Original Article

Methods of instruction in the National University: Preferences, opinions, and students' perception (2014-2015)

Ahmed Issam Kamil, Salah Ibrahim Kheder

Department of Pharmacology, Faculty of Pharmacy, National University, Khartoum, Sudan

Abstract

Background: The methods of instruction in pharmacy education are crucial and are meant to suit the professional development and encompass the advanced variety of services and functions provided by the pharmacists to serve individual patients. The aim of this study was to determine the students' opinions on the adopted and preferred methods of instruction in Pharmacy College in National University, - Sudan. **Method:** A questionnaire was distributed to 166 pharmacy students, who belonged from the second to fifth year batches. All retrieved questionnaires were analyzed. **Results:** Interactive lecturing was dominant (51%). The preferred language of instruction was combined English and Arabic (71%). A cocktail of traditional and electronic aids was used and was the preferred lecture delivery method (73.5%). Surprisingly, only (15.6%) agreed that attending lectures improves understanding and final grades and this synchronized with their opinion in the lecturers because their lectures are not clearly outlined or presented in an easy way and even they are not concerned with their understanding and participating in the lectures. Block system is the preferable system by 76% of students, based on its characteristics and unexpectedly they preferred to be examined by the end of the block and not by the end of the semester (76.5% vs. 23.5%), respectively. About 55.4% of students agreed that problem-based learning (PBL) is very useful and skill-gaining technique, whereas 27.8% disagreed and 16.9% were neutral. Majority of students (144 [86.7%]) confirmed that tutorials are useful learning methods. Involvement of PBL and tutorials should be expanded. About 70% of students disagreed that they depend on handouts in studying and 63.2% of them use references. **Conclusion:** Adopting an interactive method of lecturing will enable an active role of students in the learning process. Selecting bilingual type of instruction media enhances the knowledge as well as attracting students' contribution. Application of intellectual and entertainment activities to the curriculum helps in motivation and increases the durability of the block system pressure.

Key words: Block system, method of instructions, students' perception

INTRODUCTION

There has been an increasing interest among healthcare educators in engaging students in active learning and

Address for correspondence:
Dr. Salah Ibrahim Kheder, Department of Pharmacy, Faculty of Pharmacy, National University, P.O. Box 3783, Khartoum, Sudan.
E-mail: isra-su@outlook.com

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moving away from strictly presenting technical content followed (often weeks later) by an examination.[1] There is ample evidence that passive lectures provide the lowest level of knowledge retention and cognition. These had led to the development of different teaching methods and tools that overcome issues such as one-way communication, passive audience, and learning assessment.[2]

The variety of roles for pharmacists creates challenges for pharmacy education, as it needs to adapt its curricula to suit changes in health systems. Starting with a 3-year program in 1914, pharmacy education has evolved from a 4-year certificate degree program and then to a 5-year bachelor degree program focused on a variety of subjects that supported pharmacists working in various settings, such as pharmaceutical production, hospitals, community pharmacies, and pharmaceutical regulatory affairs.[3]

Pharmacy education in its broadest meaning is to qualify graduate with the core knowledge of pharmaceutical sciences as well as to equip him/her for lifelong knowledge and training in science and practice.[4] However, pharmacy education methods should clearly qualify a graduate to meet patients' perceptions and perspectives toward medications being important determinants of the success of health intervention strategies.[5] The adopted type and methods of instruction in pharmacy education are crucial and groundbreaking concepts to suit the professional development and encompass the advanced variety of services and functions provided by the pharmacists to serve individual patients.[6] In general, the curricula contents as well as the adopted instruction methods should meet the patients' need and should curb the treatment misadventures.

In Sudan, the last decade has witnessed a great interest among Sudanese regarding pharmacy education. This resulted in establishment of a large number of pharmacy schools and continued submissions for approval of new ones. Currently there are 16 schools (7 public and 9 private schools), all but one of which is located in Khartoum. Their combined annual admission in 2013 is around 2124 students (38–510 students per university), with fewer male students than female students ratio (1:4).[7] The undergraduate curriculum followed in most of these pharmacy schools is the traditional full academic year system. Teaching methods are confined to large group lectures using the whiteboard and multimedia projection and small group practical sessions. Traditional written, practical, and oral examinations and assignments are used to evaluate students' learning. The curricula and methods of teaching and evaluation are more or less similar at all pharmacy schools in Sudan. The only exception is that some schools follow what is called a modified semester system where the academic year is divided into two semesters and each semester is evaluated separately, which are usually 14-20 weeks each (longitudinal or semester system).

