

# KNOWLEDGE, ATTITUDE AND PRACTICE OF OVER THE COUNTER (OTC) DRUGS AMONG UNDERGRADUATE STUDENTS OF INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA (IIUM) KUANTAN, PAHANG

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## Abstract

**Introduction:** It is human's nature to seek for immediate relief when they are feeling sick thus, many choose to self-medicate. Self-medication drugs are frequently referred to as 'non-prescription' or over the counter (OTC) drugs since they can be acquired without a prescription from pharmacies and some non-pharmacy store outlets. It was proven to be common among students who are enrolled in health-related courses which driven by many factors. **Objective:** The objective of this study is to determine the level of knowledge, attitude, and practice towards OTC drugs among undergraduate students at International Islamic University Malaysia (IIUM) Kuantan and its association with the sociodemographic data. **Methodology:** A quantitative cross-sectional study with simple random sampling study was conducted among 245 undergraduate students of IIUM Kuantan Campus, from May to June 2022. Data was collected by using Google Forms questionnaires which available in English language and distributed to all the students online. Two set of questionnaires were adapted and adopted from previous studies. Data was analysed by using SPSS version 28.0. **Results:** The study showed that most participants had a good knowledge level (49.8 %) and a positive attitude towards OTC drugs (53.9%) but had poor OTC drug practice (56.7 %). This study also reported significant associations between Kulliyah and the year of study factors with knowledge levels on OTC drugs ( $p < 0.05$ ). **Conclusion:** In conclusion, the study found that nearly half of the IIUM undergraduate students had good KAP levels towards OTC drugs. However, a sizable portion of them still had low KAP levels for OTC drugs. Hence, the study established preliminary data on lack of awareness of OTC drugs among undergraduate students at IIUM and the need for the health authority to address the OTC drugs awareness issues starting from the students themselves. Therefore, the results can be used by the health authority to initiate better education efforts about OTC medications among undergraduate students and staff, which will enable prevention and control actions to be taken in the future.

**Keywords:** Self-Medication, Over the Counter Drugs, Knowledge, Attitude, Practice.

## INTRODUCTION

It is human's nature to seek for immediate relief when they are feeling sick. Since there are many options available nowadays, people choose to self-medicate to treat themselves. Self-medication is now widely used all over the world, in both developing and developed countries.

The World Health Organization (WHO) defined self-medication (SM) as the use of drugs to treat self-diagnosed diseases or symptoms. Self-medication medicines are frequently referred to as 'non-prescription' or over-the-counter (OTC) drugs since they can be acquired without a prescription from pharmacies and some non-pharmacy store outlets.(1) It is beneficial to one's health and is acknowledged by the World Health Organization as a form of self-care, allowing users to build confidence, make choices, and take control of their health decisions.

Self-medication is driven by a range of factors with knowledge being one of the main reasons, according to previous studies. (2, 3) A cross-sectional study in the University of Gondar, Ethiopia indicated that the prevalence of self-medication was 79.7%. Similar findings were also reported among medical students in India and Egypt in which the total prevalence of self-medication was 78.6% and 73.2% respectively. (4) A generalized conclusion can be made as it was proven to be more common among educated personnel such as physicians, nurses, and students who are enrolled in health-related courses than among illiterates.

In addition, Malaysia is a country where production separation is not enforced, and this has a significant impact on the private healthcare sector. The Poison Act 1952 and its regulations make it permissible for physicians to prescribe medication.(5) Hence, the accessibility and lack of a strong regulatory system could lead to an increase in the number of people self-medicating, ultimately leading to irrational drug use and the development of drug resistance.(6) Most of the study discovered that students choose to self-medicate because of time savings, quick relief, the elimination of the need to consult a doctor for minor ailments, cost considerations, as well as easy access to the medical information.(7) Various drugs such as analgesics, antipyretics, antacids, anti-diarrheal, antidepressants, anti-anxiety, antihistamines, anti-emetics, antibiotics, and plenty of others are readily available locations.

