

An insight of medical student's preference and opinions to Pharmacology textbooks

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ABSTRACT

Background

Various medical subjects pose a daunting task to students. Chief amongst which the subject's students grapple with is pharmacology. The study's primary objective was to find out the second professional medical student's preferences, feedback, and attitude towards pharmacology textbooks at SSR Medical College, Mauritius.

Methods

This cross-sectional questionnaire-based observational survey was conducted from May 2018- June 2018 at Seewoosagur Ramgoolam Medical College, Mauritius. A Chi-square test was performed to find out correlations between variables. $p < 0.05$ was considered as statistically significant.

Results

A total of 192 medical students participated in the study out of 210 students, giving an overall response rate of 91.42%. 103 (35.6%) students chosen Essentials of Medical Pharmacology- K.D. Tripathi as a first preference, followed by 59 (30.7%) students selected Pharmacology for Medical Students- Tara V Shanbhag and Smita Shenoy as a second preference, and 22 (11.5%) chosen Medical Pharmacology- Padmaja Udaykumar as a third preference.

Conclusion

The textbook Essentials of Medical Pharmacology by K.D. Tripathi is the most popular and most preferred textbook, closely seconded by Pharmacology for Medical Students by Tara V Shanbhag and Smita Shenoy and followed by Medical Pharmacology by Padmaja Udaykumar, the third in the list of the most preferred textbook. The shortcomings of textbooks, such as the innate lack of the ability to cultivate interest in common diseases which are prevalent in the home country of the students, as well as the lack to inspire students to do further reading into research articles and studies, clearly showcases the disconnect that exists between publishers, authors and users.

Keywords

Indian ocean islands, learning, medical, Mauritius, monograph, pharmacology, students, textbook

Background

The study of medical sciences is a very competitive and challenging field. Various medical subjects pose a daunting task to students. Chief amongst which the subject's students grapple with is pharmacology. To become a good clinician, understanding Pharmacology is essential and mastered to ensure the holistic treatment [1].

Seewoosagur Ramgoolam (SSR) Medical College was established in 1999 in the island nation Mauritius. The medical school is affiliated with the University of Mauritius (UOM), and recognized by the Medical Council of Mauritius (MCM). The total duration of the MBBS course is five years in SSR Medical College, and the course is divided into First Professional, Second Professional, Final Part –I, and Final Part –II. Anatomy, Biochemistry, Physiology is taught in the first professional in one and half year. Pharmacology is taught in second professional in the MBBS course along with Pathology, Microbiology, and Forensic Medicine for one and half years. ENT, Ophthalmology, and Community medicine are taught in the Final Part –I for 1 year, and Medicine, Surgery, Obstetrics and gynecology, and Pediatrics as core subjects in Final Part –II, respectively [2].

In this modern and technologically advanced era, students can access unled resources and data to best aid their studies and build their concepts. Superadded to this, today's students are spoilt for choice when it comes to the selection of their textbooks. The number of textbooks per subject is expanding and exploding on an international basis, making choosing the correct textbook a challenge [3].

With this massive selection of textbooks and superadded access to unfathomable amounts of material and data, naturally, one would expect the results recorded by students, their marks, and their understanding of concepts to improve. This access to extra learning material should also change the perception of students towards the subject of pharmacology. On the contrary, however, students still grapple with pharmacology, the failure and attrition rate remains high, and the subject remains as daunting as ever [4,5,6].

If one had to look at the selection of textbooks and additional material available for medical studies 50 years ago, the volume would be dismal compared to what is available today. Currently, several pharmacology textbooks and reference books are available in the market Goodman and Gilman's- The pharmacological basis of therapeutics, Basic and Clinical Pharmacology by Bertram G. Katzung, Essentials of Medical Pharmacology by KD Tripathi, Lippincott Illustrated Reviews: Pharmacology by Karen Whalen, Rang and Dale's Pharmacology, Clinical Pharmacology by P. N. Bennett; M. J. Brown; Pankaj Sharma, Principles of Pharmacology by H. L. Sharma and K. K. Sharma, Pharmacology and Pharmacotherapeutics by RS Satoskar, Nirmala Rege, SD Bhandarkar, Clinical Pharmacy and Therapeutics by Roger Walker and Cate Whittlesea, etc.