National University–Sudan was established in 2005 as a college for medical and technical studies; in 2014, it became a university. It has adopted a new and unique system of education (block system), which is taking one class at a time, all day, and every day, until all of the material and subject is covered and examined. The aim of this study is to investigate the National Pharmacy students' perception of the new adopted block system and evaluate students' preferences for methods of instruction in the National University, Faculty of Pharmacy.

METHOD

This cross-sectional study was carried among all pharmacy students of the batches from 2nd to 5th year, 2014–2015, of National University. The research was approved by the academic secretary of the university as graduation research project. Personal consents were obtained from the participants prior to their enrollment.

An exclusive questionnaire was used to elicit general opinions of students on different variables to address the study's objectives. Different opinions' variables that reflect National pharmacy students' perception on the adopted block system and method of instructions were designed. The survey instrument subjected to different validity check and underwent by face-to-face interview to assure students' understanding.

The questionnaire consists of 3 parts. The first part (8 questions) dealt with students' demographic data such as gender, age, residence, year of admission to the university and secondary school record, and his/her last cumulative grade point average in addition to some basic information about family residence and parents' education level and income. The second part of questionnaire consists of 14 statements about the students' opinion on general aspects on educational system as a Likert-type scales. The third part comprised 10 assorted closed questions about the students' opinion in block system, and their preference on the instruction methods and one open question about information and suggestions need to be added.

Data were analyzed using the Statistical Package for Social Sciences version 16 SPSS Inc., 233s. Wacker Drive Chicago, II. 60606-6412 USA), Excel SPSS version 21.

The value $P = 0.05$ was considered statistically significant.

RESULTS

Table 1 showed that majority of respondents were female 104 (62.65%), 129 (77.7%) aged between 21 and 25 and interestingly more than half of the heads of the families 97 (58.43%) had a university level of education.

When applying Likert scales [Table 2], unexpectedly about 70% of students disagreed that they depend on handouts in studying and 63.2% of them use references. Surprisingly, only 15.6% agreed that attending lectures improves understanding and final grades, and this synchronized with their opinion in the lecturers in the four previous statements as their lectures are not clearly outlined or presented in an easy way and even they are not concerned with their understanding and participating in the lectures. It may be also due to the boring type of lectures presented without using visual aids that was reflected by 67.5% of students' opinion.

Table 1: Demographic data of the study population (*n*=166)

Demographic data	*n* (%)
Sex	
Female	104 (62.65)
Age (years)	
15-20	28 (16.87)
21-25	129 (77.71)
≥25	9 (5.42)
Year of admission to university	
2012	47 (28.31)
2011	40 (24.10)
2010	59 (35.54)
2009	10 (6.02)
2006-2008	10 (6.02)
Secondary school academic record (%)	
60-65	27 (16.27)
66-70	19 (11.8)
71-75	64 (38.55)
76-80	40 (24.10)
≥80	16 (9.64)
Family residence of the participants	
Khartoum state	113 (68.07)
Other states	32 (19.28)
Overseas	21 (12.65)
Head of the family education	
Illiterate	4 (2.41)
Primary school	7 (4.22)
Secondary school	32 (19.28)
University	97 (58.43)
Postgraduate	26 (15.66)
CGPA	
≥2.0	72 (43.37)
≥2.5	38 (22.89)
≥3.0	56 (33.73)

CGPA: Cumulative grade point average

By investigating the block system, more than half of students (53.0%) find it as very effective and fulfill the students' ambitions and suits them, whereas about quarter of them disagreed (24.7%) with this statement.

About 55.4% of students agreed that problem-based learning (PBL) is very useful and skill-gaining technique, whereas 27.8% disagreed and 16.9% were neutral. More or less, similar results were obtained for tutorials as a method to help the students to understand the subjects: 51.2% agreed, 36.2% disagreed, and 12.7% neutral.

Figure 1 shows that greater majority of the participated pharmacy students preferred the block system rather than longitudinal system in their college (126 vs. 40).

