals, gender and academic phase) while Kruskal Wallis Test was used for lecturer's duration of services as it involved 4 categories. Alpha value was set at 5% with a confidence interval of 95%. Null hypothesis was rejected when $p < 0.05$ except for the post-hoc test (Mann Whitney U Test) at $p < 0.0083$.

3.10 Ethical consideration

This study has been approved by the Ethics Committee of Universiti Putra Malaysia (JKEUPM) with reference number (Ref. no: JKEUPM-2021-091). Approval from the Dean of FMHS was also obtained before starting data collection. All data from the respondents were kept confidential and no identification data were recorded by the study instruments. All participants were to sign a consent form prior to taking part in this research study. The findings of the study were promised to not affect the lecturers' and students' position in UPM.

CHAPTER 4 : RESULTS

4.1 Response rate

Based on the sample size calculation, the total number of medical lecturers and students required including 20% expected non-responses which consisted of 184 medical lecturers and 326 medical students. Out of 184 medical lecturers, only 62 answered the questionnaire provided, giving a total response rate of 33.7%. Table 7 shows the response rate from each academic phase of medical lecturers. On the other hand, out of 326 medical students, all 326 answered the questionnaire provided, giving a response rate of 100%. Table 8 shows the response rate from each year of medical students.

Table 7. Response rate from each academic phase of medical lecturers.

No.	Academic Phase	Frequency (n)	Percentage of response (%)
1.	Preclinical phase	31	41.3
2.	Clinical phase	31	28.4

Table 8. Response rate from each year of medical students.

No.	Year of Study	Frequency (n)	Percentage of response (%)
1.	Year 1	68	100.0
2.	Year 2	64	100.0
3.	Year 3	71	100.0
4.	Year 4	71	100.0
5.	Year 5	52	100.0

4.2 Sociodemographic characteristics of respondents

Table 9 shows the characteristics of 62 medical lecturers respondents by gender, academic phases and duration of service. Out of 62 respondents, 66.1% were female while 33.9% were male. With regard to their academic phases, half (50%) of the respondents were preclinical phase lecturers and another 50% were clinical phase lecturers. Meanwhile, the majority (29%) of the lecturers were less than 5 years of teaching, followed by 5 to 10 years (25.8%).

Table 10 shows the characteristics of 326 medical students respondents by gender and academic phases. Out of 326 respondents, the majority were female with 66.3% while the remaining 33.7% were male. With regard to their academic phases, 40.5% were in the preclinical phase while 59.5% were in the clinical phase.

Table 9. Sociodemographic characteristics of lecturer respondents (N=62)

Characteristics	Frequency (n)	Percentages (%)
Gender		
Female	41	66.1
Male	21	33.9
Academic Phases		
Preclinical	31	50.0
Clinical	31	50.0
Duration of Service		
Less than 5 years	18	29.0
5 - 10 years	16	25.8
11 - 15 years	13	21.0
More than 15 years	15	24.2

Table 10. Sociodemographic characteristics of student respondents (N=326)

Characteristics	Frequency (n)	Percentages (%)
Gender		
Female	216	66.3
Male	110	33.7
Academic Phases		
Preclinical	132	40.5
Clinical	194	59.5

4.3 Association between roles of individual and their perceptions and perceived practices of formative assessment

Generally, both lecturer and student respondents rated positively on the importance and practice of formative assessment. There is a significant association in the *score of perception about the importance of formative assessment* with the role of respondents (Table 11). The mean score of perception about the importance of formative assessment is significantly higher in lecturers compared to students ($p < 0.001$). Therefore, the null hypothesis is rejected. The finding shows that the lecturers' agreement on the importance of formative is higher than the students.

Table 11. Association between roles of individual and their perceptions and perceived practices of formative assessment (N = 388)

		Mean Rank	Median (IQR)	Z	P-value
Mean Score of Perception about the Importance of Formative Assessment	Lecturer	248.27	4.10	^a -4.157	*0.001
	Student	184.27	4.00		
Mean Score of Perceived Practice of Formative Assessment (Monitoring)	Lecturer	253.05	4.00	^a -4.522	*0.001
	Student	183.37	3.90		
Mean Score of Perceived Practice of Formative Assessment (Scaffolding)	Lecturer	258.14	4.10	^a -4.934	*0.001
	Student	182.40	4.00		

Note: *: Significance level at $p < 0.05$

^a : Mann-Whitney U Test

There is also a significant association in the *score of perceived practice of formative assessment (monitoring)* with the role of respondents. The mean score of perceived practice of formative assessment (monitoring) is significantly higher in lecturers than in students ($p < 0.001$). Therefore, the null hypothesis is rejected. The finding shows that the lecturers' agreement on the practice of formative assessment through monitoring is higher than the students.

Furthermore, there is a significant association in the *score of perceived practice of formative assessment in terms of scaffolding* between lecturers and students. The mean score of perceived practice of formative assessment (scaffolding) is significantly higher in lecturers than in students

($p < 0.001$). Thus, null hypothesis is rejected. The finding shows that the lecturers' agreement on the practice of formative assessment through scaffolding is higher than the students.

4.4 Association between gender and their perceptions and perceived practices of formative assessment

4.4.1 Association between gender and lecturers' perceptions and perceived practices of formative assessment

The results show that there is no significant difference in the *score of the importance of formative assessment, perceived practice of formative assessment (monitoring) and perceived practice of formative assessment (scaffolding)* between different genders among the lecturers ($p < 0.05$) (Table 12). Thus, the null hypothesis is not rejected. The findings indicate that the perception of lecturers on the importance of formative assessment, their practice of formative assessment through monitoring and scaffolding were similar between different genders.

Table 12. Association between gender and lecturers' perceptions and perceived practices of formative assessment (N=62)

		Mean Rank	Median (IQR)	Z	P-value
Mean Score of Perception about the Importance of Formative Assessment	Female	29.67	4.00	^a -1.131	0.258
	Male	35.07	4.14		
Mean Score of Perceived Practice of Formative Assessment (Monitoring)	Female	32.10	4.00	^a -0.370	0.711
	Male	30.33	4.00		
Mean Score of Perceived Practice of Formative Assessment (Scaffolding)	Female	32.46	4.11	^a -0.600	0.549
	Male	29.62	4.00		

Note: *: Significance level at $p < 0.05$

^a : Mann-Whitney U Test

4.4.2 Association between gender and students' perceptions and perceived practices of formative assessment

There is no significant difference in the *score of the importance of formative assessment, perceived practice of formative assessment (monitoring) and perceived practice of formative assessment (scaffolding)* between the different genders among medical students ($p > 0.05$) (Table 13). Thus, the null hypothesis is not rejected. The findings indicate that the perception of students on the importance of formative assessment, their practice of formative assessment through monitoring and scaffolding were similar between different genders.

Table 13. Association between gender and students' perception and perceived practice of formative assessment (N=326)

		Mean Rank	Median (IQR)	Z	P-value
Mean Score of Perception about the Importance of Formative Assessment	Female	159.66	4.00	^a -1.04	0.298
	Male	171.05	4.00		
Mean Score of Perceived Practice of Formative Assessment (Monitoring)	Female	161.32	3.90	^a -0.589	0.556
	Male	167.78	3.90		
Mean Score of Perceived Practice of Formative Assessment (Scaffolding)	Female	162.04	4.00	^a -0.396	0.692
	Male	166.36	4.00		

Note: *: Significance level at $p < 0.05$

^a : Mann-Whitney U Test

4.5 Association between academic phases and their perceptions and perceived practices of formative assessment

4.5.1 Association between academic phases and lecturers' perceptions and perceived practices of formative assessment

There is no significant difference in the *score of the importance of formative assessment, perceived practice of formative assessment (monitoring) and perceived practice of formative assessment (scaffolding)* between the different academic phases among medical lecturers ($p > 0.05$) (Table 14). Therefore, the null hypothesis is not rejected. The findings show that the perception of lecturers on the importance of formative assessment, their practice of formative assessment through monitoring and scaffolding were similar between different academic phases.

Table 14. Association between academic phases and lecturers' perceptions and perceived practices of formative assessment (N=62)

		Mean Rank	Median (IQR)	Z	P-value
Mean Score of Perception about the Importance of Formative Assessment	Preclinical	34.10	4.14	^a -1.149	0.250
	Clinical	28.90	4.14		
Mean Score of Perceived Practice of Formative Assessment (Monitoring)	Preclinical	30.74	4.00	^a -0.336	0.737
	Clinical	32.26	4.00		
Mean Score of Perceived Practice of Formative Assessment (Scaffolding)	Preclinical	32.77	4.22	^a -0.568	0.570
	Clinical	30.23	4.00		

Note: *: Significance level at $p < 0.05$

^a : Mann-Whitney U Test

4.5.2 Association between academic phases and students' perceptions and perceived practices of formative assessment

There is no significant association in the *score of the importance of formative assessment* and *perceived practice of formative assessment (scaffolding)* with the different academic phases of medical students ($p > 0.05$) (Table 15). The null hypothesis is not rejected. The findings indicate that the perception of students on the importance of formative assessment and their practice of formative assessment scaffolding were similar between different academic phases.