Most of the drugs are purchased to treat minor ailments such as headaches, fevers, sore throats, colds, gastrointestinal issues, and skin disorders. Interestingly, it was discovered in a study that headache is the most common reason for analgesic use among college students. The prevalence of lifetime tension-type and migraine headaches was 66.8% and 13.06%, respectively, prompting them to use more analgesics to self-medicate.(8) However, there are risks of drug overuse or non-compliance to prescription if it is used in a wrong manner. It will eventually perpetuate inappropriate self-medication practice that contributes to adverse drug reactions due to drug interactions, overuse, organ damage, and even toxicity which could end up with emergency hospital admission cases. It can be proven as 2.9% to 3.7% of the deaths in the world, mainly caused by drug-drug interactions.(9)

Hence, a study regarding OTC drugs or self-medication among undergraduate healthcare students must be done to determine and explore the awareness of OTC drug self-medication among the students.

## **MATERIAL AND METHOD**

The study has been conducted using a quantitative cross-sectional study which was carried out between May to June 2022. The sample size was calculated using the single proportion sample size, with a specified level of precision using the prevalence from previous studies as reference. Assuming a 95% confidence interval ( $Z = 1.96$ ) with the desired precision of 0.05 units for the sample size.(7, 10) Based on the calculation,

the study population was 245 in order to reject the null hypothesis with a power of 80% and a 95% confidence interval.

This study involved undergraduate students from each Kulliyah (Kulliyah of Nursing, Kulliyah of Medicine, Kulliyah of Pharmacy, and Kulliyah of dentistry, Kulliyah of Allied Health and Science and Kulliyah of Science). Simple random sampling has been applied for this study. The inclusion criteria were undergraduate students of IIUM Kuantan, currently at IIUM Kuantan or online learning and can understand English well and must be willing to participate and complete the whole questionnaires. The exclusion criteria were those who were on medical leave and unwilling to participate in the study.

## MEASURE AND ANALYSIS

The study provided an online self-administered questionnaire the questionnaire were adapted and adopted from two different articles. (10, 11) The set of questionnaires was distributed to the participants by using Google form a web-based integrated application. The questionnaire was divided into four parts, the following were the contents of the questionnaires

Part A was sociodemographic data which consisted of participants gender, kulliyah, year of study, residency, and previous self-medication practice for the past six months.

For Part B, questions pertaining to one's knowledge of OTC drugs made up this section. There were 15 knowledge-related questions that carried 15 correct answers. There were 15 knowledge-related questions that carried 15 correct answers. It offered options like 'Yes', 'Unsure', and 'No'. Each correct answer receives 2 points, a wrong answer receives 0 point, and 1 point for unsure answer. The knowledge level scores were classified into two levels which are "poor knowledge" (score less than 22) and "good knowledge" (score more than 22) for each of the domain.

Part C composed of 10 statements regarding self-medication attitude with 5 Likert-scale, the statement on Likert's scale has positive and negative responses. For each domain, the attitude level scores were divided into two categories: "positive attitude" (score greater than 41) and "negative attitude" (score less than 41).

Part D was to evaluate the practice of the participants which mainly composed of 10 practice related questions. It offered options like 'Yes', 'Unsure', and 'No'. Each correct answer receives 2 points, a wrong answer receives 0 point, and 1 point for unsure answer. For the domain, there were two categories for the practice level scores: "poor practice" (score less than 16) and "good practice" (score more than 15).

## ETHICAL CONSIDERATION

IIUM Research Committee (IREC) had granted the researcher permission to collect data earlier in January 2022 (IREC 2022-KON/5) Before granting consent to participate in the research, each participant received an information sheet outlining the goals and confidentiality of the study. Everyone who took part in the study gave their word that the information they provided would be kept private and used only for academic research. Participants also have the option to withdraw their consent at any time and to refuse to participate.

