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Educational Article

Students' perceptions about learning pharmacology at a single private institute in Malaysia

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الملخص

أهداف البحث: فهم التصور الحالي لطلاب الطب بشأن تعلم علم الأدوية، وأهمية دوره في كل من الممارسة السريرية والبحوث. وقد يفيد هذا الفهم في تحسين التدريس في هذا الفرع من العلوم. أجريت هذه الدراسة لتقييم رأي طلاب الطب نحو علم الأدوية.

طرق البحث: تم اختيار ١٥٠ من طلاب الطب عشوائيا من جامعة العلوم والإدارة، في ماليزيا. عبأ الطلاب استبانة ذاتية بنية معرفة وجة نظر هم تجاه تعلم علم الأدوية.

النتائج: كان معظم المشاركين من الطالبات (٧٥,٣٪)، وكان ٦٨٪ منهم من العرق الملايي، ومن أبوين مهنتهم غير طبية (٨٨,٧ - ٩٥,٣٪). وكان متوسط النسبة المئوية للاستجابة والموافقة على المشاركة (٤٧,١٥ ± ١١,٦٩)، وهي معتبرة جدا (قيمة ٠,٠٠٠١ > ب ٠,٠٠٠١) بالمقارنة مع متوسط النسبة المئوية لمن لم يوافقوا على المشاركة (٩,٩٧ ± ٣,١٥). كما كانت النسبة المئوية للطلاب الذين يعتبرون علم الأدوية مادة مفضلة ويختارونه للدراسات العليا أقل من ذلك بكثير (قيمة ٠,٠٥ > ب) بالمقارنة مع الفئة التي لم توافق، مع أن الطلاب الذين وافقوا كانوا أقل من ٣٠٪ من مجموع المشاركين.

الاستنتاجات: وصلت هذه الدراسة إلى أن التصور العام للطلاب لتعلم علم الأدوية كان إيجابيا. لكن كشفت الدراسة ضرورة تضافر الجهود لجعل تعلم علم الأدوية تجربة مثيرة للاهتمام، وتحديد المجالات ذات الأولوية لهذه التحسينات.

الكلمات المفتاحية: تصور الطلاب; علم الأدوية; المعاهد الخاصة في ماليزيا; تعلم علم الأدوية

Abstract

Objective: Understanding current perceptions of medical students regarding learning pharmacology and understanding pharmacology's important role in both clinical practice and research may be helpful in improving the teaching of this discipline. This study was conducted to evaluate medical students' opinions toward pharmacology.

Methods: One hundred fifty medical students, randomly selected from the Management and Sciences University (MSU) in Malaysia, completed a self-administered questionnaire that inquired concerning their views toward learning pharmacology.

Results: The majority (75.3%), of the participants were female and (68%) were Malays whose parents were non-medical professionals (88.7–95.3%). The average percentage of respondents agreeing to participate (47.15 ± 11.69) was highly significant ($p < 0.0001$) compared with the average percentage of respondents that disagreed (9.97 ± 3.15). The percentage of students that considered pharmacology as a favoured subject and a choice for post-graduate studies was significantly lower ($p < 0.05$) compared with the percentage that did not, although the students that agreed were less than 30% of the total participants.

Conclusions: The study found that the general perceptions of students regarding the study of pharmacology

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were positive. Nevertheless, the study also exposed the need for concerted efforts to make learning pharmacology an interesting experience and to identify priority areas for such improvements.

Keywords: Learning pharmacology; Pharmacology; Private institute in Malaysia; Student perceptions

Introduction

Students' perceptions comprise an assortment of effective methodologies for improvement on teaching basic sciences related to clinical professions, such as pharmacology in health education.[1,2] Educational research has been conducted regarding students' perceptions toward teaching and learning as well as factors that affect their learning in undergraduate programs as far back as the 19th century.[3,4] Most of the studies on students' feedback mostly focused on areas such as learning outcomes, teaching and assessment methodologies, academic staff and educational environment.[5] Student perception is an accepted means of reviewing teaching and evaluation methods and developing teaching methodologies in undergraduate programs around the world.[1,2,6,7] Furthermore, student perception is used to identify which teaching strategies students perceive to be the most effective means to facilitate the learning of pharmacology material.[8]