Table 15. Association between academic phases and students' perceptions and perceived practices of formative assessment (N=326)

		Mean Rank	Median (IQR)	Z	P-value
Mean Score of Perception about the Importance of Formative Assessment	Preclinical	169.82	4.00	^a -1.008	0.313
	Clinical	159.20	4.00		
Mean Score of Perceived Practice of Formative Assessment (Monitoring)	Preclinical	149.22	3.70	^a -2.274	*0.023
	Clinical	173.22	4.00		
Mean Score of Perceived Practice of Formative Assessment (Scaffolding)	Preclinical	166.85	4.00	^a -0.536	0.592
	Clinical	161.22	4.00		

Note: *: Significance level at $p < 0.05$

^a : Mann-Whitney U Test

However, the *score of perceived practice of formative assessment (monitoring)* was significantly associated with the academic phase ($p = 0.023$). The mean score is significantly higher in clinical phase students than in preclinical phase students. Therefore, the null hypothesis is rejected. This shows that the students perceived that the lecturers practice more formative assessment through monitoring in the clinical phase than preclinical phase.

4.6 Association between lecturers' duration of service and their perceptions and perceived practices of formative assessment

There is no significant association between the *score of perception about the importance of formative assessment*, *perceived practice of formative assessment (monitoring)* and *perceived practice of formative assessment (scaffolding)* and the duration of service of the lecturers ($p > 0.05$) (Table 16). Thus, the null hypothesis is not rejected. This illustrates that the perception of lecturers on the importance of formative assessment, their practice of formative assessment through monitoring and scaffolding were similar between different duration of services.

Table 16. Association between lecturers' duration of service and their perceptions and perceived practices of formative assessment (N=62)

	Duration of Service	Mean Rank	Median (IQR)	df	P-value
Mean Score of Perception about the Importance of Formative Assessment	Less than 5 years	32.75	4.00	^b 3	0.383
	5 - 10 years	34.63	4.14		
	11 - 15 years	23.96	3.86		
	More than 15 years	33.20	4.14		
Mean Score of Perceived Practice of Formative Assessment (Monitoring)	Less than 5 years	32.31	4.00	^b 3	0.923
	5 - 10 years	33.25	4.00		
	11 - 15 years	31.04	4.00		
	More than 15 years	29.07	4.00		
Mean Score of Perceived Practice of Formative Assessment (Scaffolding)	Less than 5 years	31.58	4.29	^b 3	0.819
	5 - 10 years	34.44	4.33		
	11 - 15 years	31.42	4.00		
	More than 15 years	28.33	4.00		

Note: *: Significance level at $p < 0.05$

^b: Kruskal-Wallis Test

4.7 Proportion of students' and lecturers' perceived practices of formative assessment

The respondents were required to indicate the frequency of formative assessment practice based on their experience as a lecturer or student (Table 17). We found that the lecturers indicated that they frequently conduct small group teaching, written examination and practical classes/labs/workshops (64.5%, 59.7% and 53.2%) while students also claimed that they are frequently assessed through small group teaching, written examination and clinical examination (60.1%, 58.3% and 53.4% respectively). The medical lecturers agreed that they sometimes conduct any assessment by peer assessment (58.1%), self-assessment (46.8%) and presentation/audio or video presentation (41.9%). Meanwhile, students showed that sometimes their assessments were done through peer assessment (58.0%), practical classes/labs/workshops (51.2%) and presentation/audio or video presentation (50.9%). Some lecturers and students informed that they never practiced self assessment (33.9% and 18.7% respectively) and reflective writing/logbooks (29.0% and 18.3% respectively). However, about 24% of the lecturers reported that they never conduct clinical examinations-to evaluate the students.

Table 17. Mode of assessment (frequency and percentage)

No	Items	Ordinal scale	Lecturers (N = 62)	Students (N = 326)
1.	Small group session (eg. PBL/CaseStudy/ECE/Bedside Teaching, etc)	Frequently	40 (64.5)	196 (60.1)
		Sometimes	21 (33.9)	112 (34.4)
		Never	1 (1.6)	10 (3.1)
		Don't know	0 (0.0)	8 (2.5)
2.	Written examination (eg. Essay/MCQ/SAQ, etc)	Frequently	37 (59.7)	190 (58.3)
		Sometimes	23 (37.1)	115 (35.3)
		Never	2 (3.2)	14 (4.3)
		Don't know	0 (0.0)	7 (2.1)
3.	Clinical Examination (eg. OSCE / Long case / Short case, etc)	Frequently	24 (38.7)	174 (53.4)
		Sometimes	21 (33.9)	128 (39.3)
		Never	15 (24.2)	12 (3.7)
		Don't know	2 (3.2)	12 (3.7)
4.	Reflective writing / Logbook	Frequently	19 (30.6)	111 (34.0)
		Sometimes	24 (38.7)	158 (48.5)
		Never	18 (29.0)	40 (12.3)
		Don't know	1 (1.6)	17 (5.2)
5.	Practical classes / Labs / Workshops	Frequently	33 (53.2)	125 (38.3)
		Sometimes	21 (33.9)	167 (51.2)
		Never	7 (11.3)	20 (6.1)
		Don't know	1 (1.6)	14 (4.3)

6. Presentation/Audio or video product	Frequently	31 (50.0)	122 (37.4)
	Sometimes	26 (41.9)	166 (50.9)
	Never	4 (6.5)	25 (7.7)
	Don't know	1 (1.6)	13 (4.0)
7. Peer Assessment	Frequently	11 (17.7)	70 (21.5)
	Sometimes	36 (58.1)	189 (58.0)
	Never	14 (22.6)	54 (16.6)
	Don't know	1 (1.6)	13 (4.0)
8. Self Assessment	Frequently	11 (17.7)	89 (27.3)
	Sometimes	29 (46.8)	161 (49.4)
	Never	21 (33.9)	61 (18.7)
	Don't know	1 (1.6)	15 (4.6)

Majority of lecturers (72.9%) and students (69.6%) perceived that assessment is frequently conducted to strengthen understanding and knowledge obtained (Table 18). About 62% from both lecturers and students agreed that assessment is frequently carried out to diagnose strengths and weaknesses and it helps to develop thinking. They also perceived that assessment is held frequently to motivate learning (56.5% and 57.1% respectively). Conversely, more than 50% of lecturers and students perceived that assessment practice is frequently used to grade/rank and evaluate teaching.

Table 18. Purpose of assessment (frequency and percentage)

No	Items	Ordinal scale	Lecturers (N = 62)	Students (N = 326)
9. Assessment is used to grade/rank achievement	Frequently		32 (51.6)	188 (57.7)
	Sometimes		26 (41.9)	110 (33.7)
	Never		4 (6.5)	17 (5.2)
	Don't know		0 (0.0)	11 (3.4)
10. Assessment is used to motivate learning	Frequently		35 (56.5)	186 (57.1)
	Sometimes		26 (41.9)	119 (36.5)
	Never		1 (1.6)	11 (3.4)
	Don't know		0 (0.0)	10 (3.1)
11. Assessment is used to diagnose strengths and weaknesses	Frequently		39 (62.9)	202 (62.0)
	Sometimes		22 (35.5)	99 (30.4)
	Never		1 (1.6)	16 (4.9)
	Don't know		0 (0.0)	9 (2.8)

12. Assessment is used to evaluate teaching	Frequently	31 (50.0)	181 (55.5)
	Sometimes	30 (48.4)	122 (37.4)
	Never	1 (1.6)	14 (4.3)
	Don't know	0 (0.0)	9 (2.8)
13. Assessment is to develop thinking	Frequently	39 (62.9)	202 (62.0)
	Sometimes	23 (37.1)	100 (30.7)
	Never	0 (0.0)	17 (5.2)
	Don't know	0 (0.0)	7 (2.1)
14. Assessment is to strengthen understanding and knowledge obtained	Frequently	45 (72.6)	227 (69.6)
	Sometimes	17 (27.4)	82 (25.2)
	Never	0 (0.0)	9 (2.8)
	Don't know	0 (0.0)	8 (2.5)

Both lecturers and students noted that marking was frequently used to assess knowledge (77.4% and 61.7%) and thinking (71.0% and 58.6%) (Table 19). A high number of lecturers and students admitted that marking was sometimes based on implicit (61.3% and 48.5% respectively) and explicit (53.2% and 44.8% respectively) criteria. However, about 19% of the students do not know that the marking was based on implicit and explicit criteria. Furthermore, 58.1% lecturers and 59.5% students perceived that marking was frequently given as a summative grade.