## STATISTICAL ANALYSIS

Data was analysed using Statistical Package for Social Science (SPSS) version 28.0. P-value less than 0.05 was considered statistically significant. Frequency and percentage were used for the descriptive data presentation. As the Kolmogorov-Smirnov test revealed the data were not extracted from a normal distribution ( $p > 0.005$ ), nonparametric statistical tests were adopted which are Chi-square, Kruskal Wallis with post-hoc test Mann Whitney to see the association between sociodemographic data and knowledge, attitude, and practice (KAP) of the participant with ( $p < 0.05$ ) was considered statistically significant. Where else, the correlation between KAP was explored by using Pearson coefficient correlation.

## RESULTS

### Socio-Demographic Data

A total of 245 of undergraduate students were participating in this study within the months of data collection period (May to June 2022). 179 (73.1%) were female students while 66 (26.9%) participants were male students. Besides, in this study, majority of the participants came from Kulliyah of Nursing with 62 (25.3%), followed by Kulliyah of Pharmacy 41 (16.7%), Kulliyah of Allied Health and Science 38 (15.5%). Total participants for both Kulliyah of Medicine and Kulliyah of Science were 36 (14.7%) meanwhile for Kulliyah of Dentistry, the total number of participants 32 (13.1%). Next, in terms of year of study, majority of the participants were Year 4 students a 94 (38.4%) from all Kulliyah. 57 (23.3%) participants came from Year 2 students, followed by Year 3 students with 49 (20.0%), Year 1 students with 44 (18.0%) and only 1 (0.4%) participant came from Year 5 students. Additionally, 110 (44.9%) of the participants reside at semi-urban area meanwhile 100 (40.8%) reside at Urban area, 35 (14.3%) participants on the other hand reside at Rural area. 217 (88.6%) of the participants admitted to self-medicate for the past six months.

**Table 1: sociodemographic data of the participants (N = 245)**

Variables		Frequency (%)
<b>Gender</b>	Male	66 (26.9)
	Female	179 (73.1)
<b>Kulliyah</b>	Kulliyah of Nursing	62 (25.3)
	Kulliyah of Medicine	36 (14.7)
	Kulliyah of Pharmacy	41 (16.7)
	Kulliyah of Dentistry	31 (13.1)
	Kulliyah of Allied Health	38 (15.5)
	Kulliyah of Science	36 (14.7)
<b>Year of study</b>	Year 1	44 (18.0)
	Year 2	57 (23.3)
	Year 3	49 (20.0)
	Year 4	94 (38.4)
	Year 5	1 (0.40)
<b>Residency</b>	Urban	100 (40.80)
	Semi-urban	110 (44.9)
	Rural	35 (14.3)
<b>Self-medicate for the past 6 months?</b>	Yes	217 (88.6)
	No	28 (11.4)

*\*Descriptive analysis*

## The level of knowledge, attitude, and practice among undergraduate students in IIUM Kuantan.

According to table 2, the finding showed that 122 (49.8%) of the participants have good knowledge regarding OTC drugs with the score ranging (22 – 30). Approximately 123 (50.2%) of the participants have poor knowledge regarding OTC drugs. Besides, it was revealed that 132 (53.9%) of the participants possessed positive attitude towards OTC drugs with the score ranging (41-50). Nevertheless, 113 (46.1%) of the participants were categorized as having negative attitude towards OTC drugs. It was also reported that 106 (43.3%) of the participants have good practice towards OTC drugs with the score ranging (16-20). However, the remaining 139 (56.7%) of the participants were classified as having poor practice towards OTC drugs with score less than 16.