Student feedback has been considered to be an effective methodology for modification of undergraduate curriculum and making pharmacology more interesting and practicable.[2] Several studies on students' perceptions regarding learning of pharmacology documented students' improvements in performance through improved teaching and learning processes.[9] Student feedback is thus considered an invaluable tool for improving students' performances when suggestions obtained from students are implemented.[10]

Studies regarding students' feedback help to provide several useful inputs for educational improvements. These studies can provide valuable inputs into the curriculum review processes,[11,12] help in forming a learner-centred knowledge-building process,[13] improve on the implementation of recent teaching methods in pharmacology,[14] and in the fundamental or clinical components,[15] as well as enhance the quality of learning environments.[16]

Pharmacology is a crucial subject for medical students who are going to be future medical practitioners. It is therefore important that medical students appreciate pharmacological principles and are able to relate and apply them in the practice of medicine.[1] Traditionally, the teaching of pharmacology in medical schools follows a discipline-based and lecture-based approach with a heavy emphasis on acquiring factual knowledge concerning drugs[17] and does not train the medical students adequately in their therapeutic application.[16] It is therefore pertinent that knowledge of basic pharmacology has remained poor among medical practitioners.[1] Although the need for improved education in clinical pharmacology is clear, the fact that assessment methodologies in pharmacology for medical students have shown little change during the past several decades suggests that little is known regarding how to accomplish such improvements.[17,18]

At the international medical school Management and Science University, medical students are taught Pharmacology in a block system during their third and fourth semesters of study. Pharmacology instruction takes place through didactic lectures and case-stimulated learning (CSL) sessions. Each semester has three or four lectures per week and students are divided into batches of 16 or 20 for the CSL sessions. Each CSL batch is further subdivided into four groups of four or five students each. The students solve cases using the concepts taught in the class and the information resources available in the school library. Students are taught about essential drugs, the P-drug concept and P-drug selection for specific patients.

The revised curriculum of the Management and Sciences University, to which the school is affiliated, places a strong emphasis on self-directed learning and directed learning. The curriculum emphasises rational prescribing using an evidence-based medicine approach, with the WHO Guide to Good Prescribing as the reference standard.

Understanding current perceptions held by future medical practitioners regarding pharmacology and its role in both research and clinical practice may be helpful for improving teaching on this subject and introducing appropriate changes into the curricula where and when necessary. This research was conducted as a cross-sectional survey to evaluate medical students' attitudes toward pharmacology.

Materials and Methods

This is a descriptive cross sectional study; random sampling was performed to collect the data from university students. One hundred fifty students from the International Medical School and Faculty of Health and Life Sciences, Management and Science University (MSU), Malaysia, consisting of both genders, were recruited as respondents in this study. Questionnaires were distributed between the 2nd and 31st of July 2012. The questionnaire was designed based on the literature review in this field[14] with modification and distributed to medical students. A short briefing about the aims and objectives of this study was given and after the respondents filled in the questionnaire, the questionnaires were collected. Data collected were analysed using the Statistical Package for Social Sciences (SPSS), Version 18. Frequency was expressed as a percentage. The Pearson Chi-square test was used to evaluate any significant difference between percentage of frequency responses for each question. Analysis of variance (ANOVA) and the post-hoc test were used to analyse the difference in responses among all questions. Tukey's Honestly Significant Difference (HSD) test was used as the post-hoc test. A p value <0.05 was considered as statistically significant.

Results

Socio-demographic data of participants

Students involved in this study were students from International Medical School and Faculty of Health and Life

Table 1: Socio-demographic characteristics of the study participants (n = 150).

Variables	Categorize	Frequency	Percentage (%)
Gender	Male	37	24.7
	Female	113	75.3
Race	Malay	102	68.0
	Chinese	8	5.30
	Indian	33	22.0
	Others	7	4.70
Profession of Father	Medical	17	11.3
	Non-medical	133	88.7
Profession of Mother	Medical	7	4.70
	Non-medical	143	95.3

The values represent socio-demographic characteristics of participant frequency and its percentage. The collected data were analysed using the Statistical Package for Social Sciences (SPSS), Version 18.

Sciences, Management and Science University, Malaysia. The majority of the participants were female (75.3%) and Malay (68%) (Table 1). The majority of the parents (fathers & mothers) of the respondents were non-medical professionals and the frequencies were 88.7 and 95.3, respectively (Table 1).

Assessment of perception

The percentage average of agree responses for 15 questions (47.15 ± 11.69) was highly significant ($p < 0.0001$) when compared with the average of the disagree percentage (9.97 ± 3.15) (Figure 1).