Table 19. Marking of assessment (frequency and percentage)

No	Items	Ordinal scale	Lecturers (N = 62)	Students (N = 326)
15. Marking is based on implicit criteria	Frequently		17 (27.4)	98 (30.1)
	Sometimes		38 (61.3)	158 (48.5)
	Never		3 (4.8)	6 (1.8)
	Don't know		4 (6.5)	64 (19.6)
16. Marking is based on explicit criteria	Frequently		25 (40.3)	112 (34.4)
	Sometimes		33 (53.2)	146 (44.8)
	Never		0 (0.0)	6 (1.8)
	Don't know		4 (6.5)	62 (19.0)
17. Marking is to assess knowledge	Frequently		48 (77.4)	201 (61.7)
	Sometimes		14 (22.5)	110 (33.7)
	Never		0 (0.0)	8 (2.5)
	Don't know		0 (0.0)	7 (2.1)
18. Marking is to assess thinking	Frequently		44 (71.0)	191 (58.6)
	Sometimes		17 (27.4)	119 (36.5)
	Never		1 (1.6)	7 (2.1)
	Don't know		0 (0.0)	9 (2.8)

19. Marking is given as a summative grade	Frequently	36 (58.1)	195 (59.5)
	Sometimes	23 (37.1)	114 (35.0)
	Never	2 (3.2)	2 (0.6)
	Don't know	1 (1.6)	15 (4.6)

Majority of the students (77.3%) and lecturers (62.9%) revealed that the assessments were frequently conducted at the end of a module (Table 20). Only 58.1% of the medical lecturers perceived assessment to be carried out frequently throughout the module while 46.4% of students thought that the assessment is sometimes carried out throughout the module.

Table 20. Timing of assessment (frequency and percentage)

No	Items	Ordinal scale	Lecturers (N = 62)	Students (N = 326)
20. Assessment is carried out throughout a module	Frequently		36 (58.1)	114 (35.0)
	Sometimes		26 (41.9)	151 (46.4)
	Never		0 (0.0)	47 (14.4)
	Don't know		0 (0.0)	14 (4.3)
21. Assessment is carried out at the end of a module	Frequently		39 (62.9)	252 (77.3)
	Sometimes		19 (30.6)	63 (19.3)
	Never		4 (6.5)	6 (1.8)
	Don't know		0 (0.0)	5 (1.5)

In terms of the value of feedback, the majority of the lecturers claimed that feedback frequently improved the learning process (83.9%), was helpful in its detail (75.8%), prompted discussion between teachers and students (74.2%) and helped to understand assessment (71.9%). In general, half of the students acknowledged the value of feedback even though there was a big gap (20%) between lecturers' and students' percentage on each criteria of the feedback (Table 21).

Table 21. Value of feedback (frequency and percentage)

No	Items	Ordinal scale	Lecturers (N = 62)	Students (N = 326)
22. Feedback is helpful in its detail	Frequently		47 (75.8)	169 (51.8)
	Sometimes		15 (24.2)	137 (42.0)
	Never		0 (0.0)	11 (3.4)
	Don't know		0 (0.0)	9 (2.8)

23. Feedback prompts discussion between teachers and students	Frequently	46 (74.2)	188 (57.7)
	Sometimes	16 (25.8)	112 (34.4)
	Never	0 (0.0)	15 (4.6)
	Don't know	0 (0.0)	11 (3.4)
24. Feedback helps to understand assessment	Frequently	44 (71.0)	193 (59.2)
	Sometimes	18 (29.0)	111 (34.0)
	Never	0 (0.0)	15 (4.6)
	Don't know	0 (0.0)	7 (2.1)
25. Feedback improves learning process	Frequently	52 (83.9)	200 (61.3)
	Sometimes	10 (16.1)	107 (32.8)
	Never	0 (0.0)	13 (4.0)
	Don't know	0 (0.0)	6 (1.8)

CHAPTER 5 : DISCUSSION

5.1 Response rate

Out of 184 lecturers who were chosen to participate in the study (preclinical and clinical), only 62 managed to answer the questionnaire, giving a response rate of 33.7%. This is most likely due to the limited time given for data collection and also given the fact that data collection had to be done online instead of face-to-face. The lecturer might be preoccupied with their work commitment, therefore were unable to participate in the survey. Moreover, the limited data collection period due to the delay in the pilot test and the coincidence of data collection period with the Hari Raya celebration in early May subsequently led to a lower number of responses in general.

However, out of 326 students who were chosen to participate in the study (Year 1 to Year 5), all 326 of them answered the questionnaire giving a response rate of 100%. This is due to the fast response time from students and the medium for communication through Whatsapp group helped shorten the time for data collection and yielded a high response rate. Amongst 326 respondents, clinical students contributed to a large portion of respondents compared to preclinical students (clinical = 59.5%, preclinical = 40.5%). This is due to the higher number of students in clinical phase, which consist of year 3, year 4 and year 5, while preclinical students only include Year 1 and Year 2 students.

5.2 Association between UPM undergraduate medical lecturers' and students' perceptions and perceived practices of formative assessment

From our results, both lecturers and students agreed that formative assessment is important. However, lecturers appeared to have higher agreement compared to students. The findings of our study revealed that the lecturers appreciate the concepts of performing the formative assessment and value of feedback gained at the end of every session compared to students in order to improve their teaching lesson. Nonetheless, there are many studies that have found that formative assessment is useful both for lecturers and students in different ways. As an example, a study by Herr et. al (n.d.) proved that formative assessment helped to identify any misunderstanding and offer reliable ongoing feedback throughout the study, which helped teachers and students to revise and improve their educational planning. Moreover, there was a significant association in the score of perceived practice of formative assessment in terms of monitoring between lecturers and students. Yigzaw (2013) pointed out that teachers admit the continuous assessment improves classroom interaction between teachers and students. All lecturers show that they have higher

agreement on formative assessment than students by assisting them to monitor their students' learning progress. We found that the majority of the lecturers were usually evaluating their students during classes by having a brief understanding session first before going through the lessons to strengthen the students' basic knowledge. They would also have the question and answer session before the end of the class to clarify all the misunderstandings. Sondergeld et al. (2010) mentioned that a wide variety of ideas on conducting the formative assessment in the classroom that can be done by the educators seem likely to contribute to the effectiveness of executing formative assessment. There was a significant association in the score of perceived practice of formative assessment in terms of scaffolding between lecturers and students. We observed that the lecturers have higher agreement that the scaffolding approach is really helpful in teaching compared to the students. This is because more than half of the lecturers perceived that they could build a good connection with the students for a better learning experience through a scaffolding approach. Despite focusing solely on monitoring strategies, they would not know what the students truly lacked in their studies unless they attempted to engage them in the classroom. This has been supported by a previous study that mentioned more than 60% teachers agreed that the students' involvement reflects their understanding in the classroom by noticing and interconnecting their actions from instructions and behaviours (Sondergeld et al., 2010).

5.3 Association between gender of UPM undergraduate medical lecturers' and students' perceptions and perceived practices of formative assessment

In our study, lecturers have the same agreement on the importance of formative assessment regardless of the different genders. Hence, the genders of the lecturers does not really influence the importance of formative assessment as both genders seem to have their own ways on the appreciation and understanding of the benefits of performing the formative assessment in class.

Both genders of lecturers show that they have the same agreement in terms of monitoring approach as we found that the lecturers inspected the students' improvement throughout the course as a whole despite their genders. They tend to observe the students' understanding through quizzes, group works and practical assignments even though they were not used to grade the students. According to the prior research, classroom assessment aids to refine and boost the teacher-student communication, not only that but also encourage students to attain maximum capability and accomplishment (Onuka & Owolabi, 2008). On the other hand, Kimmel (2000) said male and female teachers are seen differently in interactive communication patterns as both have unique conveying style derived naturally in which the genders of educators influenced the students' evaluation for their learning and teaching approach (Hameed et al., 2014). However, our

findings show that both female and male lecturers were likely to have the similar formative assessment approach to enhance an active learning environment in the class.

Furthermore, there was no significant association between genders of UPM undergraduate medical lecturers and perceived practice of formative assessment through scaffolding approach. Female and male lecturers tend to have the same agreement on scaffolding approaches. They are able to notice the uncertainties in their students' learning and guide them to fully understand the content of each topic. Evidence from a previous study mentioned that some teachers collaborated to further design a solution, providing valuable criteria with colleagues and students, and creating new systematic processes in order to observe each student's learning and achievement (OECD, 2008). We found that the situation was very similar in UPM where the lecturers tend to conduct meetings especially before announcing and distributing the examination marks to discuss the students' performance and brainstorm solutions of the difficulties that both lecturers and students faced throughout the semester to further plan a better strategy for the upcoming semester.