It is true that with scientific breakthroughs and developments in the medical field that the information and syllabus are constantly evolving in nature to be on par with discoveries and relevant practices. The overload of so many different sources and constantly changing academic syllabus may play a part in students' difficulty when selecting the "right" textbook [7].

How a student perceives information, assimilates it, and subsequently memorizes, applies, and stores is unique. Students generally use multiple textbooks to understand various concepts as different authors relate and explain multiple sections in many different ways. It is ubiquitous for students to only select to use a textbook for a particular section in the entire syllabus. This practice is both wasteful to the environment and the student [4-8].

Many institutions and or faculty members have been found to "push" a particular textbook as it covers the syllabus in a manner that is deemed most appropriate. This practice has got both inherent advantages and disadvantages. The benefits are that the lecture format will loosely be based on a tangible textbook and make it easier to follow the course. The large innate weakness is that a large cohort of students may not be able to study from the prescribed textbook due to formatting and or explanation and concepts that aren't explained in a manner they can best grasp [9,10].

It is thus vital to understand whether modern students still value their textbooks and if so, it must be established which textbooks are preferred and for what reasons. The various combinations of student textbooks and the logical explanation behind these combinations are of paramount importance to new students, publishers, authors, and faculty. Such vital data yielded from this study is of the utmost importance to all involved in the field. The findings thereof will simultaneously aid students, faculty, authors, and publishers to make more informed and calculated decisions about textbook selection, publishing, and learning material, respectively [11,12].

The study's primary objective was to find out the second professional medical student's preferences, feedback about pharmacology textbooks, and their attitude towards various pharmacology textbooks at SSR Medical College, Mauritius. The need for the study also arises from the fact that there is a dearth of data available on this research question. To our knowledge, this is the first study being conducted and reported from Mauritius.

Material and methods

Study design and the participants

This cross-sectional survey was conducted from May 2018 - June 2018 at Seewoosagur Ramgoolam Medical College (SSRMC), Mauritius. SSRMC is the first medical college established in the island nation Mauritius in 1999.

Data Collection

The data was collected from 192 medical students from the second professional studying Pharmacology and were

pursuing an undergraduate medical course in the college. The data was collected by online Google form questionnaire among the cohort. Written consent of participation was taken from all the participants of the survey.

Questionnaire design

A semi-structured validated questionnaire was designed after an extensive review of literature from Pubmed, Pubmed Central, Embase, Trip, Google Scholar databases. The questionnaire was alienated into three sections: the first section of the questionnaire comprised of the demographic particulars of medical students viz. age, gender, nationality and semester of the study were taken into consideration. The second section of the questionnaire encompassed the first three most preferred textbooks in Pharmacology preferred by undergraduate medical students. The third section of the questionnaire comprised of the factors that could determine their choice of picking their selected textbooks in Pharmacology. It consisted of a total of 16 questions, which emphasized the following aspects viz. How often do you use the textbook in Pharmacology? Does it clarify the pharmacodynamics and pharmacokinetics of prototype drugs clearly? Does it describe the pathophysiology of major diseases? Does it provide detailed descriptions of the mechanism of action of drugs as a pharmacological basis of therapeutics clearly? Does it identify drugs that are frequently used in clinical practice? Does it stimulate your interest in the topic and motivate you to learn on your own? Does it encourage the integration of pharmacology with other subjects of basic sciences? Does it stimulate your interest in more common diseases that is prevalent in your country? Is the material of the textbook well organized? Does the sequence of the topic is well organized? Are the contents clear, concise, and easy to understand? Was it necessary to consult another textbook to clear your doubts? Does it stimulate you to refer to useful literature in this field like scientific research articles? Do you think that the textbook will help you to get a better score in the examination? Would you recommend this textbook to other students? Does the textbook cover all of the topics as per University of Mauritius curriculum? A 5-point Likert scale (always, almost always, frequently, sometimes, never) was used for the collection of the data.