Forty-two students (28%) agreed that pharmacology is a favourite subject, whereas 21 (14%) disagreed and 87 (58%) responded neutrally. The majority of the students (100; 66.6%) agreed that pharmacology has created a knowledge base that will help them with the rational choice of drugs during future practice, while 10 (6.7%) disagreed and 40 (26.7%) maintained neutrality. Sixty-six students (44%) mentioned that pharmacology lectures are interesting and stimulating, however, 24 students (16%) disagreed and 60 (40%) responded neutrally. More than half of the students (93; 62%) agreed that pharmacology is more closely integrated with the clinical sciences and real cases from hospitals should be used during stimulated learning problems. Thirteen students (8.7%) and 44 (29.3%) students responded oppositely and neutrally, respectively (Table 2).

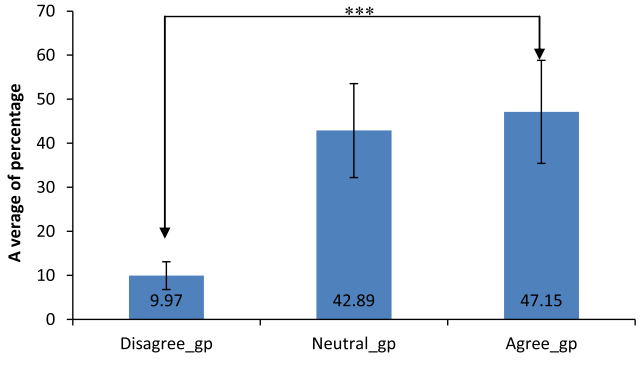

Figure 1: The average of response percentages regarding learning pharmacology. The values are represented (mean ± SD) of percentage of frequencies. Tukey's Honestly Significant Difference (HSD) test was used as the post-hoc test. A p value <0.05 was considered to be statistically significant.

Seventy-five students (50%) agreed that the pharmacology helped with developing their skills in problem-solving and logical-reasoning; however, 19 students (12.6%) and 56 (37.3%) students responded oppositely and neutrally, respectively. More than half of the students (83; 55.4%) opined that the teaching of pharmacology should focus strongly on the health problems of Southeast Asia with a special emphasis on Malaysia. Eighty-two students (54.7%) reported agreement regarding the need for practical sessions on rationality of prescription and evaluation of drug advertisements; 11 students (7.3%) reported their disagreement and 57 (38%) responded neutrally. Eighty students (53.3%) agreed that they should have modules of pharmacology and therapeutics during their clinical years (Table 2).

Regarding assessment, 57 students (38%) agreed that the assessment system is fair; 11 (7.3%) and 82 (54.7%) students, however, reported oppositely and neutrally, respectively. On transparency of the assessment, 38 (25.3%) and 15 (10%) respondents agreed and disagreed, respectively, whereas 97 (64.7%) students remained neutral. More than half of the students (88; 58.6%) agreed that MCQs should be included in the assessment whereas 13 (11%) disagreed and 82 (54.7%) were neutral. Less than half of the students (64; 42.7%) agreed that the assessment focuses on the ability to acquire facts rather than the development of problem-solving skills, other students (15; 10%) disagreed while the majority of respondents (71; 47.3%) maintained neutrality. Sixty-four students (42.7%) agreed that pharmacology education had given them capacity for self-directed learning; 16 (10.7%) of the students reported oppositely, and 70 students (46.7%) maintained a neutral response. Sixty-four students (42.6%) were in agreement that pharmacology is important for post-graduation work. Sixty-five students (43.3%) agreed that practical sessions as well as the objectively structured practical examination (OSPE) stimulated learning (PSL) more than didactic lectures (Table 2).

Discussion

The majority of the participants were female students whose parents are non-medical personnel. In general, the majority of students who participated in this research expressed a positive perception of the teaching and learning of pharmacology. The average percentage of agree responses for 15 questions was highly significant ($p < 0.0001$) when compared with the average percentage of those that disagreed.

However, regarding pharmacology's being a favoured and necessary subject for post-graduation, the percentage of students that agreed was highly significant ($p < 0.05$) compared with percentage of those disagreeing, although the percentage of agreed students was less than 30% of the total percentage of participating students. This finding indicated that pharmacology was not a favoured subject. Our study is in agreement with previous studies showing that students do not consider

Table 2: Students' perception and opinion towards pharmacology topics and teaching in MSU ($n = 150$).