Most useful characteristic features of block system are the well-organized school day (i.e. 74 [44.6%]), followed by the well-condensed curriculum that has less fragments than the longitudinal system (i.e. 62 [37.3%]) [Figure 2].

Majority of students (i.e. 144 [86.7%]) confirmed that tutorials is a useful learning method, and the assessments by tutorials should by increased in curriculum [Table 3].

Furthermore, the use of a cocktail of traditional and electronic aids was the preferred lecture delivery method (122 [73.5%]), and also bilingual language of English and Arabic was the preferred language of instruction (119 [71.7%]). Majority of students (123 students [74.7%]) preferred to use both their

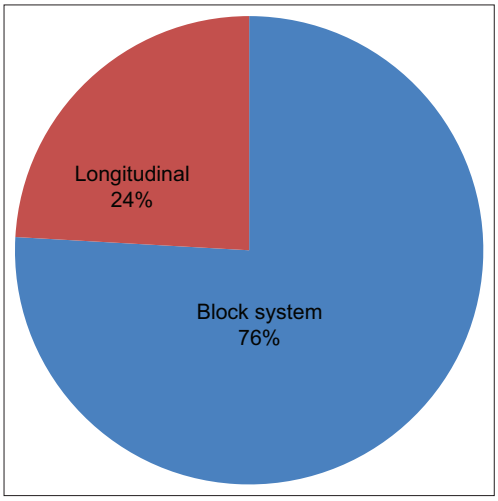

Figure 1: Preference of educational system

Table 2: Student's opinion on general aspects on educational system

Statements	Strongly agree *n* (%)	Agree *n* (%)	Neutral *n* (%)	Disagree *n* (%)	Strongly disagree *n* (%)
Traditional teaching methods is an evidence of lacking up-to-date knowledge	19 (11.5)	37 (22.4)	32 (19.3)	60 (36)	18 (10.8)
Students depend on handouts in studying	13 (7.8)	13 (7.8)	25 (15.1)	70 (42.2)	45 (27.1)
Usually students do not use references	17 (10.2)	20 (12.0)	24 (14.5)	55 (33.1)	50 (30.1)
Lectures are clearly outlined for the students	13 (7.8)	22 (13.3)	43 (25.9)	67 (40.4)	21 (12.6)
Lecturers usually give students an opportunity for participation in the lectures	9 (5.4)	15 (9.0)	37 (22.3)	77 (46.4)	28 (16.9)
Lectures are presented in an easy and interesting way	16 (9.6)	27 (16.3)	57 (34.3)	48 (28.9)	18 (10.8)
Lecturers are concerned about student's understanding of the lecture	13 (7.8)	19 (11.4)	49 (29.5)	62 (37.3)	23 (13.9)
Attending lectures improves understanding and final grades	16 (9.6)	10 (6.0)	23 (13.9)	72 (43.4)	45 (27.1)
Lecturers use visual aids	10 (6.0)	12 (7.2)	32 (19.3)	82 (49.4)	30 (18.1)
Students depend on the final revision in highlighting the most probable question expected the exam	18 (10.8)	27 (16.3)	19 (11.4)	68 (41.0)	34 (20.5)
The block system is very effective and fulfill the students learning ambitions and suits them	49 (29.5)	39 (23.5)	37 (22.3)	17 (10.2)	24 (14.5)
The PBL is very useful and skill-gaining technique	40 (24.1)	52 (31.3)	28 (16.9)	51 (12.7)	25 (15.1)
Tutorials help students to understand the subject	38 (22.9)	47 (28.3)	21 (12.7)	24 (14.5)	36 (21.7)

PBL: Problem-based learning

Table 3: Educational methods and preference of students

	Frequency (%)
The preferred instruction method	
Lectures	27 (16.3)
Tutorials	85 (51.2)
Hospital rounds	48 (28.9)
Others	6 (3.6)
Preferred lecture delivery method	
Traditional	13 (7.8)
Electronic	30 (18.1)
Both	122 (73.5)
Others	1 (0.6)
Preferred language of instruction	
English	35 (21.1)
Arabic	12 (7.2)
Both	119 (71.7)
Preferred lecture revision method	
Your own lecture's notes	17 (10.2)
Teacher's handouts	25 (15.1)
Both	123 (74.7)
PBL involvement in the curriculum	
Satisfactory	57 (34.3)
Should be increased	85 (51.2)
Should be decreased	24 (14.5)
Tutorials are useful learning methods	
Yes	144 (86.7)
No	22 (13.3)
Assessment of tutorial's involvement in curriculum	
Increased	111 (66.9)
Decreased	16 (9.6)
Stay as it is	38 (22.9)
Preferred timing of the examination	
By the end of the block	127 (76.5)
By the end of the semester	39 (23.5)