**Table 2: Knowledge, attitude, and practice among undergraduate students in IIUM Kuantan (N = 245)**

Variables		Frequency (n)	Percentage (%)	Mean (SD)
Knowledge	Good ( $\geq 22.08$ )	122	49.8	22.08 ( $\pm 89$ )
	Poor ( $< 22.08$ )	123	50.2	
Attitude	Positive ( $\geq 40.68$ )	132	53.9	40.68 ( $\pm 4.29$ )
	Negative ( $< 40.68$ )	113	46.1	
Practice	Good ( $\geq 16.15$ )	106	43.3	16.15 ( $\pm 2.19$ )
	Poor ( $< 16.15$ )	139	56.7	

## Association between sociodemographic data and knowledge towards OTC drugs among undergraduate students of IIUM Kuantan

Table 3 showed no significant association between the gender and students' knowledge towards OTC drugs with ( $p > 0.05$ ). However, Kruskal-Wallis test on the other hand reported there were a significant associations between Kulliyah, Year of Study and students' knowledge towards OTC drugs with ( $p < 0.05$ ). Besides, there was no significant association between residency and IIUM students' knowledge towards OTC drugs ( $p > 0.05$ ). Mann-Whitney test also revealed no significant association ( $p > 0.05$ ) between the self-medication practice for the past six months with students' knowledge.

**Table 3: Sociodemographic data and level of knowledge among undergraduate students in IIUM Kuantan (N=245)**

Variables	Good knowledge (%)	Poor knowledge (%)	$\chi^2$	p-value
Male	33 (13.46)	33 (13.46)	0.02	0.969
Female	90 (36.73)	89 (36.33)		
Total	123 (50.20)	122 (49.80)		
*Chi Square test, significant ( $p < 0.05$ )				
Variables		Frequency (%)	Median	p-value
Kulliyah	KON	66 (26.9)	22.5	
	KOM	179 (73.1)	23	
	KOP	62 (25.3)	24	*0.001
	KOD	36 (14.7)	22	
	KAHS	41 (16.7)	22	
	KOS	31 (13.1)	20	
	Year of study	Year 1	44 (18.0)	21
	Year 2	57 (23.3)	21	
	Year 3	49 (20.0)	23	*0.001
	Year 4	94 (38.4)	23	
	Year 5	1 (0.40)	-	

	Urban	100 (40.80)	23	
<b>Residency</b>	Semi-urban	110 (44.9)	22	0.213
	Rural	35 (14.3)	22	
<i>*Kruskal Wallis test, significant (p &lt; 0.05)</i>				
<b>Variable</b>		<b>Frequency (%)</b>	<b>z-statistics</b>	<b>p-value</b>
<b>Self- medicate practice for the past 6 months</b>	Yes	217 (88.6)		
	No	28 (11.4)	-1.118	0.264
<i>*Mann Whitney test, significant (p &lt; 0.05)</i>				

According to table 4, Mann Whitney test reported that the knowledge score was significantly higher for KOP (Mdn = 24.00) compared to KON (Mdn =22.50), ( $p = 0.023$ ). Meanwhile KON(Mdn =22.50) was significantly higher than KOS (Mdn = 20.00), ( $p = 0.010$ ). Next, KOP (Mdn= 24.00) was significantly higher than KOM (Mdn = 23.00), ( $p = 0.049$ ). KOM (Mdn = 23.00)was significantly higher than KOS (Mdn =20.00), ( $p = 0.006$ ). Next, knowledge score for KOP (Mdn = 24.00) was significantly higher compared to KOD (Mdn = 22.00), KAHS ((Mdn = 22.00) and KOS (Mdn = 20.00) with ( $p = 0.016$ ), ( $p = 0.005$ ) and ( $p = 0.001$ ) respectively. Lastly for the pair comparison in terms of Kulliyah, the total knowledge score was significantly higher for KAHS ((Mdn = 22.00) compared to KOS (Mdn = 20.00) with ( $p =0.022$ ).

In terms of year of study, knowledge score for Year 3 was significantly higher than Year 1 (Mdn = 21.00) with ( $p = 0.004$ ). Meanwhile, knowledge score for Year 4 (Mdn = 23.00)also was significantly higher than Year 1 (Mdn = 21.00), ( $p = 0.003$ ). Besides, compared to Year 2 (Mdn = 21.00), it was found that Year 3 and Year 4, both (Mdn = 23.00) were significantly higher with ( $p = 0.02$ ) and ( $p = 0.01$ ) respectively.