Our study revealed that both female and male students have the same agreement on the perception of importance of formative assessment. We found that female and male students really thought that every quiz and assignment given by the lecturers were crucial in their performance although sometimes it would not count for their final assessment score. Both genders were hardworking and very committed in their studies despite the fact that they needed to cover numerous lecture notes throughout a module. In contrast to our study findings, Ismail (2015) mentioned that most of the respondents from different courses in University Malaya agreed that female students are more diligent in their studies compared to male students and somehow their attitudes reflect their performance and achievement in the class (Borg, 2014).

Furthermore, both female and male students claim that they have the same agreement that their lecturers practice formative assessment through monitoring their learning progress. This is because the creative way of lecturers' approaches during online classes would affect the students' preparation beforehand and progress regardless of their genders. For instance, the lecturers would conduct a quiz at the beginning of the class prior to the teaching to assess their understanding about the lessons. Moreover, the interaction of lecturers and students by giving cases based learning would also encourage active participation and trigger creative thinking among students for their preparation in real clinical scenarios. This has been supported with previous study in which Korean teachers understand that creative teaching encourages students to develop their own thinking by facilitating peer discussion and provides them with the opportunity to develop hands-on experience and active communication in the classroom (Kyunghee & Haeji, 2019).

A study done by Waheed and Sadiq (2017) informed that female students benefited the most from scaffolding in terms of improving their grammatical skills than male students as they rapidly improved by suitable teaching and mentorship. In contrast, our study shows no significant association between genders of the medical students and scaffolding strategies. We noticed that both genders have the same agreement that formative assessment enhances their learning implementation in problem solving, understanding and social skills. This could be explained with the implementation of mentor and mentees programmes among lecturers and students. Most of the mentors would keep track of their mentees learning progress especially when they found out the students' grades from their tests regardless of the different genders. It would help the lecturers to plan supports and guidance strategies in order to improve and motivate them better. Therefore, a group of great quality of students that fulfilled in every aspect could be developed from time to time. This has been proven from a study done by Lin et. al. (2021) found that the majority of the mentors believed that the quality of the mentor was the most crucial factor and they believed that mentors can benefit the development of the trainee.

5.4 Association between academic phases of UPM undergraduate medical lecturers' and students' perceptions and perceived practices of formative assessment

With regards to academic phases, results showed that preclinical and clinical lecturers have similar agreement on the perception and perceived practice (monitoring and scaffolding) of formative assessment. Preclinical lecturers and clinical lecturers had the same level of high agreement on the importance of formative assessment. In contrast, the study done by Sach (2012) found that there is a significant difference between middle school phase and high school phase. In that study, teachers from the middle school phase give feedback on self-worth despite their mistake strategy because the maturity of students can support this approach. In contrast, medical students are considered as already matured students. Therefore, lecturers may tend to have a similar approach in teaching and guiding the students.

It was noted that there was no significant association between academic phases of UPM undergraduate medical lecturer and perceived practice of formative assessment through scaffolding strategy. This is in contrast with the study by Torrance and Pryor (1998) that suggested teachers in lower grades are attempting to "protect" their students from learning from their mistakes to build confidence at early stages. On the contrary, since the maturity level is similar between preclinical and clinical students. Lecturers from both academic phases wanted students to learn from their mistakes-and do not require protection from honest feedback.

Preclinical and clinical students were shown to have similar perceptions and perceived practices of formative assessment through scaffolding as lecturers from both phases are assumed to give the equal amount of opportunities for students to ask questions in classes. Both preclinical and clinical medical students had a high agreement on the importance of formative assessment. However, the study shows a significant association between academic phases of students and perceived practice of formative assessment through monitoring approach. Clinical students had a higher agreement compared to pre-clinical students. It might be due to the difference in mode of assessment in the clinical phase which is more towards clinical examination and a reduced amount of written examination or theory examination. Teaching and learning in the clinical phase is also usually done in smaller groups compared to preclinical, so lecturers have more time to monitor and teach them individually. Preclinical students have more opportunities to consult their lecturers, and get feedback, about their strengths and weaknesses.

5.5 Associated between UPM undergraduate medical lecturer's duration of service and their perceptions and perceived practices of formative assessment

The difference in duration of services of lecturers revealed no influence towards their perceptions and perceived practices of formative assessment in terms of importance, monitoring and scaffolding. In contrast to Izci (2016), the study stated that teachers with greater teaching experience promote change in assessment towards formative assessments. According to the data, the most experienced instructors believe that the purpose of formative assessment is to support the learning and acknowledge that all children can progress. This might be because the different generations of lecturers had different modes of assessment and differ in experiences, therefore despite experience in other assessments the application of formative assessment may have not been fully appreciated and developed to be applied to the programme. It is also assumed that the difference in faculty development programs organized by the university and faculty to all lecturers and the "teaching orientation" program given to new lecturers so this can make them more knowledgeable and have awareness in good teaching practices.

All lecturers, regardless of their duration of services, claimed that they practise formative assessments to monitor students. It is possible that assessment has been viewed as the monitoring tool for students by all lecturers and does not depend on duration of service as lectures use assessments as a mechanism to inform students on their weak points to let them reflect on their efficiency in study regardless of their working experiences.

There was no significant association between perceived practice of formative assessment through scaffolding and lecturer's duration of service. However, Sach (2012) found out that teachers with

over 20 years' experience had the highest ranking in terms of believing student progress through formative assessments and those with 0–3 years' experience had the lowest scores. It is believed that the level of lecturer experience may have an effect in the perceived implementation of formative assessment. However, the result of our study was contradictory. It might be because the implementation of formative assessment in UPM undergraduate medical programmes is present among all lectures regardless of working experiences.

5.6 Proportion of students' and lecturers' perceived practices of formative assessment in UPM undergraduate medical programme.

Majority of lecturers agreed that the practice mode of assessment was done through small group sessions, written examinations, practical classes / labs / workshops, clinical examination and claimed that reflective writing was only done sometimes. However, the majority of students agreed that small group sessions, written examination and clinical examination were done frequently but perceived reflective writing/logbook and practical classes/labs/workshops were done sometimes. Most lecturers perceived presentation and video assignments were practiced frequently and students perceived it was done sometimes. This may be due to the perspective of medical students not having enough presentation/audio/video products in comparison to other programmes. Other than that, most lecturers viewed practical classes as done frequently while most students view it as done sometimes. This might be due to the lack of online practical classes that are being done currently because of the COVID-19 pandemic. Despite the numerous efforts by lecturers to apply virtual labs and lab video recordings, students might not perceive those as practical classes. However students did not perceive peer assessment and self-assessment in terms of formative and summative assessment frequently. It was assumed that the nature of the programme included less peer and self assessment, where it is only practiced in the Professional and Personal Development (PPD) module. Whereas written examination was the second highest percentage and is considered a form of summative assessments. This might be due to the implementation of high stakes examinations and tests at the end of each semester throughout all 5 years. On the other hand, SGT stands as the highest percentage in the mode of assessment. It was assumed to be due to the practice of PBL and ECE in preclinical years and case study with bedside teaching in the clinical years. The results showed the perception of practice in terms of mode of assessment to lean more towards formative rather than summative.

Most of the lecturers and students agree that the purpose of assessment is to strengthen understanding and knowledge obtained. This shows that formative assessment is being practised as students can get feedback to have a better understanding on how to improve ways of studying more effectively. However, a lower number of lecturers and students think that assessment used to

evaluate teaching and develop thinking. Students and lecturers did not think that assessments are to evaluate teaching because of not being given the opportunity to give feedback to lectures. Study stated that it is important to provide information to the instructor so that it can be included into the teaching/learning process (Crooks, 1988; Gipps, 1994). Despite the positive perception of assessment practice towards formative methods, more than half of students and lecturers agreed that assessment is used to grade/rank achievement. It could be highly due to the uneven distribution of marks in assessing students, where generally continuous assessment, PBL sessions and quizzes have a lower score weightage while a higher score weightage depended fully on the final year-end examination. Grading system in higher education plays a major role in the professional development of an individual which quantitatively measures the ability of students to achieve the learning objectives (Reddan, 2013). Most medical schools, including UPM, a pass/fail grading system is practised where a minimum percentage of 50% is required to pass each course which subsequently allows students to advance into the following semester. Even though the summative assessment plays a major role in the curriculum, the students and lecturers indicated that formative and summative assessments are usually carried out at the same time.

Besides that, the majority of students and lecturers say that marking is to assess knowledge and is given as a summative grade, which is more toward a summative assessment. Both parties perceived the practice of assessment is more towards grading the students which implies that they perceived the assessment as summative. This may be due to high stake examinations in the programme which focuses on graduating and obtaining a rank of achievement.