Questionnaire validation

Three subject experts validated the questionnaire in Pharmacology and Research (IB, AA, and RKG). The three experts determined the content validity and construct validity. A Preliminary pilot testing was conducted among 20 medical students undergoing a Pharmacology course, and the questionnaire was modified based on their responses. The modified questionnaire was administered in the final study for the collection of the data. Cronbach's alpha ascertained the reliability of the questionnaire. The internal consistency between the items using Cronbach's alpha was found to be 0.88.

Inclusion criteria

A total of 192 medical students from the second professional, those students were undertaking Pharmacology course at Seewoosagur Ramgoolam Medical College (SSR Medical College) were included in the study. Students from Semester 4th, 5th and 6th were included in the study.

Exclusion criteria

Students from first, third and fourth professionals viz. semester 1st, 2nd, 3rd, 7th, 8th, 9th, 10th were excluded from the study. Participation in the study was entirely voluntary. Those students who were unwilling or not given their written consent to participate in the study were excluded from the study. Incomplete filling of Questionnaires was also omitted from the survey.

Sample size calculation

A preliminary pilot study was done in 20 medical students who were studying Pharmacology were randomly selected, the first preference of Pharmacology textbooks as Essentials of Medical Pharmacology- K.D. Tripathi was found to be 70%. $P=70\%$, $Q=30\%$, Allowable Error = 10% of $P=7\%$. Required sample size for 95% CI is 165. P = percentage of the first preference of Pharmacology Textbooks as Essentials of Medical Pharmacology- K.D. Tripathi. We got a suitable sample size of 192 for this research. [13, 14].

Ethical committee approval

Declaration of Helsinki of ethical principles for medical research involving human subjects guidelines was followed while conducting the survey. Ethical committee approval was taken from the institutional ethics committee of Seewoosagur Ramgoolam Medical College, Mauritius prior to conduct the survey. This study was a non-interventional observational questionnaire-based survey. The names and identities of the subjects were kept confidential.

Data management and statistical analysis

The data was entered and evaluated by means of Statistical Package for the Social Sciences (SPSS) Version 24.0 software. Descriptive statistics was used to evaluate the demographic profile of the medical undergraduate students. Chi-square test was performed to find out correlations between the gender, nationality and the first preference of textbooks in Pharmacology. $p < 0.05$ was considered as statistically significant.

Results

A total of 192 medical students participated in the study out of 210 students, which gives an overall response rate of 91.42%. The mean age of the students was $21.32 \pm$ SD 1.236 years. 108(56.3%) students were female, and the rest were male 84 (43.8%). Most of the students were Indian, 138 (71.9%). As far as a semester of the study was concerned, most of the students were from the 6th semester

86(44.8%), followed by the 5th semester, 72(37.5%), and the 4th semester 34 (17.7%), respectively. (Table 1)

Table 1: Demographic details of students

	(n=192)	Frequency (Percentages)
Gender	Male	84 (43.8)
	Female	108 (56.3)
Nationality	Indian	138 (71.9)
	Mauritian	27 (14.1)
	South African	24 (12.5)
	Others	3 (1.6%)
Semester	4th	34 (17.7)
	5th	72 (37.5)
	6th	86 (44.8)

Essentials of Medical Pharmacology- K.D. Tripathi 41(48.8%) and Pharmacology for Medical Students- Tara V Shanbhag and Smita Shenoy 29 (34.5%) were chosen the most by the male cohort.

