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Elkalmi, R. M., Elnaem, M. H., Rayes, I. K., Alkodmani, R. M., Elsayed, T. M., & Jamshed, S. Q. (2018). Perceptions, Knowledge and Practice of Self-Medication among Undergraduate Pharmacy Students in Malaysia: A Cross Sectional Study. *Journal of Pharmacy Practice and Community Medicine*, 4(3), 132-136. <https://doi.org/10.5530/jppcm.2018.3.32>

[Link to publication record in Ulster University Research Portal](#)

**Published in:**  
Journal of Pharmacy Practice and Community Medicine

**Publication Status:**  
Published (in print/issue): 04/09/2018

**DOI:**  
[10.5530/jppcm.2018.3.32](https://doi.org/10.5530/jppcm.2018.3.32)

**Document Version**  
Publisher's PDF, also known as Version of record

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# Perceptions, Knowledge and Practice of Self-Medication among Undergraduate Pharmacy Students in Malaysia: A Cross Sectional Study

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Received: 26 June 2018;

Accepted: 28 August 2018

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## Abstract

**Background:** Awareness about health status has increased the prevalence of self-medication. Several factors play role in self-medication like gender, socioeconomic status, education level and frequency of illness. **Objective:** To explore the perceptions, knowledge and practice of self-medication among pharmacy students from International Islamic University Malaysia (IIUM), Kuantan. **Methods:** A cross-sectional study was conducted from October to December 2015. A convenience sample was taken from year 1 to year 4 of pharmacy students. Data was analyzed using SPSS version 21. **Results:** Of 462 questionnaires distributed, 379 were returned giving a response rate of (88.3%). The results show significant difference on the level of knowledge among pharmacy students from different academic levels ( $p < 0.001$ ). The total mean score of knowledge about self-medication was  $4.57 \pm 1.89$ . For perception, the vast majority of the students believed that self-medication can save time (88.8%) and money (73.7%). Sore throat, headache, fever and cold were the most common inducements complaints for self-medication 68.4%; 64.9%, 64.6%, 60.9%; respectively. Furthermore, health supplements (29.8%), antipyretics (23.9%) and analgesics (23.4%) were the commonly used medication. Almost all (90.7%) of the students believed that self-medication can be practiced when the illness is not too serious. **Conclusion:** The study findings depicted that the majority of study participants have insufficient knowledge about self-medication. Early exposure to knowledge about self-medicine in the early stages of undergraduate pharmacy education is imperative to ensure a proper and appropriate way to self-medication among students.

**Key words:** Self-medication; pharmacy students; perception; knowledge level; Malaysia.

## INTRODUCTION

World Health Organization (WHO) refers self-medication as “the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms”.<sup>[1]</sup> Self-medication can also be defined as the administration of medicinal products without referring to physician or specialist in any healthcare institution.<sup>[2]</sup> Self-medication can occur by using previous prescription provided by physician, buying over-the-counter drugs at pharmacy and supermarket, sharing medicines with other family members or administering unconsumed medicines stored at home.<sup>[3]</sup> WHO encourages an effective treatment for mild illnesses by implementing self-medication among patients since it has many benefits such as the probability of reducing workload of healthcare professionals and may also provide a quick cure for patients living in rural areas where healthcare institutions are difficult to reach.<sup>[4]</sup>

There are several factors that may contribute to self-medication practice. One of the most important reasons is having knowledge about medicines' use. Physicians and students who involve in health-related courses have more tendencies to practice self-medication.<sup>[5]</sup> Even for people without health education background, they might practice self-medication as it is easy to acquire basic health information from the internet or people around them such as relatives or physicians. Another reason that was found to contribute to self-medication practice is getting a mild illness.<sup>[6]</sup> In such cases, patients tend to skip physician's visits and seek OTC medicines to resolve their symptoms. Recurrent mild illness is one more reason to think of self-medication.<sup>[7]</sup> The objectives of this study are to describe the perceptions and to access the knowledge to explore the practices of self-medication among pharmacy students' in International Islamic University Malaysia (IIUM), Kuantan.

## METHODS

This study is an anonymous, pre-validated questionnaire-based survey consisting of both open and close-ended statements. The survey questions were developed based on the previous researches done by studies.<sup>12,81</sup> The questionnaire comprises four sections. Section A consists of demographic questions of age, gender, current semester of the participating student and whether they have practiced and preferred self-medication or not. In section B, the questions are designed to distinguish the subjects' general knowledge about self-medication. Section C consists of questions regarding their perception towards self-medication. Finally, Section D consists of questions concerning the participants' practice of self-medication.