Both lecturers and students agreed that marking is sometimes based on implicit and explicit criteria. There might be a high possibility that students did not understand the actual meaning of implicit and explicit marking. Ellis (1994b) described implicit as a nonconscious automatic engrossment of an instruction based on instinct without a clear explanation whereas explicit was defined as a conscious understanding of instructions where learners were given clear instruction before carrying out learning. Implicit marking is highly associated with summative assessment where students were not really given the opportunity to diagnose their rights and wrongs in answering questions. On the other hand, formative assessment is usually associated with marking explicitly as post-assessment feedback and evaluation were done to allow students and teachers to diagnose weaknesses and work on knowledge improvement. There is also a probability that UPM medical programmes conduct both formative and summative assessment. Examples of explicit markings include PPD session, post-continuous assessment feedback whereas implicit markings include final semester examination, OSCE, OSPE in which the end results were not really discussed in detail with the student.

Furthermore, most students and lecturers specified that that assessment is usually carried out at the end of a module, showing that assessment is carried out more in a summative manner. This might be because of the nature of the programme of having a high stake final examination at the end of each semester or end of posting examination for clinical years . However, it is worth mentioning students claimed assessments are sometimes carried out throughout a module, contradictory to lectures who claimed it was done frequently. This might be due to the fact that some students may have overlooked the assessments throughout the module such as problem based learning and quizzes.

Lastly, the majority of both students and lecturers perceived that feedback usually improves the learning process. Students believe that the practice of feedback helps to have a better understanding and improve the learning process as they can firmly pinpoint their weakness. Teacher's feedback helped them to examine errors of which they had not been aware, and to understand the cause (Taras, 2003). High percentage of students and lecturers also claimed that they agreed feedback helps to understand assessment, feedback prompts discussion between teachers and students and feedback is helpful in its details. Both groups believe that feedback can help in the learning process, therefore, formative assessment should take place more often so that both can take advantage of advocating the feedback towards reinforcing knowledge in UPM undergraduate medical programmes.

In summary, both students and lecturers had their own unique perception on summative and formative assessment and some contradict one another but based on our study the majority of the results showed that both lecturers and students perceived practices from both formative and summative assessment but may lean to summative assessments based the purpose of assessment is to grade/rank and also majority of them claimed that assessment is usually carried out in the end.

CHAPTER 6 : CONCLUSION, LIMITATION AND RECOMMENDATION

6.1 Conclusion

Through our study, we can conclude that both students and lecturers of UPM undergraduate medical programmes have a positive perception towards formative assessment implementation in the curriculum. It is convincing that formative assessment is indeed a crucial tool in education. Implementation of formative assessment in studies allows students to improve their academic performance with the appropriate guidance from experienced lecturers.

Lecturers perceived that formative assessment plays an important role in their teaching process and perceived themselves practising formative assessment oftenly in terms of monitoring and scaffolding. Gender, academic phases and duration of service had a similar perception which indicates that these factors did not play a role in influencing their perception and practice. Being compared to students, lecturers tend to have a higher agreement on the importance and practice of formative assessment in education. The differences in gender did not change students' perception and practice of formative assessment. Students from preclinical and clinical showed the same results as lecturers in perception and perceived practice in terms of scaffolding. However, preclinical and clinical students had a slightly different perception in terms of monitoring. Clinical students agreed to a greater degree that their lecturers often provide encouragement, and guidance in improving their tasks and clinical skills compared to preclinical students.

Overall, both lecturers and students perceived that the practice in UPM includes both formative and summative assessment. Since the majority of lecturers and students indicated that the assessment is used to grade/rank students' achievements and is frequently carried out at the end of the module, we may conclude that assessment practice in UPM undergraduate medical programme is more towards summative assessment. Therefore, in general, it is clearly shown that both parties truly acknowledge the importance of formative assessment and highly perceive their practice of formative assessment methods in education. Even though most lecturers have a better perception towards formative assessment and perceive themselves applying them in teaching compared to students, the results from our study revealed that summative assessment methods are still oftenly done in classroom setting, clinical and preclinical years.

6.2 Limitation and bias

Our research was a cross-sectional study. It only involved the population of study at the period when this study was conducted. The study population only involved medical students and lecturers from UPM and not from other universities. Therefore, the study results are not valid for

any other time period and cannot be generalised to medical students and lecturers from other universities in Malaysia.

Another limitation was the cooperation and response from the medical students and lecturers from FPSK. We had a hard time collecting adequate responses from medical lecturers as time was limited and medical lecturers from both preclinical and clinical were not giving good cooperation in responding to emails. The lower responses rate from lecturers could also be due to the much tighter schedule of lecturers compared to students. There was a lack in our pilot test for lecturer questionnaire as we only had 19 responses, where the minimum required responses should be 20. This was highly due to the low responses from medical lecturers outside UPM and it was hard to communicate with them through emails. However, we managed to receive full responses from preclinical and clinical students as all the questionnaires were sent through Whatsapp Groups of respective years. The imbalance in responses between students and lecturers could be due to the busy schedule of lecturers compared to students. Also student-to-student networking was easier and more cooperation was given during the data collection period. Another reason could be that the data collection period for lecturers (2 weeks) was shorter than students (3 weeks) as the pilot testing for lecturers finished much later than students.

6.3 Recommendation

Future studies with a larger sample size are recommended to expand the study population which also involve students and lecturers from other medical schools in order to obtain more data and provide a higher statistical reliability. The study would be able to make comparisons of the perception and perceived practice of formative assessment among undergraduate medical students and lecturers from different universities. Thus, we are able to understand the difference in assessment methods across universities and their perception and practice on formative assessment.

Another essential study would be to investigate the perception and perceived practice of formative assessment between medical and non-medical students or lecturers. Medical programmes are deemed to be a tough course for its long credit hours compared to most of the other programmes in the university. Also, the methods of assessment also seemed to be quite different between medical programmes and the other university degree courses. By comparing the perception and perceived practice of formative assessment among them, it may show if the same learning or teaching method and preparation towards assessment is implemented by students and lecturers regardless of their programmes. The future studies may also include the evaluation of actual formative assessment implementation in different medical schools to determine whether the value of formative assessment is acknowledged in the curriculum.

Based on the study's results, even though both medical lecturers and students have good perception and perceived that formative assessment is often practiced in learning and teaching, the implementation of end of semester examination still weighs the most in assessment grading. UPM medical lecturers could encourage the balance of formative and summative assessment in students' learning experience. The application of self-assessment and peer-assessment rather than fully teacher-based assessment would further motivate students for self improvement and fully utilise the knowledge gained. Lecturers could also carry out small group tutoring, especially for weaker students, to have a full understanding of student learning capacity and ability. Students should also shift their mindset to new study approaches, continuous assessment and short quizzes, implemented by lecturers which might help in improving their academic performance not only in preclinical years but also in clinical years later. With a strong basic knowledge in preclinical years, it will facilitate retention of memory and reutilisation of this knowledge as a clinical student and a doctor later in life.

It is very important for the students to identify new learning methods that might help them cope with the ongoing syllabus in the medical program in UPM. Students should learn from their mistakes, understand them and work on topics where they could not grasp. The practice of formative assessment is an ideal method to encourage student-centered learning, not just rely on teachers, and motivates students to discover the world of knowledge on their own. Despite encouraging students to self-engage, lecturers should also enhance two-way interaction with their students. Lecturers should improve themselves, where they could provide additional readings and make time in their schedules, for the sake of understanding and assisting their students in their learning process. Regular assessments, quizzes and assignments in classes could help students get a better engagement in the subject and even keep them motivated. Feedback sessions should not be taken lightly as it allows not only students to grow but also lecturers to determine students' strengths and weaknesses. Therefore, increased understanding in these aspects can help to provide pleasant and meaningful assessment practices.

Future studies are encouraged to perform a cohort study based on the extension of a cross sectional study like this. For example, if the perception of formative assessment is found to be significantly different between medical students and lecturers, where one thinks formative assessment as useful while another thinks it as a waste of time, a study conducted in a longer period of time, on the same group of population, will be able to determine whether there are any changes in their perception after years of learning or teaching through formative assessment. The assessment results of students could also be taken into account to see if implementation of formative assessment could improve students' grades and therefore change their perceptions of formative assessment. Assessment results could also reflect the commitment of lecturers in their

teachings and, to a greater extent, improve their point of view of formative assessment. If there is improvement in perceptions for both groups of individuals, formative assessment should definitely be emphasized to future medical students from the beginning of the course.