Items	Disagree	Neutral	Agree
Pharmacology is my favourite subject in the basic sciences.	21 (14%)	87 (58%)	42 (28%)
The subject has created the knowledge base which will help me in choosing drugs rationally in my future practise.	10 (6.7%)	40 (26.7%)	100 (66.6%)
I find pharmacology lecturers interesting and stimulating.	24 (16%)	60 (40%)	66 (44%)
I would like Pharmacology to be more closely integrated with the clinical sciences and would like real cases in hospital to be used during problems stimulated learning (PSL).	13 (8.7%)	44 (29.3%)	93 (62%)
The subject has helped me to develop my problem-solving and logical-reasoning skills.	19 (12.6%)	56 (37.3%)	75 (50%)
I would like the subject to be focus more strongly on the health problems of South East Asia with special emphasis on Malaysia.	11 (7.4%)	56 (37.3%)	83 (55.4%)
I would like practical session on rationality of prescription and evaluation of drug advertisements.	11 (7.3%)	57 (38%)	82 (54.7%)
I would like to welcome modules on Pharmacology and therapeutics during the clinical years of my training.	12 (8.0%)	58 (38.7%)	80 (53.3%)
The assessment system in Pharmacology is fair.	11 (7.3%)	82 (54.7%)	57 (38%)
The assessment process is transparent.	15 (10%)	97 (64.7%)	38 (25.3%)
I would like MCQs to be included in the assessment.	13 (11%)	49 (32.7%)	88 (58.6%)
The assessment concentrates on ability to acquire facts rather than on the development of problem-solving skills.	15 (10%)	71 (47.3%)	64 (42.7%)
The Pharmacology teaching has inculcated in me a capacity for self-directed learning.	16 (10.7%)	70 (46.7%)	64 (42.7%)
I will consider Pharmacology as one of my subject for post-graduation.	23 (15.4%)	63 (42%)	64 (42.6%)
There should be more emphasis on objective structured practical examination (OSPE) and PSL, rather than didactic lectures.	10 (6.7%)	75 (50%)	65 (43.3%)

The values represent number of participants and (its percentage). The collected data were analysed using the Statistical Package for Social Sciences (SPSS) Version 18.

pharmacology as a favourite subject.[19] It is likely that students' interests are biased toward clinical sciences rather than fundamental sciences. Several studies have suggested that this may in part be due to students' apathy about the enormous challenge of learning about the majority of drugs.[19] As a result, there is a stigma attached to the study of pharmacology[20] and the students' interests appear more biased towards clinical careers with prospective incomes far better than pharmacology careers.[14] Their preference for pharmacology as a subject in post-graduation was lower, probably due to inadequate knowledge about this subject matter, which is vital for booming careers in the clinical research and pharmaceutical industries.[21]

Regarding transparency in assessment, the percentage of agreed students was significantly less than non-agreed students.

It is of interest to note that the percentage of respondents agreeing to the remaining issues, i.e., the contribution of pharmacology toward future practice, problem-solving, its closeness with clinical cases in the hospital, and the need to focus on the health problems of Southeast Asia, and especially of Malaysia, were highly significant ($p < 0.05$) compared with the percentages of disagreeing students.

The results on the students' interests in pharmacology being integrated with the clinical sciences during the paraclinical year and in hospitals, and the desirability of focussing on the health problems of Southeast Asia, especially of Malaysia, have been supported by previous studies. Their findings revealed the need for more time and attention to be devoted to issues of pharmacology that relate closely with clinical sciences.[21] The need for more integration of pharmacology during the clinical years has also been supported by several accreditation organizations in medical education, including the General Medical Council, the Association of American Medical Colleges and the American Medical Association.[1,20] Such integration is believed to provide students with the opportunity to become acquainted with various diseases and the invaluable role of pharmacology simultaneously.[22,23] For this reason, many medical schools have integrated pharmacology during clinical years.[24]

Conclusions

The study determined that in general, the perceptions of the participants regarding learning pharmacology were positive. Nevertheless, the study also observed the need for various efforts to make pharmacology study an interesting and a significant learning experience and identified priority areas for such improvement. Others that have recommended various efforts have to mitigate the general stigma that the study of this vital medical subject is dry and boring for students.

Conflict of interest

The authors have no conflict of interest to declare.

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