**Table 4: Pair comparison among Kulliyah and Year of Study.**

Variables	Comparison pair	Z-statistics	p-value
	KON vs KOM	-0.511	0.609
	KON vs KOP	-2.279	*0.023
	KON vs KOD	-0.780	0.435
	KON vs KAHS	-0.567	0.571
	KON vs KOS	-2.584	*0.010
	KOM vs KOP	-1.966	*0.049
	KOM vs KOD	-1.020	0.308
<b>Kulliyah</b>	KOM vs KAHS	-1.258	0.208
	KOM vs KOS	-2.775	*0.006
	KOP vs KOD	-2.411	*0.016
	KOP vs KAHS	-2.803	*0.005
	KOP vs KOS	-4.196	*0.001
	KOD vs KAHS	-0.201	0.840
	KOD vs KOS	-1.405	0.160
	KAHS vs KOS	-2.283	*0.022
	Year 1 vs Year 2	-0.199	0.842
	Year 1 vs Year 3	-2.851	*0.004
	Year 1 vs Year 4	-2.966	*0.003
	Year 1 vs Year 5	-0.039	0.969
	Year 2 vs Year 3	-3.079	*0.002
<b>Year of study</b>	Year 2 vs Year 4	-3.289	*0.001
	Year 2 vs Year 5	-0.120	0.904
	Year 3 vs Year 4	-0.047	0.963
	Year 3 vs Year 5	-0.836	0.403
	Year 4 vs Year 5	-0.805	0.421

*\*Mann Whitney post hoc test*

### Association between sociodemographic data and attitude towards OTC drugs among undergraduate students of IIUM Kuantan

Table 5 illustrated the association between sociodemographic data and IIUM students' attitude towards OTC drugs. The findings of the study shows that there were no significant association ( $p > 0.05$ ) between sociodemographic data (gender, kulliyah, year of study, residency, and self-medication practice for the past six months) and IIUM students' attitude towards OTC drugs.

**Table 5: Sociodemographic data and IIUM undergraduate students' attitude towards OTC drugs (N=245)**

Variables	Positive attitude (%)	Negative attitude (%)	$\chi^2$	p-value
Male	36 (14.69)	30 (12.24)		
Female	96 (39.18)	83 (33.88)	0.16	0.899
Total	132 (53.88)	122 (46.12)		
<i>*Chi Square test, significant (<math>p &lt; 0.05</math>)</i>				
Variables		Frequency (%)	Median	p-value
	KON	66 (26.9)	42.00	
	KOM	179 (73.1)	40.00	
	KOP	62 (25.3)	41.00	
<b>Kulliyah</b>	KOD	36 (14.7)	40.50	0.060
	KAHS	41 (16.7)	42.00	
	KOS	31 (13.1)	40.00	
	Year 1	44 (18.0)	42.00	
	Year 2	57 (23.3)	40.00	
<b>Year of study</b>	Year 3	49 (20.0)	40.00	0.091
	Year 4	94 (38.4)	42.00	
	Year 5	1 (0.40)	-	
	Urban	100 (40.80)	41.00	
<b>Residency</b>	Semi-urban	110 (44.9)	41.00	0.785
	Rural	35 (14.3)	41.00	
<i>*Kruskal Wallis test, significant (<math>p &lt; 0.05</math>)</i>				
Variable		Frequency (%)	z-statistics	p-value
<b>Self- medicate practice for the past6 months</b>	Yes	217 (88.6)		
	No	28 (11.4)	-0.975	0.330
<i>*Mann Whitney test, significant (<math>p &lt; 0.05</math>)</i>				

### Association between sociodemographic data and practice towards OTC drugs among undergraduate students of IIUM Kuantan.