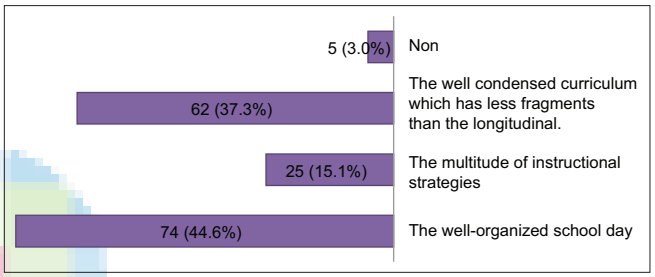

Figure 2: The most useful characteristic features of block system

own lecture notes and teacher notes, and astonishingly they preferred to be examined by the end of the block and not by the end of the semester (76.5% vs. 23.5%), respectively.

DISCUSSION

The current study shows the perception of pharmacy students at the National University to different methods and tools in undergraduate instruction. Majority of students' age ranges from 21 to 25, and this is in accordance with our expectations of the sample age, of which it represents the students of the last 3 years. The increased number of female students (62.65%) was in line with the most pharmacy colleges adopted coeducation type of teaching in Sudan were, in general, a higher intake of female students compared to male ones.[7,8] The study revealed that about 74% of the head of the families of participants in this study had at least a university level of education, and it is implied that those parents were keen to educate their sons and daughters in competitive programs such as pharmacy. This conformed with a study conducted in the United States clearly demonstrated the relationship between

the head of family education and higher enrollment and doing better in colleges in pharmacy.[9]

More than one-third of the students were to disagree when they were asked about if they find lectures easy and interesting, no surprise, as there is a global argument about the effectiveness of lectures, as some of learning theories criticize lectures and describe it as a dull, boring way of knowledge providing,[10] and one of its major flaws is the encouragement of passive audience. As a logical consequence of the above negative views about lectures, half of the respondents disagreed with the claim that lecturers are interesting the students understanding. Attendance does not correlate with improvement of academic performance as stated by the majority (70.5%). This result contradicts with the result obtained by many other studies.[11,12]

More than half of the students (55.4%) consider PBL effective in skill-gaining technique, which raises a question about the way of application of this technique. Most of the respondents think the PBL involvement should be increased. Half of the students' view tutorials help in the deep understanding of the subjects, and its involvement should be increased.

The block system was the dominant selection of student (75%), paradoxically, as the majority prefers the block system over longitudinal, their opinions about the efficiency of block system varied about quarter (24.7%) of the participants disagree consider it not effective, and this might be due to lack of students information about the block system, or may be due to high pressure the block system puts on the students. The most useful characteristic of block system was the well-organized school day followed by the condensation of curriculum which prevents fragments. It reflects the good students' perception of block system versus long-term system.

When asked about their preferences, students preferred interactive lectures over direct. A study conducted in Saudi Arabia concluded that the combined type of instruction helped students in better information recall and better performance in the final evaluation grades, when compared to the use of either direct or electronic methods alone.[11]

Combined Arabic and English was preferred by (71%) of respondents; this result was in agreement with other two studies one done in Saudi Arabia (52.3%),[11] and other one done in India (55%).[13] Furthermore, majority consider both lecture's note and handouts preferable over using each one separately.

Students' major observation about the educational system was to include intellectual and entertainment activities on the curriculum.

CONCLUSION

Block system is the preferable system based on its characteristics, adopting an interactive method of lecturing will enable an active role of students in the learning process. Selecting bilingual type of instruction media enhances the knowledge acquaintance as well as attracting students' contribution. Involvement of PBL and tutorials should be expanded. Application of intellectual and entertainment activities to the curriculum help in motivation and increases the durability of the block system pressure.

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Conflicts of interest

There are no conflicts of interest.

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