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APPENDIX

Gantt Chart

Months Activities	Dec	Jan	Feb	March	April	May	June	July
Proposal Preparation								
Submission of Proposal								
Preparation of Proposal Presentation								
Proposal Presentation								
Preparation for Ethical Approval to Organisation								
Data Collection and Analysis								
Final Report Presentation								
Correction of final presentation								
Submission of Final Report to Module Coordinator								
Preparation of Poster								
Submission of Poster and Scientific Article								
Poster Competition								
Submission of Log Book and Hard bound Copies of Final Report								

Ethical Approval Letter by JKEUPM

Ref. no: UPM/TNCPI/RMC/JKEUPM/1.4.18.2 (JKEUPM)

Date: 24 March 2021

Dear Prof./Dr./Mr./Ms.,

APPLICATION FOR JKEUPM ETHICAL CLEARANCE: APPROVED

With reference to the above, I am pleased to inform you that your application for ethical clearance for the research project entitled 'Factors Associated with Lecturers' and Students' Perceptions and Perceived Practices of Formative Assessment in Universiti Putra Malaysia (UPM) Undergraduate Medical Programme' has been approved.

Please note that the official letter of approval will be issued as soon as possible. However, the ethical clearance is considered effective from the date of this email, and you may now proceed with your research.

Kindly remind the ethical approval is required in the case of amendments/ changes to the study documents/ study sites/ study team.

Researchers should also complete a Study Final Report upon study completion. The form can be obtained from the Ethics Committee for Research Involving Human Subjects (JKEUPM) website (<http://www.tncpi.upm.edu.my/faildokumen>).

If you have any enquiries, please contact Ms. Nurulhasanah Ishak (03-97691605) or Ms. Nor Ellia Abd Ajis (03-97691244).

Note: Please use this reference number for any transaction:- JKEUPM-2021-091

Thank you.

Yours faithfully,

Prof. Dr. Zamberi Sekawi

Chair

Ethics Committee for Research Involving Human Subjects

Universiti Putra Malaysia



FORM 2.4: RESPONDENT'S INFORMATION SHEET AND INFORMED CONSENT FORM

Please read the following information carefully and do not hesitate to discuss any questions you may have with the researcher.

1. STUDY TITLE :

Factors Associated With Lecturers' And Students' Perceptions And Perceived Practices Of Formative Assessment In Universiti Putra Malaysia (UPM) Undergraduate Medical Programme.

2. INTRODUCTION:

Formative assessment is defined as a continuous process of assessment that involves teachers and students engagement in order to improve learning and teaching strategies by providing feedback. However, it has been found that some of them might have a different understanding of the formative assessment due to lack of application in daily life. From this, it can be said that medical lecturers and students have lack of practices and wrong perception on formative assessment. This study involves 510 respondents of preclinical and clinical lecturers and undergraduate medical students from Year 1 until Year 5. The study is done by medical undergraduates from 1st March 2021 until 15th March 2021 via Google Form. This study will determine the association between the sociodemographic factors (i.e., role of individual, gender, academic phases, and lecturers' duration of service) and the perceptions and perceived practices of formative assessment in Universiti Putra Malaysia (UPM) Undergraduate Medical Programme. This will help to promote better understanding of the formative assessment among medical lecturers and students in Universiti Putra Malaysia (UPM).

3. WHAT WILL YOU HAVE TO DO?

Respondents are asked to fill up the questionnaire that has been prepared. ALL respondents have to fill up and answer every question in all sections A, B and C. For section B, respondents will respond to each individual item from a five-point likert scale (strongly disagree, disagree, undecided, agree, strongly agree). Finally, for section C, respondents will respond to each individual item from a 4 point likert scale (frequently, sometimes, never, don't know). Please also note that participation is voluntary, and that participants may withdraw anytime without penalty or loss of benefit. Respondents will not be paid for your participation in this study. No compensation or any token will be given to the respondents.

4. WHO SHOULD NOT PARTICIPATE IN THE STUDY?

- i. Medical lecturers who are on extended leave or on post-graduate studies during data collection period.
- ii. Medical students who are sitting for their examination during the data collection period.

5. WHAT WILL BE THE BENEFITS OF THE STUDY:

(a) TO YOU AS THE SUBJECT?

Participation of respondents will help the researchers to ascertain the perceptions and perceived practices of formative assessment among students and lecturers in University Putra Malaysia. This in return can provide self-awareness towards the importance of formative assessment and its benefits of implementation in the classroom learning process among respondents. Following awareness, they will be able to understand, appreciate and hopefully apply the methods of formative assessment in their study or teaching progress.

(b) TO THE INVESTIGATOR?

The investigator can determine the sociodemographic factors (i.e., role of individual, gender, academic phases, and lecturers' duration of service) and the perceptions and perceived practices on formative assessment in Universiti Putra Malaysia (UPM) Undergraduate Medical Programme.

6. WHAT ARE THE POSSIBLE RISKS?

Since this study only involves questionnaires, there are no risks associated with this study.

7. WILL THE INFORMATION THAT YOU PROVIDE AND YOUR IDENTITY REMAIN CONFIDENTIAL?

All forms of information and identities of respondents that are mentioned in the questionnaire will be kept confidential. The study monitors, auditor, the JKEUPM Ethics Review Panel, and regulatory authorities will be granted direct access to respondents records for purposes only of verification of clinical trial procedures and data.

8. WHO SHOULD YOU CONTACT IF YOU HAVE ADDITIONAL QUESTIONS DURING THE COURSE OF THE RESEARCH?

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Please initial here if you have read and understood the contents of this page_____

9. CONSENT

I Identity Card No.
address.....

.....hereby voluntarily agree to take part in the research
stated above *(clinical /drug trial/video recording/ focus group/interview-based/ questionnaire-based).

I have been informed about the nature of the research in terms of methodology, possible adverse effects and complications (as written in the Respondent's Information Sheet). I understand that I have the right to withdraw from this research at any time without giving any reason whatsoever. I also understand that this study is confidential and all information provided with regard to my identity will remain private and confidential.

I* wish / do not wish to know the results related to my participation in the research

I agree/do not agree that the images/photos/video recordings/voice recordings related to me be used in any form of publication or presentation (if applicable)

* delete where necessary

Signature
(Respondent)

Signature
(Witness)

Date :

Name :

I/C No. :

I confirm that I have explained to the respondent the nature and purpose of the above-mentioned research.

Date

Signature
(Researcher)



FORM 3.2: STUDY FINAL REPORT

1.	JKEUPM Ref. No.	JKEUPM-2021-091
2.	Study Title	Factors Associated With Lecturers' And Students' Perceptions And Perceived Practices Of Formative Assessment In Universiti Putra Malaysia (UPM) Undergraduate Medical Programme.
3.	i. Principal investigator a. Name b. Address c. Tel.No d. Email ii. List of co-investigators	i. Principal Investigator a. Dr. Siti Khadijah Adam b. Pharmacology Unit Department of Human Anatomy Faculty of Medicine and Health Sciences, FMHS c. +603 9769 2354 d. sk.adam@upm.edu.my ii. Co-investigator Dr. Faridah Idris Ong Kai Li Khairunnisa Fatini binti Abd Jalil Haris Danial bin Hisham
4.	Name Of Funding Agency	N/A
5.	Study Site	Faculty of Medicine and Health Sciences, UPM
6.	Total number of eligible subjects in study site	809 subjects
7.	Recruitment of subjects in study site i. Number of participants recruited: ii. Number of participants completing trial/ study: iii. Proposed in original application: iv. Number of withdrawals from trial to date due to: a) withdrawal of consent b) no response from participants c) loss to follow-up d) death (not the primary outcome)	i. 510 participants ii. 388 participants (326 students and 62 lecturers) iii. 510 participants (326 students and 184 lecturers) iv. Withdrawals a) None b) 122 participants c) None d) None Total withdrawal: 122 participants

	Total study withdrawals: v. Number of treatment failures to date (Prior to reaching primary outcome) due to: a) adverse events b) lack of efficacy Total treatment failures:	v. N/A
8.	Duration of study	20th December 2021 until 31st May 2021
9.	Protocol Violation or Deviation	N/A
10.	Executive summary (<i>Summary of research background, objectives, methodology, findings and conclusion of the research project</i>) - maximum 500 words) *Committee may request additional information if required.	Formative assessment is considered to be crucial in education for the development of soft skills and improvement in learning progress in the classroom. Previous studies showed that formative assessment allows continuous improvement within the context of teaching and learning and provides regular feedback to both teachers and students for effective learning. However, the practice of formative assessment is often undervalued and given less attention in higher education. Studies have found that students and lecturers of different gender and academic phases have different perception and perceived practice of formative assessment. Lecturers of different duration of service were shown to have different views and practices on assessment methods probably due to their teaching experience. This study was aimed to determine the factors (gender, medical academic phases and duration of service) associated with lecturers' and students' perceptions and perceived practices of formative assessment in UPM undergraduate medical programme. This cross-sectional study was conducted using online questionnaires that were distributed to medical students and lecturers of Faculty of Medicine and Health Sciences (FMHS) UPM in academic session 2020/2021. Samples recruited for this study included 326 undergraduate medical students and 62 medical lecturers identified through stratified sampling technique. Data was analysed using SPSS version 26. Mann-Whitney U and Kruskal Wallis tests were conducted to identify the factors associated with the perceptions and perceived practice of formative assessment. There is a significant association between the role of individual and academic phases with their perception and perceived practice of formative assessment. Significant differences were found in the score of perception and perceived practice of formative assessment (monitoring & scaffolding) between medical lecturers and students ($p < 0.001$). Only the score of perceived practice (monitoring) showed significant difference between preclinical and clinical students ($p = 0.023$). There was no significant association found between gender, lecturers' academic phases and lecturer's duration of service with the perception and perceived practice of formative assessment.

