

## ORIGINAL ARTICLE

# Approaches of Learning among Medical Undergraduates of Faculty of Medicine and Health Sciences, Universiti Putra Malaysia in 2016

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## ABSTRACT

**Introduction:** Challenge arises for medical undergraduates as the subject of medicine is intricate and extensive. Although students come from the same pool of excellent academic background, the medical undergraduates are still prone to failure in exams, resulting in them repeating the year of study or even having the thought of changing to other courses. In order to cope with the programme, students may adopt learning approaches that would help them to go through the programme. Therefore, it would be interesting to explore the learning approaches of medical students in Universiti Putra Malaysia. **Methods:** The purposes of this study were to determine the learning approach of medical undergraduates of Faculty of Medicine and Health Sciences, Universiti Putra Malaysia (FMHS, UPM) together with its associated factors, which were socio-demographic characteristics and learning environment. This research was a cross-sectional study where the sample size calculated was 554. Self-administered questionnaires were given to the respondents chosen by simple random sampling. The socio-demographic characteristics were analysed using descriptive statistics such as frequency and percentage. Chi-square test was used to analyse the association between the variables. **Results:** The response rate was 83% (460 respondents agreed to participate). The majority of the respondents were females (73.7%), Malay (67%), and in their clinical years of study (58.7%). Overall, most students preferred deep approach (DA) of learning (49.6%), followed by strategic approach (29.1%) and surface apathetic approach (21.3%) of learning. There were statistically significant associations between learning approach and gender ( $p=0.005$ ), as well as between learning approach and year of study ( $p=0.037$ ). **Conclusion:** Our study showed an association between learning approaches and year of study and gender. DA of learning was the preferred learning approach in medical students at FMHS, UPM. This approach of learning, where students learn to understand the subject matter, may result in students become effective learners. Their understanding about the subject matter will be applicable to their clinical practice in the future.

**Keywords:** Medical students, Learning, Malaysia.

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## INTRODUCTION

The challenge arises for medical undergraduates as the subject of medicine is intricate and extensive. In Universiti Putra Malaysia (UPM), the first two years are the time when medical undergraduates need to assimilate an immense amount of knowledge which

comprises of anatomy, physiology, biochemistry, microbiology, pathology, pharmacology and other related sub-disciplines. The second phase, which is known as the clinical years, is mapped towards learning through experiences at the bedside in clerkship, surgical and other medical subspecialties (1). Although students come from the same pool of excellent academic background, they are still prone to failure in exams, resulting in them repeating the year of study or even having the thought of changing to other courses. This may be due to their coping and adjusting mechanism towards learning which differ from one another (2). Previous research indicates that students can take different approaches to learning. These traits of learning

approaches are not stable in individuals, as some students will tend towards taking Deep Approach (DA), Surface Apathetic Approach (SAA) and/or Strategic Approach (SA) of learning (3). DA learning of students will take learning as to understand, engage with, operating in and valuing the subject matter. DA learning is an organized approach that focused on understanding the concepts and relating ideas. On the other hand, SAA learning is syllabus-bound superficial learning which emphasize on rote memorization instead of understanding. The primary interest of students with this approach of learning is to acquire mark or grade or the qualification, instead of learning the subject matter. Another approach of learning, which is Strategic Approach, is in between DA and SAA of learning. In this regard, students will use DA of learning and/or SAA of learning based on subject matter. These students purpose of learning is to achieve good grades in assessments (2,4).

Learning environment contributes to student approach to learning. Learning environment includes workload and methods of teaching (5). Workload can be defined as the number of working hours, which consist of attending lectures, seminars or tutorials, as well as independent study, preparation of projects, examinations, and so forth (6). Alternatively, heavy workload can be perceived when someone is pressured or stressed by his work (7). Students may also perceive a heavy or unmanageable workload with respect to big amount of work to do with a little amount of time (8). With regard to the methods of teaching, there was a research study comparing problem-based learning and traditional, subject-based curricula. Problem-based curriculum can be perceived as a method of teaching to engage students for active learning while the traditional or subject-based curriculum is usually by passive teaching style (8). In passive teaching style, students receive knowledge from teachers and memorizing the information; whereas in active teaching style, students are engaged in their learning by doing and thinking about the subject matter.