Among the Indian students, 71 (51.4%) selected Essentials of Medical Pharmacology- K.D. Tripathi and Pharmacology for Medical Students- Tara V Shanbhag and Smita Shenoy 53 (38.4%) respectively. Mauritian students preferred Essentials of Medical Pharmacology- K.D. Tripathi 19 (70.4%), followed by Medical Pharmacology Padmaja Udaykumar 6 (22.2%). South African students opt for Essentials of Medical Pharmacology- K.D. Tripathi 11(45.8%) followed by Medical Pharmacology- Padmaja

Table 2: Preference of textbooks in pharmacology

Title of the Book	Author	1 st Preference n=192	2 nd Preference # n=140	3 rd Preference ## n=12
1. Essentials of Medical Pharmacology-	K.D. Tripathi	103(53.6)	38 (19.8)	4 (2.1)
2. Pharmacology for Medical Students-	Tara V Shanbhag and Smita Shenoy	59(30.7)	76(39.6)	1(0.5)
3. Medical Pharmacology	Padmaja Udaykumar	22 (11.5)	19 (9.9)	1(0.5)
4. Review of Pharmacology	Gobind Rai Garg Sparsh Gupta	1 (0.5)		
5. Basic and Clinical Pharmacology	Bertram G. Katzung	2 (1)		1(0.5)
6. Lippincott Illustrated Reviews: Pharmacology	Karen Whalen	1 (0.5)	1(0.5) 4(2.1)	3 (1.6)
7. Principles of pharmacology	HL Sharma, KK Sharma	1 (0.5)	2(1)	
8. Pharmacology and Pharmacotherapeutics	RS Satoskar, Nirmala Rege, SD Bhandarkar	2(1)		1(0.5)
9. Clinical Pharmacology	Morris J. Brown, Pankaj Sharma, Fraz A. Mir, Peter N. Bennett	1 (0.5)		
10. Clinical pharmacology made ridiculously simple	James M Olson			1 (0.5)

No 2nd preference for 52 (27.1); ## No 3rd preference 180 (93.8)

Table 2 depicts the preference of textbooks in Pharmacology among medical students. Essentials of Medical Pharmacology- K.D. Tripathi was designated as first preference by 103(53.6%) students followed by Pharmacology for Medical Students- Tara V Shanbhag and Smita Shenoy 59(30.7%) and Medical Pharmacology- Padmaja Udaykumar was chosen by 22 (11.5%) pupils were among the top 3 most preferred pharmacology text books. 140/192 (72.9%) students expressed their second predilection as, Pharmacology for Medical Students- Tara V Shanbhag and Smita Shenoy 76(39.6%), followed by Essentials of Medical Pharmacology- K.D. Tripathi 38 (19.8%). Only 12/192 students have their 3rd fondness of Pharmacology textbooks. Essentials of Medical Pharmacology- K.D. Tripathi 4 (2.1%) was at the top of the list. Interestingly, 180 (93.8%) of the students didn't have any 3rd preference.

Table 3 depicts the correlation between gender, nationality, and their first preference of textbooks of Pharmacology. Essentials of Medical Pharmacology- K.D. Tripathi 62(57.4%) followed by Pharmacology for Medical Students- Tara V Shanbhag and Smita Shenoy 30(27.8%) were the most preferred books by the female cohort.

Udaykumar 9 (37.5%) and Pharmacology for Medical Students- Tara V Shanbhag and Smita Shenoy 4 (16.7%) respectively. The association between the Nationality of students and their first preference of textbooks of Pharmacology was found to be statistically significant ($p<0.05$)

Table 4 represents the Likert scale analysis, and the various factors determined the selection of textbook in Pharmacology among medical students. For the factor how often do you use the text book in Pharmacology 78(40.6%) students retorted as always and 49(25.5%) students as almost always routinely used textbooks. The feature clarifies the pharmacodynamics and pharmacokinetics of prototype drugs clearly, 76(39.6%) always understood, but 50(26%) cohort frequently got it clarified from reading textbooks. 60(31.3%) cohort often identified the drug commonly used in clinical practice for the factor does it identify drugs that are frequently used in clinical practice. For the factor does it describe the pathophysiology of major diseases, majority of the pupils 78(40.6%) felt sometimes, 59(30.7%) frequently, 35(18.2%) always, 12(6.3%) almost always and 8(4.2%) never felt that a pharmacology textbook describes it. For detailed descriptions of mechanism of action of drugs as a pharmacological basis of