Questionnaire For Lecturers

LECTURERS' AND STUDENTS' PERCEPTIONS AND PERCEIVED PRACTICES OF FORMATIVE ASSESSMENT IN UPM UNDERGRADUATE MEDICAL PROGRAMME

Good day, Lecturers!

We are from Research Project (MDR 3201) Group 7, Second Year Medical Students of FPSK UPM. We are currently conducting a research on the Factors Associated With Lecturers' And Students' Perceptions And Perceived Practices Of Formative Assessment In UPM Undergraduate Medical Programme. This study has been approved by Jawatankuasa Etika UPM with the reference number (JKEUPM-2021-091). This survey is done to understand your perception and perceived practices about formative assessment in your teaching process. The total expected time to answer this questionnaire will be from 5 to 10 minutes.

OBJECTIVE OF STUDY

To determine factors associated with perceptions and perceived practices of formative assessment towards Undergraduate Medical Programme in UPM.

WHO SHOULD PARTICIPATE?

Lecturers who are involved in teaching Universiti Putra Malaysia (UPM) undergraduate medical programme and all Year 1 to Year 5 Doctor of Medicine (MD) students in the 2020/2021 academic session.

INSTRUCTION:

You are required to fill up and answer every question in this questionnaire. This questionnaire consists of 3 parts in total with 51 questions:

Section A: Background Of Respondents (Lecturer)

Section B: Lecturer's Perception and Perceived Practice of Formative Assessment

Section C: Lecturer's Perceived Practices on Assessment

For Section B, you are required to respond to each individual item from a five-point likert scale (1 - strongly disagree, 2 - disagree, 3 - undecided, 4 - agree, 5 - strongly agree). For section C, you are required to respond to each individual item from a 4 point likert scale (1 - frequently, 2 - sometimes, 3 - never, 4 - don't know). Please also note that your participation is voluntary, and that you may withdraw anytime without penalty or loss of benefit.

Please be assured that all personal information given in this questionnaire will be protected and used in this study and preparation of study paper and will not be published elsewhere.

Your time and cooperation are much appreciated. Thank you.

If you have any questions regarding this survey, please do not hesitate to contact:

Ong Kai Li - www.wassap.my/+60129757384

Khairunnisa Fatini Binti Abd Jalil - www.wassap.my/+601165528277

Haris Danial Bin Hisham - www.wassap.my/+60172826747

CONSENT FORM

I hereby voluntarily agree to take part in the research stated above. I have been informed about the nature of the research in terms of methodology, possible adverse effects and complications (as written in the Respondent's Information Sheet). I understand that I have the right to withdraw from this research at any time without giving any reason whatsoever. I also understand that this study is confidential and all information provided with regard to my identity will remain private and confidential.

- ☐ Agree
- ☐ Disagree

Please tick the appropriate column

- ☐ I wish to know the results related to my participation in the research
- ☐ I agree that the images / photos / video recordings / voice recordings related to me be used in any form of publication or presentation (if applicable)

SECTION A : BACKGROUND OF RESPONDENTS

Instruction: Please answer the questions below by ticking [/] the appropriate answer.

- Gender :
 - ☐ Male
 - ☐ Female
- Race :
 - ☐ Malay
 - ☐ Chinese
 - ☐ Indian
 - ☐ Others (state): _____
- Department :
 - ☐ Human Anatomy
 - ☐ Pathology
 - ☐ Medical Microbiology & Parasitology
 - ☐ Community Health
 - ☐ Biomedical Sciences
 - ☐ Nutrition and Dietetics
 - ☐ Family Medicine
 - ☐ Medicine
 - ☐ Psychiatry
 - ☐ Radiology
 - ☐ Paediatrics
 - ☐ Surgery
 - ☐ Obstetric and Gynaecology
 - ☐ Orthopaedics

- Duration of Service:
 - ☐ Less than 5 years
 - ☐ 5 - 10 years
 - ☐ 11 - 15 years
 - ☐ More than 15 years

Introduction for Section B and C:

Assessment can be divided into summative and formative assessment. Summative assessment, known as 'assessment of learning', is usually high-stakes, used to evaluate student's learning and provide grades to students.

On the other hand, formative assessment, known as assessment for learning, is a low-stake continuous assessment aimed to identify student's strengths and weaknesses and make improvement.

In these sections, we would like to evaluate your perception and perceived practice of formative assessment and assessment, in general.

SECTION B : TEACHER'S PERCEPTION AND PERCEIVED PRACTICE OF FORMATIVE ASSESSMENT

Instruction:

Please tick [/] the appropriate column that describes your **agreement on each statement**. You may choose from 1 for strongly disagree to 5 for strongly agree. There is no right or wrong answer.

Teachers' Perception About The Importance Of Formative Assessment						
Item		1	2	3	4	5
		Strongly disagree	Disagree	Undecided	Agree	Strongly agree
1	Assessment results tell me how well I have taught my students					
2	Assessment and evaluation results are important for instruction					
3	My instruction is tied closely to student assessment results					
4	Assessments provide a valuable learning experience for students					
5	Assessment results have an important effect on student self-concept					
6	Assessment and evaluations make my students work harder					
7	I need a variety of assessment methods to					

	assess my students					
Teachers' Perceived Practice Of Formative Assessment (Monitoring)						
Item		1	2	3	4	5
		Strongly disagree	Disagree	Undecided	Agree	Strongly agree
8	I encourage my students to reflect upon how they can improve their task/assignments					
9	I involve my students in thinking about how they want to learn in their task/assignments					
10	I ask my students to indicate what went well and what went badly concerning their task/assignments					
11	I encourage students to reflect upon their learning process and how to improve their learning					
12	I inform my students on their strong points concerning their learning					
13	I inform my students on their weak points concerning their learning					
14	I encourage my students to improve on their learning processes					
15	I give students guidance and assistance the progress in their learning					
16	I discuss with my students the progress they have made in learning.					
17	Together with my students, I consider ways on how to improve on their weak points					
Teachers' Perceived Practice Of Formative Assessment (Scaffolding)						
Item		1	2	3	4	5
		Strongly disagree	Disagree	Undecided	Agree	Strongly agree
18	I adjust my teaching whenever I notice that my students do not understand a topic					
19	I provide my students with guidance to help them gain understanding of the content taught.					
20	During my class, students are given the opportunity to show what they have learned.					

21	By prompting questions during class, I help my students gain understanding of the content taught.					
22	I am open to student contribution in my class					
23	I ensure that my students know what areas they need to work on in order to improve their results					
24	I give my students opportunities to ask questions					
25	My students know what they can learn from their task /assignments					
26	I can recognize when my students reach their learning goals.					

SECTION C: TEACHER'S PERCEIVED PRACTICE ON ASSESSMENT**Instruction:**

Please tick [/] the appropriate column that indicates the **frequency of each statement/item in your assessment practice**. You may choose either 1 for frequently, 2 for sometimes, 3 for never or 4 for don't know. There is no right or wrong answer.

Perceived Practice					
MODE OF ASSESSMENT					
Item		1	2	3	4
		Frequently	Sometimes	Never	Don't know
27	Small group session (eg. PBL/CaseStudy/ECE/Bedside Teaching, etc)				
28	Written examination (eg. Essay/MCQ/SAQ, etc)				
29	Clinical Examination (eg. OSCE / Long case / Short case, etc)				
30	Reflective writing / Logbook				
31	Practical classes / Labs / Workshops				
32	Presentation/Audio or video product				
33	Peer Assessment				
34	Self Assessment				
PURPOSE OF ASSESSMENT					
Item		1	2	3	4
		Frequently	Sometimes	Never	Don't know
35	Assessment is used to grade/rank achievement				
36	Assessment is used to motivate learning				
37	Assessment is used to diagnose strengths and weaknesses				
38	Assessment is used to evaluate teaching				
39	Assessment is to develop thinking				
40	Assessment is to strengthen understanding and knowledge obtained				

MARKING OF ASSESSMENT					
Item		1	2	3	4
		Frequently	Sometimes	Never	Don't know
41	Marking is based on implicit criteria				
42	Marking is based on explicit criteria				
43	Marking is to assess knowledge				
44	Marking is to assess thinking				
45	Marking is given as a summative grade				
TIMING OF ASSESSMENT					
Item		1	2	3	4
		Frequently	Sometimes	Never	Don't know
46	Assessment is carried out throughout a module				
47	Assessment is carried out at the end of a module				
VALUE OF FEEDBACK					
Item		1	2	3	4
		Frequently	Sometimes	Never	Don't know
48	Feedback is helpful in its detail				
49	Feedback prompts discussion between teachers and students				
50	Feedback helps to understand assessment				
51	Feedback improves learning process				

END OF QUESTIONNAIRES

Questionnaire For Students

LECTURERS' AND STUDENTS' PERCEPTIONS AND PERCEIVED PRACTICES OF FORMATIVE ASSESSMENT IN UNIVERSITI PUTRA MALAYSIA UNDERGRADUATE MEDICAL PROGRAMME

Good day, everyone!