Determination of students' approaches to learning may guide students and teachers to improve student learning and performance in the medical programme. Therefore, the aims of this study were to determine learning approaches of medical undergraduates at Faculty of Medicine and Health Sciences (FMHS), UPM and the associated factors. The associated factors studied were socio-demographic and learning environment.

## MATERIALS AND METHODS

### Ethics Statement

This study was conducted with approval from JKEUPM (Ethics Committee For Research Involving Human Subject), the Dean of FMHS, UPM, Malaysia. Written informed consent was obtained from each of the study participants.

### Study Population

The estimated sample size was calculated using the formula that compared proportion between two groups. The sample size was calculated based on two independent variables which were percentages of male to female with SA (9). Taking that the differences were significant at 5% level and 95% chance of detecting the difference was real. The minimum sample size calculated was 504. After considering 10% of non-respondents, an additional of 50 respondents were added to the calculated sample size. Hence, the sample size estimated for this study was 554 medical students from FMHS, UPM. The inclusion criterion for this study was medical students from this faculty. Simple random sampling method was used and 460 respondents were willing to participate in this study.

### Instrument

Data was collected using a self-administered questionnaire. The questionnaire used was adapted from Approaches and Study Skills Inventory for Students (ASSIST) (10). This questionnaire was validated and pretested. Ten per cent of the calculated population, which was 61 medical students from other institutions, was involved to measure the reliability of the questionnaire. The Cronbach's Alpha calculated was 0.737. The questionnaire was divided into four parts; the first part was for the respondent to fill out their background information. The second part consisted of 36 items on learning approaches, the third part assessed learning environment and consisted of four items, while the last part was on preferences for different types of course and teaching which consisted of eight items.

The items were scored and categorized using the Likert scale. For Likert scale, the score was given based on the answer chosen by the respondent where, Strongly Agree = 5 scores, Agree = 4 scores, Neither Agree Nor Disagree = 3 scores, Disagree = 2 scores, and Strongly Disagree = 1 score. The score of the items represents a learning approach for the respondent. The highest score for SAA, DA or SA of learning, will be considered his preferred learning approach. The statistical analysis was performed using Statistical Package for Social Sciences (SPSS). The socio-demographic factors were analysed by descriptive statistics using frequency and percentage. Chi-square test was used to analyse the association between the variables.

## RESULTS

Socio-demographic data of the respondents is presented in Table 1. The total number of the respondents was 46 and most of them were females (73.7%). The respondents were categorized into Malay and non-Malay, with the majority of them being Malay (67%). The respondents came from all years of study, and they were divided into students who were in the pre-clinical and clinical

**Table I.** Distribution of respondent's socio demographic characteristics (n=460)

Socio Demographic Characteristics	n	%
Gender		
Male	121	26.3
Female	339	73.7
Race		
Malay	308	67.0
Non-malay	152	33.0
Year of study		
Pre-clinical year	190	41.3
Clinical year	270	58.7

**Table II.** Prevalence of learning approaches among respondents (n=460)

Learning approaches	n	%
Strategic Approach (SA)	134	29.1
Surface Apathetic Approach (SAA)	98	21.3
Deep Approach (DA)	228	49.6

**Table III.** Association between Gender and Learning Approaches (N=460)

Gender	Learning approaches			Total	$\chi^2$	df	P
	SA	SAA	DA				
Male	25 (20.7%)	37 (30.5%)	59 (48.8%)	121	10.963	2	0.005
Female	109 (32.1%)	61 (18.0%)	169 (49.9%)	339			

\*p-value < 0.05 is considered significant

\*Chi square test

**Table IV.** Association between race and learning approaches (N=460)

Race	Learning Approaches			Total	$\chi^2$	df	P
	SA	SAA	DA				
Malay	81 (26.3%)	69 (22.4%)	158 (51.3%)	308	3.659	2	0.161
Non-Malay	53 (34.9%)	29 (19.1%)	70 (46.0%)	152			

\*p-value < 0.05 is considered significant

\*Chi square test

years of study. Most of the respondents were those in the clinical years (58.7%).