Table 3: Chi square test - correlation between gender, nationality and the first preference of textbooks in pharmacology

Books	Gender		P value	Nationality				P value
	Female n=108	Male n=84		Indian n=138	Mauritian n=27	South African n=24	Others n=3	
1. Essentials of Medical Pharmacology- K.D. Tripathi	62(57.4)	41(48.8)		71 (51.4)	19 (70.4)	11(45.8)	2 (66.7)	
2. Pharmacology for Medical Students- Tara V Shanbhag and Smita Shenoy	30(27.8)	29 (34.5)		53 (38.4)	1 (3.7)	4 (16.7)	1 (33.3)	
3. Medical Pharmacology Padmaja Udaykumar	13 (12)	9 (10.7)		7 (5.1)	6 (22.2)	9 (37.5)	0	
4. Review of Pharmacology Gobind Rai Garg Sparsh Gupta	1 (0.9)	0 (0)	0.252 ^x	1 (0.7)	0 (0)	0 (0)	0	0.025*
5. Basic and Clinical Pharmacology Bertram G. Katzung	0 (0)	2 (2.4)		1 (0.7)	1(3.7)	0 (0)	0	
6. Lippincott Illustrated Reviews: Pharmacology Karen Whalen	0 (0)	1 (1.2)		1 (0.7)	0 (0)	0 (0)	0	
7. Principles of pharmacology HL Sharma, KK Sharma	0 (0)	1(1.2)		1 (0.7)	0 (0)	0 (0)	0	
8. Pharmacology and Pharmacotherapeutics RS Satoskar, Nirmala Rege, SD Bhandarkar	2 (1.9)	0(0)		2 (1.4)	0 (0)	0 (0)	0	
9. Clinical Pharmacology Morris J. Brown, Pankaj Sharma, Fraz A. Mir, Peter N. Bennett	0	1 (1.2)		1(0.7)	0	0 (0)	0	

^xp>0.05- statistically insignificant

*p<0.05- statistically significant

Table 4: Textbook of pharmacology and Likert scale analysis

Factors determining the selection of Textbook in Pharmacology	Frequency (Percentages)				
	Always	Almost Always	Frequently	Sometimes	Never
1. How often do you use the text book in Pharmacology?	78(40.6)	49(25.5)	47(24.5)	16(8.3)	2(1)
2. Does it clarify the pharmacodynamics and pharmacokinetics of prototype drugs clearly?	76(39.6)	38(19.8)	50(26)	25(13)	3(1.6)
3. Does it identify drugs that are frequently used in clinical practice?	48(25)	42(21.9)	60(31.3)	36(18.8)	6(3.1)
4. Does it describe the pathophysiology of major diseases?	35(18.2)	12(6.3)	59(30.7)	78(40.6)	8(4.2)
5. Does it provide detailed descriptions of mechanism of action of drugs as a pharmacological basis of therapeutics clearly?	73(38)	61(31.8)	37(19.3)	17(8.9)	4(2.1)
6. Does it stimulate your interest in the topic and motivate you to learn on your own?	51(26.6)	56(29.2)	48(25)	27 (14.1)	10(5.2)
7. Does it encourage the integration of pharmacology with other subjects of basic sciences?	54(28.1)	24(12.5)	59(30.7)	39(20.3)	16(8.3)
8. Does it stimulate your interest in more common diseases that is prevalent in your country?	22(11.5)	8(4.2)	54(28.1)	43(22.4)	65(33.9)
9. Is the material of the text book is well organized?	66(34.4)	50(26)	39(20.3)	19(9.9)	18(9.4)
10. Does the sequence of the topic is well organized?	62(32.3)	55(28.6)	38(19.8)	22(11.5)	15(7.8)
11. Are the contents clear, concise and easy to understand?	54(28.1)	54(28.1)	46(24)	23(12)	15(7.8)
12. Was it necessary to consult another textbook to clear your doubts?	27(14.1)	24(12.5)	42(21.9)	81(42.2)	18(9.4)
13. Does it stimulate you to refer useful literature in this field like scientific research articles?	28(14.6)	19(9.9)	36(18.8)	60(31.3)	49(25.5)
14. Do you think that the textbook will help you to get better score in the examination?	56(29.2)	61(31.8)	47(24.5)	22(11.5)	6(3.1)
15. Would you recommend this textbook to other students?	54(28.1)	77(40.1)	37(19.3)	18(9.4)	6(3.1)
16. Does the textbook cover all of the topics as per University of Mauritius curriculum?	60 (31.3)	94(49)	24(12.5)	9(4.7)	5 (2.6)