We are from Research Project (MDR 3201) Group 7, Second Year Medical Students of FPSK UPM. We are currently conducting a research on the Factors Associated With Lecturers' And Students' Perceptions And Perceived Practices Of Formative Assessment In UPM Undergraduate Medical Programme. This study has been approved by Jawatankuasa Etika UPM with the reference number (JKEUPM-2021-091). This survey is done to understand your perception and perceived practices about formative assessment in your learning process. The total expected time to answer this questionnaire will be from 5 to 10 minutes.

OBJECTIVE OF STUDY

To determine factors associated with perceptions and perceived practices of formative assessment towards Undergraduate Medical Programme in UPM.

WHO SHOULD PARTICIPATE?

Lecturers who are involved in teaching Universiti Putra Malaysia (UPM) undergraduate medical programme and all Year 1 to Year 5 Doctor of Medicine (MD) students in the 2020/2021 academic session.

INSTRUCTION:

You are required to fill up and answer every question in this questionnaire. This questionnaire consists of 3 parts in total with 51 questions:

Section A: Background Of Respondents (Student)

Section B: Student's Perception and Perceived Practice of Formative Assessment

Section C: Student's Perceived Practices on Assessment

For Section B, you are required to respond to each individual item from a five-point likert scale (1 - strongly disagree, 2 - disagree, 3 - undecided, 4 - agree, 5 - strongly agree). For section C, you are required to respond to each individual item from a 4 point likert scale (1 - frequently, 2 - sometimes, 3 - never, 4 - don't know). Please also note that your participation is voluntary, and that you may withdraw anytime without penalty or loss of benefit.

Please be assured that all personal information given in this questionnaire will be protected and used in this study and preparation of study paper and will not be published elsewhere.

Your time and cooperation are much appreciated. Thank you.

If you have any questions regarding this survey, please do not hesitate to contact:

Ong Kai Li - www.wassap.my/+60129757384

Khairunnisa Fatini Binti Abd Jalil - www.wassap.my/+601165528277

Haris Danial Bin Hisham - www.wassap.my/+60172826747

CONSENT FORM

I hereby voluntarily agree to take part in the research stated above. I have been informed about the nature of the research in terms of methodology, possible adverse effects and complications (as written in the Respondent's Information Sheet). I understand that I have the right to withdraw from this research at any time without giving any reason whatsoever. I also understand that this study is confidential and all information provided with regard to my identity will remain private and confidential.

- ☐ Agree
- ☐ Disagree

Please tick the appropriate column

- ☐ I wish to know the results related to my participation in the research
- ☐ I agree that the images / photos / video recordings / voice recordings related to me be used in any form of publication or presentation (if applicable)

SECTION A : BACKGROUND OF RESPONDENTS

Instruction: Please answer the questions below by ticking [/] the appropriate answer. /

- Gender :
 - ☐ Male
 - ☐ Female
- Races :
 - ☐ Malay
 - ☐ Chinese
 - ☐ Indian
 - ☐ Others (state) : _____
- Years of Studies : _____
 - ☐ Year 1
 - ☐ Year 2
 - ☐ Year 3
 - ☐ Year 4
 - ☐ Year 5

Introduction for Section B and C:

Assessment can be divided into summative and formative assessment. Summative assessment, known as 'assessment of learning', is usually high-stakes, used to evaluate student's learning and provide grades to students.

On the other hand, formative assessment, known as assessment for learning, is a low-stake continuous assessment aimed to identify student's strengths and weaknesses and make improvement.

In these sections, we would like to evaluate your perception and perceived practice of formative assessment and assessment, in general.

SECTION B : STUDENT'S PERCEPTION AND PERCEIVED PRACTICE ON FORMATIVE ASSESSMENT

Instruction:

Please tick [/] the appropriate column that describes your **agreement on each statement**. You may choose from 1 for strongly disagree to 5 for strongly agree. There is no right or wrong answer.

Students' Perception About The Importance Of Formative Assessment						
Item		1	2	3	4	5
		Strongly disagree	Disagree	Undecided	Agree	Strongly agree
1	My assessment results tell the teachers how well they have taught me					
2	Assessment and evaluation results are important for instruction					
3	The teachers' instruction is tied closely to my assessment results					
4	Assessments provide a valuable learning experience for me					
5	Assessment results have an important effect on my self-concept					
6	Assessment and evaluations make me work harder					
7	The teachers need a variety of assessment methods to assess me					
Students' Perceived Practice Of Formative Assessment (Monitoring)						
Item		1	2	3	4	5
		Strongly disagree	Disagree	Undecided	Agree	Strongly agree
8	The teachers encourage me to reflect upon how I can improve my task/assignments					
9	The teachers involve me in thinking about how I want to learn in my task/assignments					
10	The teachers ask me to indicate what went well and what went badly concerning my task/assignments					
11	The teachers encourage me to reflect upon my learning process and how to improve my learning					

12	The teachers inform me on my strong points concerning my learning					
13	The teachers inform me on my weak points concerning my learning					
14	The teachers encourage me to improve on my learning processes					
15	The teachers give me guidance and assistance the progress in my learning					
16	The teachers discuss with me the progress I have made in learning.					
17	Together with me, the teachers consider ways on how to improve on my weak points					

Students' Perceived Practice Of Formative Assessment (Scaffolding)

Item	1	2	3	4	5
	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
18	The teachers adjust their teaching whenever they notice that I do not understand a topic				
19	The teachers provide me with guidance to help me gain understanding of the content taught.				
20	During class, I am given the opportunity to show what I have learned.				
21	When my teachers ask questions during class, they help me gain understanding of the content taught				
22	The teachers are open to my contribution in the class				
23	The teachers ensure that I know what areas I need to work on in order to improve my results				
24	The teachers give me opportunities to ask questions				
25	I know what I can learn from my task/assignments				
26	The teachers can recognize when I reach their learning goals.				

SECTION C : STUDENT'S PERCEIVED PRACTICE ON ASSESSMENT**Instruction:**

Please tick [/] the appropriate column that indicates the **frequency of each statement/item in your assessment practice**. You may choose either 1 for frequently, 2 for sometimes, 3 for never or 4 for don't know. There is no right or wrong answer.

Perceived Practice					
MODE OF ASSESSMENT					
		1	2	3	4
Item		Frequently	Sometimes	Never	Don't know
27	Small group session (eg. PBL/CaseStudy/ECE/Bedside Teaching, etc)				
28	Written examination (eg. Essay/MCQ/SAQ, etc)				
29	Clinical Examination (eg. OSCE / Long case / Short case, etc)				
30	Reflective writing / Logbook				
31	Practical classes / Labs / Workshops				
32	Presentation/Audio or video product				
33	Peer Assessment				
34	Self Assessment				
PURPOSE OF ASSESSMENT					
		1	2	3	4
Item		Frequently	Sometimes	Never	Don't know
35	Assessment is used to grade/rank achievement				
36	Assessment is used to motivates learning				
37	Assessment is used to diagnose strengths and weaknesses				
38	Assessment is used to evaluate teaching				
39	Assessment is to develop thinking				
40	Assessment is to strengthen understanding and knowledge obtained				
MARKING OF ASSESSMENT					

Item		1	2	3	4
		Frequently	Sometimes	Never	Don't know
41	Marking is based on implicit criteria				
42	Marking is based on explicit criteria				
43	Marking is to assess knowledge				
44	Marking is to assess thinking				
45	Marking is given as a summative grade				

TIMING OF ASSESSMENT

Item		1	2	3	4
		Frequently	Sometimes	Never	Don't know
46	Assessment is carried out throughout a module				
47	Assessment is carried out at the end of a module				

VALUE OF FEEDBACK

Item		1	2	3	4
		Frequently	Sometimes	Never	Don't know
48	Feedback is helpful in its detail				
49	Feedback prompts discussion between teachers and students				
50	Feedback helps to understand assessment				
51	Feedback improves learning process				

END OF QUESTIONNAIRE