Students' learning approaches are illustrated in Table II. DA of learning was the most preferred learning approach (49.6%) followed by SA of learning (29.1%) and SAA of learning (21.3%). Table III demonstrates the significant association between gender and learning

approaches. Most females preferred DA of learning (49.9%), followed by SA (32.1%) and SAA of learning (18%). Among male respondents, the majority preferred DA of learning (48.8%), followed by SAA (30.5%) and SA approach of learning.

There was no association between race and learning approaches (Table IV). Both Malay and non-Malay

**Table V.** Association between year of study and learning approaches (N=460)

Year of study	Learning approaches			Total	$\chi^2$	df	P
	SA	SAA	DA				
Pre-clinical years	51 (26.9%)	32 (16.8%)	107 (56.3%)	190	6.583	2	0.037
Clinical years	83 (30.7%)	66 (24.5%)	121 (44.8%)	270			

\*p-value &lt; 0.05 is considered significant

\*Chi square test

**Table VI.** Association between workload and learning approaches (N=460)

Workload	Learning approaches			Total	$\chi^2$	df	P
	SA	SAA	DA				
Manageable	17 (28.9%)	11 (18.6%)	31 (52.5%)	59	0.348	2	0.840
Unmanageable	117 (29.2%)	87 (21.7%)	197 (49.1%)	401			

\*p-value &lt; 0.05 is considered significant

\*Chi square test

**Table 7.** Association between Method of Teaching and Learning Approaches (N=460)

Method of Teaching	Learning Approaches			Total	$\chi^2$	df	P
	SA	SAA	DA				
Passive	76 (29.9%)	60 (23.6%)	118 (46.5%)	254	2.658	2	0.265
Engagement	58 (28.2%)	38 (18.4%)	110 (53.4%)	206			

\*p-value &lt; 0.05 is considered significant

\*Chi square test

respondents preferred DA of learning (51.3% and 46.0%, respectively). SAA was the least preferred approach of learning in both Malays and non-Malays (22.4% and 19.1% respectively).

There was a significant association between year of study and learning approaches (Table V). The table displays that most of both the preclinical year and clinical year students preferred DA of learning. However, there was no association between workload and learning approach preference (Table VI). Although most respondents regarded medical course as having a heavy workload, hence unmanageable, DA of learning was their preferred learning approach (49.1%), followed by SA (29.2%) and SAA (21.7%) approaches of learning. Respondents who considered the course as manageable also preferred DA of learning (52.5%), followed by SA (28.9%) and SAA (18.6%) approaches of learning.

There was no association between methods of teaching and learning approaches (Table VII). In spite of teaching

style, either passive or teaching with engagement, respondents preferred DA of learning (passive=46.5%, engagement=53.4%).

## DISCUSSION

### Socio-demographic characteristics

In this study, there was a gender discrepancy, in which females were the majority of the respondents (females = 73.7%, males =26.3%). This corresponded to the study population where females were the majority of the medical undergraduates at FMHS, UPM. With regard to race, Malay ethnicity formed the majority, which reflected the socio-demographic characteristic of race distribution in Malaysia.

### Distribution of respondent's learning approaches

This study has shown that almost half of the respondents (49.6%) preferred DA of learning. The reason for DA of learning could be due to the nature of learning in

medicine. Mattick and Knight (2007) described DA of learning as a high-quality of learning to meet the learning outcomes for the medical curriculum (11). The rest of the respondent adopted SA of learning (29.1%) and SAA of learning (21.3%). SA of learning only focuses on achieving good exam results rather than understanding the particular subject to the roots. Meanwhile, SAA of learning took on rote memorisation without understanding the subject matter, hence may not be suitable future doctors who are supposed to apply what they learn in their clinical practice.