therapeutics clearly, 73(38%) pupils always agreed with the statement. As far as does it stimulate your interest in the topic and motivate you to learn on your own factor was concerned 56(29.2%) almost always, 51(26.6%) always and 48(25%) frequently felt motivated for self-directed learning. 59(30.7%) cohort frequently felt integration of pharmacology with other subjects of basic sciences. Unfortunately, 65(33.9%) cohort never, 54(28.1%) frequently, 43(22.4%) sometimes felt interested in more common diseases that are prevalent in the country after reading textbooks in Pharmacology. 66(34.4%), 62(32.3%), and 54(28.1%) students agreed and always opined that the textbook of Pharmacology was well organized, well-sequenced and contents were clear, concise, and easy to understand. 81(42.2%) students sometimes felt to consult another textbook to clear doubts. Inappropriately, 60(31.3%) sometimes felt, and 49(25.5%) cohort never felt stimulated to refer to useful literature viz. scientific research articles after reading textbooks. 61(31.8%) almost always, and 56(29.2%) pupils always agreed that the textbook would help get a better score in the examination. 77(40.1%) pupils almost always agreed to recommend their preferred textbook to other pupils. Most of the students, 94(49%) almost always and 60 (31.3%), always agreed that textbook cover all of the topics as per the University of Mauritius curriculum.

Discussion

Medical science encompasses of many subjects and is considered as a very tough course. Numerous disciplines within the process of studying to become a physician pose great challenges to students. One of these vital and important disciplines is pharmacology. Therefore, it is vital to implement the best strategies to ensure the best knowledge is imparted to students [15-19]. In this modern and technologically advanced era, students have access to unlimited resources and data to best aid their studies and build their concepts. Superadded to this, today's students are spoilt for choice when it comes to the selection of their textbooks. The number of textbooks per subject is expanding and exploding on an international basis, making choosing the correct textbook a challenge [20].

The findings elucidated by the data from this study are invaluable as it provides an in-depth synopsis into the selection of the various pharmacological textbooks and the various combinations used by students. These findings can thus be implemented to ultimately ease the burden of students as they study the subject of pharmacology; aid faculty in their teaching and better direct publishers and authors to produce more user-friendly textbooks which are better perceived and tailored towards the target market [21]. In this study, a small cohort of the most frequently used textbooks by the students was identified and selected. The medical students highlighted ten books of frequent and current use. In order of 1st choice preference to least used, the results were as follows:

- 1) Essentials of Medical Pharmacology by K.D. Tripathi
- 2) Pharmacology for Medical Students by Tara V Shanbhag and Smita Shenoy
- 3) Medical Pharmacology by Padmaja Udaykumar
- 4) Basic and Clinical Pharmacology by Bertram G. Katzung
- 5) Pharmacology and Pharmacotherapeutics by RS Satoskar, Nirmala Rege, SD Bhandarkar
- 6) Review of Pharmacology by Gobind Rai Garg Sparsh Gupta
- 7) Lippincott Illustrated Reviews: Pharmacology by Karen Whalen
- 8) Principles of pharmacology by HL Sharma, KK Sharma
- 9) Clinical Pharmacology by Morris J. Brown, Pankaj Sharma, Fraz A. Mir, Peter N. Bennett
- 10) Clinical pharmacology made ridiculously simple by James M Olso.