Table 6 represented the association between sociodemographic data and IIUM students' practice towards OTC drugs. The findings of the present study reported that there were no significant association between sociodemographic data (gender, kulliyah, year of study, residency, and self-medication practice for the past six months) and IIUM students' attitude towards OTC drugs ( $p > 0.05$ )

**Table 6: Sociodemographic data and IIUM undergraduate students' attitude towards OTC drugs**

Variables	Good practice (%)	Poor practice (%)	$\chi^2$	p-value
Male	30 (12.24)	36 (14.69)		
Female	76 (31.02)	103 (42.04)	0.18	0.675
Total	106 (43.27)	122 (56.73)		
<i>*Chi Square test, significant (<math>p &lt; 0.05</math>)</i>				
Variables	Frequency (%)	Median		p-value
	KON	66 (26.9)	16.00	
	KOM	179 (73.1)	17.00	
	KOP	62 (25.3)	16.00	0.339
<b>Kulliyah</b>	KOD	36 (14.7)	16.00	
	KAHS	41 (16.7)	16.00	
	KOS	31 (13.1)	17.00	
	Year 1	44 (18.0)	16.00	
	Year 2	57 (23.3)	16.00	
<b>Year of study</b>	Year 3	49 (20.0)	16.00	0.158
	Year 4	94 (38.4)	16.00	
	Year 5	1 (0.40)	-	
	Urban	100 (40.80)	16.50	
<b>Residency</b>	Semi-urban	110 (44.9)	16.00	0.170
	Rural	35 (14.3)	16.00	
<i>*Kruskal Wallis test, significant (<math>p &lt; 0.05</math>)</i>				
Variable	Frequency (%)	z-statistics		p-value
<b>Self- medicate practice for thepast 6 months</b>	Yes	217 (88.6)		
	No	28 (11.4)	-0.909	0.363

*\*Mann Whitney test, significant ( $p < 0.05$ )*

**Correlation between knowledge and attitude towards OTC drugs among undergraduate students of IIUM Kuantan**

To achieve this objective, Spearman correlation test was used to find the correlation between students' knowledge and attitude towards OTC drugs. Table 7 depicted that there was no significant association ( $p > 0.05$ ) between the knowledge and attitude towards OTC drugs among the IIUM Kuantan undergraduate students which indicated the knowledge did not impact the students' attitude towards OTC drugs

**Table 7: Students' knowledge and attitude towards OTC drugs**

Variables	Knowledge	
	$r_s$	P value
Attitude	0.088	0.172

*\*Spearman correlation, significant ( $p < 0.05$ )*

**Correlation between knowledge and practice towards OTC drugs among undergraduate students of IIUM Kuantan**

Table 8 represented that there was no significant correlation between the knowledge and attitude towards OTC drugs among the IIUM Kuantan undergraduate students ( $p > 0.05$ ) which means the knowledge did not influence the students' practice towards OTC drugs

**Table 8: Students' knowledge and practice towards OTC drugs**

Variables	Knowledge	
Practice	$r_s$	$P$ value
	0.065	0.311

*\*Spearman correlation, significant ( $p < 0.05$ )*

**Correlation between attitude and practice towards OTC drugs among undergraduate students of IIUM Kuantan**

Table 9 illustrated that there was no significant correlation between the knowledge and attitude towards OTC drugs among the IIUM Kuantan undergraduate students ( $p > 0.05$ ) which suggested that the attitude did not affect the students' practice towards OTC drugs.

**Table 9: Students' attitude and practice towards OTC drugs**

Variables	Attitude	
Practice	$r_s$	$P$ value
	0.001	0.985

*Spearman correlation, significant ( $p < 0.05$ )*

**DISCUSSION**

**Knowledge, attitude, and practice towards OTC drugs among undergraduate students**

The present study concentrated on several characteristics of undergraduate students that are relevant to the logic behind OTC drug prescriptions, such as knowledge, attitude, and practice. The result revealed that the students had a good theoretical understanding of OTC drugs.