### **Association between socio-demographic characteristics and the learning approaches**

The effect of gender on learning approaches has been analysed in quite a number of studies. Although the idea that gender is associated with learning approaches seems fascinating, previous studies did not show consistent results. Most studies found that there was no association between the two (11-14). However, a study by Lie, Angelique, and Cheong (2004) at National University of Singapore showed that there was an association between gender and their inclination towards learning approaches (15). They also looked at students' performance and found that male scored higher marks than female in DA of learning whereas female scored higher marks in SAA of learning. In addition, a study by Veloo, Krishnasamy & Harun (2015) in Universiti Utara Malaysia, also found that female preferred SAA of learning in comparison to male (16). In our study, there was also a significant association between gender and learning approaches. Both genders preferred DA of learning with male preference was DA>SAA>SA; while female preference was DA>SA>SAA.

On the other hand, our study did not show an association between race and approaches to learning. This is in contrast to a previous study by Ismail, et. al. (2013) in UPM. Their study indicated an association between learning approaches and learning. In their study, they have further specified the non-Malays as Chinese and Indians, which we did not. They found that Chinese were more inclined to SAA of learning, in comparison to other races, while Malays and Indians, preferred DA of learning (17).

Our study found a significant association between year of study and learning approaches in which both preclinical and clinical year students preference was DA>SA>SAA. This result is in accordance to a previous study by Aaron and Skakun (1999) and a much recent study by Wickramasinghe et.al. (2011) (18).

### **Association between learning environment and the learning approaches**

Previous studies have shown that perception of workload influences learning approaches (19-22). In this regard, unmanageable workload results in students' preference

to SAA of learning. Interestingly, a study by Giles (2009) in New Zealand found that students who perceived their workload as unmanageable adopted for DA of learning (8). Giles explained that the students might have responded to the questionnaire with the intention to obtain preferable results rather than their actual learning approaches. It is also plausible that some students intend to adopt DA as their learning approach, but opted to SAA of learning to cope with the learning environment. On the other hand, our study did not find a significant association between workload and learning approaches. This could be explained by the fact that respondents' perception on the workload. In this regard, although a heavy workload can be a demotivating factor for some students to learn and understand the subject well, other students may consider this as a motivating factor for them to do well in their study. For example, someone who considers medical course as unmanageable may strive to be a good learner. Whereas, another student with similar perception with the latter may feel stressed and cope with SAA of learning.

This study also did not find an association between teaching methods and learning approaches. This is in contrast to a study conducted by Gibbs and Coffey (2004) (23). Their study showed a significant association between teaching methods and students' approaches to learning. By changing from the usual didactic teaching to teaching with engagement, students showed more interest in their learning. There was also a reduction in the number of those preferring SAA of learning, with an increase in number of those preferring DA of learning. The population of study between these two studies can explain this difference in results. Our study population comprised of tertiary learner whereas Gibbs and Coffey's study population were school children. As students progress into the tertiary education, their takes on learning will be based on adult learning andragogy that focuses on self-directed learning (5). The motivation for studying in self-directed learning comes from an intrinsic factor. Thus, external influences such as the method of teaching may not influence how an adult learns.

## **CONCLUSION**

Our study showed an association between learning approaches and year of study and gender. Other factors such as race, workload and methods of teaching did not have an association with students learning approaches. DA of learning was the preferred learning approach in medical students at FMHS, UPM. This approach of learning, where students learn to understand the subject matter, may result in students become effective learners. Their understanding about the subject matter will be applicable to their clinical practice in the future.

## RECOMMENDATIONS

Our study did not look at students' performance according to their learning approaches. We suggest for a future study to look into this. Therefore, the effectiveness of the learning approaches can be determined. We had categorized the races as Malays and non-Malays, which is a limitation of this study. Future study should look into all races of the population. Future study can also explore pre-clinical year students' learning approaches when they are in clinical years.

## ACKNOWLEDGEMENTS

The authors acknowledge academics at Department of Community Health, Faculty of Medicine and Health Sciences, University Putra Malaysia, for their advice when conducting this study.

## CONFLICT OF INTEREST

All authors declare that they have no conflict of interest

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