It must be noted that out of the above selection, the textbook - Essentials of Medical Pharmacology by K.D. Tripathi was rated as the first preference textbook by 103(53.6%) of the medical students, second preference by 38 (19.8%), and third preference by only 4 (2.1%) of the students. It is thereby evidently clear that the textbook - Essentials of Medical Pharmacology by K.D. Tripathi is the most popular and most preferred textbook 103(53.6 %). The second most popular textbook- 59(30.7%) Pharmacology for Medical Students- Tara V Shanbhag and Smita Shenoy followed by Medical Pharmacology by Padmaja Udaykumar 22 (11.5%) was rated as the third preference textbook by of the medical students.

Barring the textbook - Essentials of Medical Pharmacology by K.D. Tripathi, the most common third choice "reference" textbook selected by students

It is thus evident that the combination of the textbook Essentials of Medical Pharmacology by K.D. Tripathi and Medical Pharmacology by Padmaja Udaykumar is used most frequently by students as Essentials of Medical Pharmacology by K.D. Tripathi is commonly used as the 1st preference book and Medical Pharmacology by Pharmacology for Medical Students- Tara V Shanbhag and Smita Shenoy is used most widely as the second preference book.

The above finding is corroborative with Amarnath S, et al. who found that the textbook - Essentials of Medical Pharmacology by K.D. Tripathi was the first choice and most popular textbook selected by 46.25% of the senior batch students at a Medical College in Puducherry. Only 7.69% of the junior batch, however selected Essentials of Medical Pharmacology by K.D. Tripathi as their first choice; alternatively, 92.30% of the junior batch selected Pharmacology prep manual for UG by Tara V Shanbhag as their first choice [22-24].

The findings of this study were found to be similar to our research. The data depicts that gender did not heavily influence the selection of the various textbooks as the Essentials of Medical Pharmacology by K.D. Tripathi was favored by 62(57.4%) of the female cohort. In contrast,

Pharmacology for Medical Students by Tara V Shanbhag and Smita Shenoy was the second most preferred, with 30(27.8%) of the female cohort selecting this book as a preference. A similar selection of textbooks was prevalent among the male cohort with Essentials of Medical Pharmacology by K.D. Tripathi being selected by 41(48.8%), and Pharmacology for Medical Students by Tara V Shanbhag and Smita Shenoy being chosen by 29 (34.5%) [25, 26].

Students' nationality played a role in the selection of their second preference textbook. It was evident that the textbook Essentials of Medical Pharmacology by K.D. Tripathi was the first-choice selection among all the nationalities. In the Indian cohort of students, 71(51.4%) selected Essentials of Medical Pharmacology by K.D. Tripathi and Pharmacology for Medical Students by Tara V Shanbhag and Smita Shenoy 53 (38.4%) respectively as their first and second choices. The Mauritian cohort of students preferred Essentials of Medical Pharmacology by K.D. Tripathi with an agreement rate of 19(70.4%). Medical Pharmacology by Padmaja Udaykumar was the second choice as 6 (22.2%) of the Mauritian students selected it. 11(45.8%) of the South African students opted for the textbook Essentials of Medical Pharmacology by K.D. Tripathi, while 9(37.5%) selected Medical Pharmacology by Padmaja Udaykumar as their second choice. It is therefore evident that the second choice of the textbook was the same for the South African and Mauritian cohort but was different for students from the Indian cohort; this finding depicts the bearing that one's nationality has on the selection of textbooks and preferences thereof [27, 28].

It is evident from the data collected that 180 (93.8%) of the students did not have any third preference or selection of textbook. Therefore, it is poignant to note that most students will only refer to a maximum of two textbooks. The reason of studying multiple books could be to get more score or improve their performance in examinations/ assessments, whereas as medical course is so vast, a student has to cope up with many subjects at the same time and due to lack of time they are not referring to the third book. Whence superimposed to the finding that 47(24.5%) of students feel neutral towards how often they use their textbooks supports the notion that students use fewer reference books.