The questionnaire passed through a validation process (both content and face validation) by three pharmacy practice lecturers at IIUM. In order to test the validity and the reliability of the survey form, the revised questionnaire was pilot-tested among a convenient sample of 20 pharmacy students from various academic year of the pharmacy program. Each level of the students consisted two male and three female students. To minimize data contamination and potential bias, the data used for the pilot study were not included for the final analysis. The overall Cronbach's alpha value was 0.72. The final draft of the questionnaire was distributed among all undergrads Pharmacy Students registered at the School of Pharmacy, IIUM during the 1<sup>st</sup> semester of academic year 2013/2014.

Before survey distribution, study participants have briefed about the study objectives. Ethical consideration including the right of withdrawal and confidentiality of the revealed details. However, Anonymity and confidentiality were ensured. The survey forms were distributed in classrooms and the surveys were collected a week after. Responding to the questionnaire and return it was considered as consent. A permission to conduct the study was obtained from the Dean, Kulliyah of Pharmacy, IIUM.

Data collected were entered into the statistical package for social sciences (SPSS) for windows version 21.0 (SPSS Inc, Chicago IL). Descriptive statistical analyses such as frequencies and percentages were used to represent the respondents' demographic information. When appropriate, student t tests were performed by comparing the means of two continuous variables.

One-way ANOVA with Post Hoc Tukey HSD (honestly significant difference). A post hoc analysis has been used for multiple comparisons in order to detect the existence of differences between pair-wise groups. The relationship between the categorical data was examined with the chi-square test. Fisher Exact test is preferred over the chi-square test for skewed data if 25% or more of the cells in the table have expected frequencies of less than 5 or if any expected frequency is less than 1. A p-value of 0.05 or less was considered to be significant.

## RESULTS

Of 462 questionnaires distributed among the pharmacy students of (International Islamic University Malaysia (IIUM)), 379 were returned giving a response rate of (88.3%). From the 379 respondents, 82 (21.8%) were male and 294 (78.2%) were female. The number of participants from 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> pharmacy undergrad program was (n=87, 23.0%); (n=112, 29.5%); (n=89, 25.8%); and (n=129, 34.0%), respectively. The vast majority (n=316, 84%) of the respondents preferred self-medication when they are sick. However, the preference of self-medication among male students (n=72, 87.8%) is higher than females. Among the majority of study respondents, source of information of the drugs used for Self-medication was previous doctors (n=236, 62.8) followed by pharmacists (n=228, 60.6). However, slightly

more than half (n=200, 53.2%) of the students indicated to the internet as source of information of the drugs used for Self-medication. Other sources of knowledge included parents, family and health education. Responses and demographic characteristics of the respondents are presented in Table 1.

The knowledge of self-medication among pharmacy students was assessed by asking 10 questions with true/false options. A score of 1 was given for each correct answer and 0 for each wrong answer. The maximum score obtainable was 10 and the minimum was 0. However, the total mean knowledge score of the study participants was 4.57SD+1.89. There was no statistically significant difference in the mean score of the knowledge domain by gender ( $p=0.603$ ), but there was a significant difference in the mean score of self-medication knowledge with the current academic year enrollment ( $p<0.001$ ). Furthermore, a statistical significant difference in the mean scores of self-medication knowledge between those who prefer self-medication when they become sick or not has been observed ( $<0.001$ ). There was significant association between the statement that Self-medication can save time and self-medication preferences and year of enrollment ( $p<0.001$ ) and ( $p<0.001$ ) respectively. However, the vast majority (n=334, 88.8%) of the study participants either strongly agreed or agreed with the statement.

Students were asked if Self-medication is practiced as patient has sufficient knowledge on indication of drug. There was almost unanimous agreement across the 4 groups with statement. There was significant association between this statement and the year of enrollment ( $P<0.001$ ). Nevertheless, there was quite a high number (n= 95, 25.3%) of respondents either strongly disagreed or disagreed that doctor's consultation is not required when the efficacy of drug is proven based on previous experience, as shown in Table 2.