The finding showed that the mean score for knowledge was 22.08 ( $\pm 8.90$ ). Based on the result, the knowledge of the undergraduate students was more than half which indicated good level of knowledge. Studies reported the similar findings which claimed that more than half of the students from their respective studies had good understanding of OTC drugs. (10, 12, 13) It was also discovered that 86.1% had correctly answered to the statement about the fundamental knowledge needed for self-medication, demonstrating that they were fully aware of the necessity of drug knowledge prior to self-medication. The same result was also reported previous study. (14)

Besides, the present study also discovered that the mean score for attitude was 40.68 ( $\pm 4.29$ ) whereby 132 (53.9%) of the participants possessed positive attitude towards OTC drugs. This result was found to be consistent with previous study involving healthcare students, whereby more than half of the students possessed good attitude towards self-medication with OTC drugs. (15)

The mean score for practice in the current was 16.15 ( $\pm 2.19$ ) with 139 (56.7%) of them were classified as having poor practice towards OTC drugs which is very concerning. This finding was accordance to the study which claimed that majority of the students had poor towards self-medication with OTC drugs. (14) Besides, 11.8% of the students said they were unsure and did not immediately throw away the medications once they had noticed some changes. This revelation had proven that the students might be

unaware of the implementation of 'Return Your Medicines Program' by Ministry of Health Malaysia (MOH) whereby all the unused and excess medications needed to be returned to the pharmacy for safe disposal.(16) Therefore, raising public awareness of this issue beyond the student population is crucial.

### **Association between sociodemographic data and knowledge, attitude, and practice towards OTC drugs among the undergraduate students**

Based on the finding, the study found an association between kulliyah and year of study with students' knowledge towards OTC drugs. Kulliyah of Pharmacy had the highest overall median score (Mdn= 24), while Kulliyah of Science had the lowest median score with (Mdn=20). The difference could be based on the argument that whereas Kulliyah of Pharmacy was a healthcare course, Kulliyah of Science was not. As a conclusion, it can be inferred from this result that healthcare students have better knowledge than non-healthcare students, which is congruent with the result reported whereby the medical students had greater understanding of OTC drugs compared to nonmedical students.(17)

On the other hand, there was also an association between the year of study and knowledge median scores ( $p < 0.05$ ). It indicated that year of study also did affect the students' knowledge and the finding was compatible with the previous finding that reported a strong relationship between year of study and knowledge level among the students.(13)

The current study also revealed that fourth year students were self-medicating the most for the past six months and this finding was similar to previous study that stated year of study became significant factor led to self-medication due to increased medical knowledge.(18)

Other than that, there was no association found between gender, residency, and self-medication practice for the past six months with knowledge towards OTC drugs. Several reasons to be explain the finding of this study. First, gender difference does not have relation to the level of knowledge since all the students had equal exposure and level of awareness towards the OTC drugs. Besides, same thing goes to residency, it may be presumed that their knowledge levels are comparable regardless of residency areas given that all the students have similar awareness and exposure to the OTC drugs. In addition, the students may practice self-medication regardless of how much knowledge they had about the OTC drugs, hence the exposure to OTC drugs for the past six months did not affect their knowledge towards OTC drugs.

The current study also revealed that there was no association between sociodemographic data and attitude with ( $p > 0.005$ ). Besides, the data in this study stated that gender does not have any relation with knowledge which in line with the finding by previous study that also reported zero association between the gender and level of knowledge.(19) However, the finding was contradicted to the previous finding whereby it was reported that female students possessed a better attitude towards safe OTC drugs compared to male students.(7) In terms of year of study, it was also revealed that there was no association between year of study and students' attitude which found to be consistent with earlier study.(19)

Additionally, the current study found that students' attitudes toward OTC drugs were unaffected by their residence, including urban, semi-urban, and rural areas. This finding was likely because most of the students were housed at the hostel thus

influencing them to have similar attitude regarding self-medication with OTC drugs. Lastly, there was also no association between the self-medication practice for the past six months with students' attitude towards OTC drugs suggesting that their attitude towards OTC drugs have not changed despite the exposure to the OTC drugs over the previous six months.