The neutrality that some of the students involved in this research showed towards the use of textbooks echoes the results of a study conducted by Berry T, et al. who revealed that only 8% of the finance students within the study read their textbooks for more than 3 hours a week and 18% of the students did not open their textbooks at all. This provides insight into the disconnect that exists between what faculty perceive students to be studying and what students are actually studying. On the contrary and in juxtaposition to the finding of Berry T, et al. it must be noted that the majority of students in this study namely 78(40.6%) thereof reported to always make use of their

textbooks and a further 49(25.5%) of the students reported to almost always routinely use their textbooks [29].

The data strongly depicts that most students will only refer to a maximum of two textbooks, and if so, the time spent in those textbooks will be minimal. Therefore, it is vital that faculty and authors understand this disconnect and implement alterations to best cater to the students who won't want more than a single or possibly a second reference textbook. This is further supported by the fact that the majority 81(42.2%) of the students did not feel that consulting a second textbook would clear their doubts.

A blatantly evident finding was the lack of diversity within the textbooks when explaining and or placing emphasis on diseases that are native to the students' homeland. The vast majority of the students reported the lack of the ability of the textbooks to cultivate interest in common diseases that are prevalent in the students' home country. 65(33.9%) of the cohort never, 54(28.1%) frequently, and 43(22.4%) sometimes felt interested in more common diseases that are prevalent in their country after reading the various textbooks. This finding is important for publishers to take heed of as special attention should be taken so as to ensure multiple editions of a textbook for various regions are published, with emphasis and information on endemic diseases to that region.

60(31.3%) of the students sometimes felt and 49(25.5%) cohort never felt stimulated to refer to useful literature viz. scientific research and articles after reading textbooks to extend their knowledge and insight. This finding is supported by Sandnes FE, et al. who found that undergraduates are rarely involved with research as they both are too inexperienced and don't understand the value thereof. Undergraduates generally do not understand the importance of reading scientific articles and research and therefore will not refer to them as an additional source for further reading [30].

The data and findings generated by this study are of great importance. The correct implementation of these findings will aid students, faculty, authors and publishers make more informed and calculated decisions about textbook selection, publishing, and learning material, respectively. This is ultimately easing the burden of students as they study the subject of pharmacology whilst simultaneously aiding faculty in their teaching and increasing the popularity of a publisher's textbook, thus resulting in a win, win situation for all of the parties involved.

Conclusion

Certain textbooks are markedly more accepted and preferred by medical students. The textbook - Essentials of Medical Pharmacology by K.D. Tripathi is the most popular and most preferred textbook, closely second by Pharmacology for Medical Students by Tara V Shanbhag and Smita Shenoy and followed by Medical Pharmacology by Padmaja Udaykumar, the third in the list of the most preferred textbook.

The combination of these two books was chief amongst the student's selection. The shortcomings of textbooks, such as the innate lack of the ability to cultivate interest in common diseases which are prevalent in the home country of the students as well as the lack to inspire students to do further reading into research articles and studies, clearly showcase the disconnect that exists between publishers, authors and users. This research can thus be implemented to ultimately ease the burden of students as they study the subject of pharmacology; aid faculty in their teaching and better direct publishers and authors to produce more user-friendly textbooks which are better perceived and tailored towards the target market.

Limitation and future scope of the study

This study can be replicated in other hospital settings with more participants.

Abbreviations

Medical Council of Mauritius (MCM), Seewoosagur Ramgoolam Medical College (SSR Medical College), University of Mauritius (UOM)

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Authors' contribution

- a. Study planning: IB, AA
- b. Data collection: IB, AA
- c. Data analysis/ interpretation: IB
- d. Manuscript writing: IB, JR, AA
- e. Manuscript revision: IB, JR, AA, RKG
- f. Final approval: IB, JR, AA, RKG
- g. Agreement to be accountable for all aspects of the work: IB, JR, AA, RKG

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None declared.

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