Study results showed that sore throat (n=275, 68.4%), headache (n=244, 64.9%), fever (n=243, 64.6%) and cold (n=229, 60.9%) were the most common illness experienced for self-medication. However, vomiting (n=72, 19.1%) has been reported as the least common illness that leads the students for self-medication. 257 students (68.4%), reported that they always (29.8%) or often (38.6%) self-medicate when having a sore throat. Nearly one-third of the students (n=116, 30.9%) reported that they always and (n=128, 34.0%) reported that they often self-medicate when having a headache, which represented 64.9% of the respondents. Fever was also a common indication for practicing self-medication, as reported by 149 students (39.6%) who often and 94 students (25.0%) who always self-medicate to treat symptoms

**Table 1: Interrelation of the Knowledge Score of Pharmacy Students with their Demographic Characteristics (N=379).**

Demographic	f (%)	Mean (SD)	P-value
<b>Gender</b>			
Male	82 (21.80%)	4.67+1.78	<b>0.603a</b>
Female	294 (78.20%)	4.54+1.92	
<b>Do you prefer self-medication when you sick?</b>			
Yes	316(84.00)	4.75+1.87	<b>&lt;0.001a</b>
No	60(16.00)	3.65+1.73	
<b>Year of enrollment</b>			
Year 1	69 (18.35)	2.6667+1.00	<b>&lt;0.001b</b>
Year 2	109 (28.98)	3.5596+1.38	
Year 3	88 (23.40)	5.6250+1.18	
Year 4	110 (29.25)	5.9364+1.59	
<b>Total</b>	<b>376(100)</b>	<b>4.5745+1.89</b>	

<sup>a</sup>student t test; <sup>b</sup>One-way ANOVA with Post Hoc Tukey HSD.

**Table 2: Knowledge toward self-medication among study participants (N= 379).**

Statement	Response	Year of Study				Total	p-value*
		Year 1	Year 2	Year 3	Year 4		
		F (%)	F (%)	F (%)	F (%)	F (%)	
Self-medication is the use of over-the-counter or non-prescription drugs, without consultation with a doctor	Incorrect	3 (4.3%)	7(6.4%)	1(1.1%)	2(1.8%)	13(3.5%)	0.149
	Correct	66(95.7%)	102(93.6%)	87(98.9%)	108(98.2%)	363(96.5%)	
Self-medication involves the use of medicinal product by the individuals to treat self-recognized symptoms	Incorrect	6 (8.7%)	10(9.2%)	1(1.1%)	5(4.5%)	22(5.9%)	0.069
	Correct	63(91.3%)	99(90.8%)	87(98.9%)	105(95.5%)	354(94.1%)	
You can take chloramphenicol eye drop/ointment with two days of red eye symptom	Incorrect	63(91.3%)	92(84.4%)	35(39.8%)	42(38.2%)	232(61.7%)	<b>P&lt;0.001</b>
	Correct	6(8.7%)	17(15.6%)	53(60.2%)	68(61.8%)	144(38.3%)	
Loratadine can cause drowsiness	Incorrect	60(87.0%)	73(67.0%)	59(67.0%)	68(61.8%)	260(69.1%)	<b>0.004</b>
	Correct	9(13.0%)	36(33.0%)	29(33.0%)	42(38.2%)	116(30.9%)	
Econazole cream can treat skin rash with pus formation	Incorrect	67(97.1%)	94(86.2%)	54(61.4%)	46(41.8%)	261(69.4%)	<b>P&lt;0.001</b>
	Correct	2(2.9%)	15(13.8%)	34(38.6%)	64(58.2%)	115(30.6%)	
Lacrimal sac is pressed while using eye drop	Incorrect	61(88.4%)	70(64.2%)	6(6.8%)	52(47.3%)	189(50.3%)	<b>P&lt;0.001</b>
	Correct	8(11.6%)	39(35.8%)	82(93.2%)	58(52.7%)	187(49.7%)	
Lomotil can increase the number and frequency of bowel movement	Incorrect	67(97.1%)	107(98.2%)	69(78.4%)	51(46.4%)	294(78.2%)	<b>P&lt;0.001</b>
	Correct	2(2.9%)	2(1.8%)	19(21.6%)	59(53.6%)	82(21.8%)	
Only topical products are available without prescription for the treatment of mild to moderate acne	Incorrect	49(71.0%)	57(52.3%)	41(46.6%)	36(32.7%)	183(48.7%)	<b>P&lt;0.001</b>
	Correct	29.0%	52(47.7%)	47(53.4%)	74(67.3%)	193(51.3%)	
Taking Vitamin C as supplement may shorten the number of days with cold symptoms	Incorrect	97(97.1%)	102(93.6%)	80(90.9%)	101(91.8%)	350(93.1%)	0.442
	Correct	2(2.9%)	7(6.4%)	8(9.1%)	9(8.2%)	26(6.9%)	
Paracetamol cannot be taken with empty stomach	Incorrect	63 (91.3%)	90(82.6%)	39(44.3%)	44(40.0%)	236(62.8%)	<b>P&lt;0.001</b>
	Correct	6(8.7%)	19(17.4%)	49(55.7%)	66(60.0%)	140(37.2%)	

\*Chi<sup>2</sup> test

of high body temperature. Meanwhile, the least common symptoms self-treated by the students were vomiting and skin rash, as 42.8% and 29.5% students respectively, never treated themselves in these situations as has been presented In Table 3.