The present study also showed no association between sociodemographic data and students' practice towards OTC drugs with ( $p > 0.005$ ). In terms of gender, it was reported that there was no association between gender and students' practice towards OTC drugs which oppose to the finding by previous studies as both claimed that gender was considered as a significant factor to self-medication practice and female students tended to have self-health consciousness and better practice compared to male students. (17, 20)

In terms of year of study, it was also revealed that there was no significant difference between year of study and students' practice towards OTC drugs. This finding prove that students had similar practice regardless their year of study. Nevertheless, previous findings reported an association between academic year of students and students' practice towards self-medication that was probably due to increased study exposure to diseases and medications. (4, 6) The present study also reported that residency such as urban, semi-urban and rural did not affect students' practice towards OTC drugs. This can be due to their current staying at hostel so they may have similar pattern of self-medication practice under their surrounding's influence.

It was also reported that all the students who stayed at the hostel had a similar self-medication practice. (17) Additionally, the current study found no evidence of a relationship between the responsible use of over-the-counter (OTC) drugs and the majority of participants' past six months of self-medication. This suggests that students may self-medicate without fully considering the potential consequences, even when they are knowledgeable about the topic.

### **Correlation between knowledge, attitude, and practice towards OTC drugs**

The present study revealed that there was no statistically significant correlation between the knowledge and attitude towards OTC drugs among undergraduate students in IIUM Kuantan ( $p > 0.05$ ). This finding was also similar to the study conducted among the university students in Portugal. (3) However, a study suggested a significant correlation between knowledge and attitude towards OTC drugs and this is speculated due to basic knowledge of OTC drugs or self-medication will lead to a sense of self-efficacy and self-responsibility on a personal level, resulting in a positive attitude toward safe self-medication. (2)

Besides, there was also no statistically significant correlation between knowledge and practice regarding OTC drugs among undergraduate students at IIUM Kuantan, ( $p > 0.05$ ), indicating that knowledge has no bearing on how they utilize the OTC drugs. It can be assumed that students utilize the OTC drugs differently regardless of their knowledge level. Nevertheless, there was a correlation between the knowledge and attitude with the claim that knowledge of OTC drugs or self-medication may allow the students to identify the danger of drug poisoning, prompting appropriate safe behaviour practice and adhering to public health recommendation. (21) The investigation also discovered that there was no statistically significant correlation ( $p > 0.05$ ) between undergraduate students at IIUM Kuantan's knowledge and their actual use of over the counter (OTC) medications. This suggests that these students'

interactions with over-the-counter drugs were not significantly influenced by attitudes. On the other hand, a different finding was reported by previous study which highlighted that even in circumstances where knowledge about the particular practice was limited, a positive attitude emerged as a significant factor contributing to the effectiveness of healthy behavior.(22)

## CONCLUSION

In conclusion, the study found that nearly half of the IIUM Kuantan undergraduate students had good KAP levels towards OTC drugs. However, a sizable portion of them still had low KAP levels for OTC drugs. Hence, the study established preliminary data on lack of awareness of OTC drugs among undergraduate students at IIUM and the need for the health authority to address the OTC drugs awareness issues starting from the students themselves. Therefore, the results can be used by the health authority to initiate better education efforts about OTC medications among undergraduate students and staff, which will enable prevention and control actions to be taken in the future. There are some limitations in this study, whereby the study considered to be a cross-sectional study that only offers snapshots of the subjects' KAP due to responses varying based on specific time and conditions during data collection, the data could not be generalised. The survey also solely assumes that self-medication and OTC drug behaviour are constant throughout the year. In terms of the application of self-administered questionnaires, response bias is a real problem due to fatigue, poor memory, or unfamiliarity with the instrument.

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## Conflict of Interest

The author has no conflict of interest to declare about this study.

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