Table 4 shows the most common classes of drugs used in self-medication. Vitamin supplements (66%), antipyretics (62.5%) and analgesics (60.4%) as most common therapeutic categories for self-medication. However, Antibiotics and antiemetic were the least commonly used drugs for self-medication (8.7% and 6.4%) respectively.

Study results showed that 248 (66%) students always (29.8%) and often (36.2%) take vitamin/supplements for self-medication. About one-quarter (n=90, 23.6%) of the students said that they always use and 145 students (38.6%) reported often use antipyretic as self-prescribed medication. study results showed that a little more than a third (37%) of the students (n= 139) reported often and 88 students (23.4%) reported always use of analgesics as self-prescribed medication. It is worth mentioning here that nearly the majority of the study respondent they claimed that they were never use antibiotic (n= 265, 70.05%) and anti-emetic (n= 232, 61.7%) for self-medication. A substantial number of the respondents reported that they always drink plenty of water (n= 58%) and get enough sleep and rest (n= 69.7%) when they are sick. Nevertheless, 84 (22.3%) of the students never seek advice from pharmacist when they are sick and 124 (33%) of the students never take traditional medicine as shown in (Figure 1).

## DISCUSSION

The study showed that there was a high prevalence of self-medicating among pharmacy students (84%). This corresponds to three studies conducted in

**Table 3: Symptoms leading to self-medication.**

Symptom	Never	Seldom	Often	Always
	f (%)	f (%)	f (%)	f (%)
Headache	41 (10.9)	91 (24.2)	128 (34.0)	116 (30.9)
Fever	24 (6.4)	109 (29.0)	149 (39.6)	94 (25.0)
Skin Rash	111 (29.5)	153 (40.7)	77 (20.5)	35 (9.3)
Cough	42 (11.2)	115 (30.6)	130 (34.6)	89 (23.7)
Sore Throat	27 (7.2)	92 (24.5)	145 (38.6)	112 (29.8)
Cold	32 (8.5)	115 (30.6)	132 (35.1)	97 (25.8)
Stomach ache	61 (16.2)	133 (35.4)	112 (29.8)	70 (18.6)
Vomiting	161 (42.8)	143 (38.0)	41 (10.9)	31 (8.2)

**Table 4: Common drug classes used in self-medication.**

Symptom	Never	Seldom	Often	Always
	f (%)	f (%)	f (%)	f (%)
Anti-emetic	232 (61.7)	109 (29.0)	22 (5.2)	13 (3.5)
Analgesic	41 (10.9)	108 (28.7)	139 (37.0)	88 (23.4)
Anti-pyretic	39 (10.4)	102 (27.1)	145 (38.6)	90 (23.9)
Antitussive	93 (24.7)	127 (33.8)	106 (28.2)	50 (13.3)
Anti-histamine	83 (22.1)	114 (30.3)	111 (29.5)	68 (18.1)
Antibiotic	265 (70.5)	87 (23.1)	19 (5.1)	5 (1.3)
Anti-diarrhea	139 (37.0)	145 (38.6)	67 (17.8)	25 (6.6)
Vitamin/Supplement	28 (7.4)	100 (26.6)	136 (36.2)	112 (29.8)

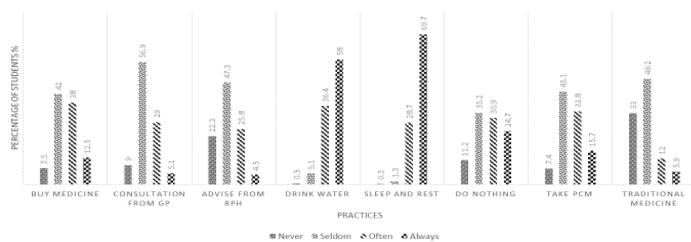


Figure 1: Practices during sickness

India, where the prevalence of self-medication among medical students was shown to be in a range of 57.1% to 92%.<sup>[9-11]</sup> In most developing countries, it can be argued that more than half of students preferred self-medications, for example in Slovenia (51%), Egypt (55%), Nigeria (56.9%), India and 55.3% in Pakistan.<sup>[12-16]</sup> Likewise, a study on self-medication behavior among female students in Malaysia reported that 80.9% of the female students chose to self-medicate.<sup>[17]</sup> A similar observation was noticed in this study where it is found that 77.2% of the female students prefer self-medications. This can be attributed to the fact that the female students are more reluctant to visit the hospital or outpatient department for trivial illness. Gender is considered as a significant factor in self-medication patterns among the participants. Self-medication was observed to be higher among females than males in this research paper. This finding is similar to few studies conducted by others.<sup>[3,10,12]</sup> Generally, there is no much difference between years of study and preference of self-medication as most of the respondents preferred self-medication.

### Knowledge of self-medication

Knowledge on self-medication between pharmacy students at IIUM was determined by the mean value. The results of this study revealed a poor knowledge among respondents about self-medication (Mean  $4.57 \pm 1.89$ ). This finding is congruence with the study done by Aljadhey, H. *et al.* which reported that the majority of their study (70%) participants had poor knowledge (score of  $< 2$ ) regarding self-medication.<sup>[18]</sup> Others have reported similar findings of insufficient knowledge among their study participants.<sup>[19]</sup>

Although there is insufficient knowledge about self-medication among study population, it is noted that the cognitive level has improved by the academic years, i.e. the newcomers have a low cognitive level compared with the older ones. Previous study have confirmed that Senior medical students have a better knowledge about certain aspects of self-medication which reflects the influence of medical training.<sup>[20]</sup>

### Perception towards self-medication

Students' perception towards self-medication were explored by checking how strongly they agree or disagree with the statements provided on five points Likert scale. Overall, the majority of students agreed with all the statements related to perception on self-medication. Particularly, most of them believe that self-medication can save time. These perceptions are similar to those reported in a study by Kayalvizhi S. and Senapathi R. (2001) as they stated that self-medication is time-saving.<sup>[21]</sup> Besides that, they also argued that self-medication can be practiced when the illness is not too serious.<sup>[21]</sup> Length of waiting time for medical consultation has been identified as one of the predictive factors for self-medication.<sup>[22]</sup>

### Practice of self-medication

A study indicated that headache was always the reason for practicing self-medication among health sciences students including Pharmacy.<sup>[23]</sup> Another

previous study has been carried out among medical, pharmacy and health science students at Gondar University also reported that fever and headache was the most common symptoms for self-medication.<sup>[8]</sup> However, a study conducted in India showed that sore throat was the first indication for self-medication.<sup>[3]</sup> On the other hand, Banerjee and Bhadury reported that cough and common cold were the common symptoms to think of self-medication.<sup>[10]</sup>

Analgesics, vitamin supplements and antipyretics are among the most frequently self-prescribed medications reported among medical students in Belgrade, Serbia.<sup>[24]</sup> quite similarly, previous study also reported that analgesics were the most common drug class used for self-care followed by antacids, anti-helminthes and antibiotics.<sup>[8]</sup> Gutema *et al.* reported that Paracetamol and NSAIDs were the most common class of medications used in the self-medication practices.<sup>[23]</sup>

### Limitations

This study has some limitations to be concerned off. First, it was only limited to IIUM pharmacy students. Second, the survey was distributed and collected back after a week. This was due to difficulty collecting sufficient number of respondents in a class at one time. Some answers might interfere with the knowledge scoring collected. This might have happened if the respondent searched for an answer through the internet or text books.

### CONCLUSION

In conclusion, knowledge of pharmacy students on self-medication practice has increased by passing through their studies. Meanwhile, the difference in gender does not influence the knowledge on self-medication. Moreover, most of the sample pooled strongly agreed that self-medication can be practiced when the illness is not too serious. Also, antipyretics are the most common drug class used by the students to self-medicate. Early exposure to the knowledge on self-medication is extremely essential in order to ensure proper and appropriate way to self-medicate especially among first year students.

Future studies might compare knowledge level, perception and practice of self-medication among pharmacy and other health sciences students in different colleges to provide a more comprehensive overview of self-medication practice.

### ACKNOWLEDGEMENT

We extend our appreciation to the students who took part in this study and also the dean and staff of Kulliyah of Pharmacy, International Islamic University Malaysia for providing the enabling environment to conduct this study.

### CONFLICT OF INTEREST

The authors declare no conflict of interest.

### ABBREVIATIONS

None.

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**Cite this article as:** Elkalmi RM, Elnaem MH, Rayes IK, Alkodmani RM, Elsayed TM, Jamshed SQ. Perceptions, Knowledge and Practice of Self-Medication among Undergraduate Pharmacy Students in Malaysia: A Cross Sectional Study. *J Pharm Pract Community Med*. 2018;4(3):132-6.