KNOWLEDGE, ATTITUDE AND PRACTICE OF OVER - THE- COUNTER ANALGESICS AMONG UNDERGRADUATE STUDENTS IN HEALTH CAMPUS, UNIVERSITI SAINS MALAYSIA

SITI NUR'AIN SURAYA BINTI MOHD AMIN

SCHOOL OF HEALTH SCIENCES

UNIVERSITI SAINS MALAYSIA

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by

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LIST OF ABREVIATIONS

USM	Universiti Sains Malaysia
OTC	Over-the-Counter
WHO	World Health Organization
FDA	Food & Drug Association
MOH	Ministry of Health
PPSP	Pusat Pengajian Sains Perubatan
PPSG	Pusat Pengajian Sains Pergigian
PPSK	Pusat Pengajian Sains Kesihatan

ABSTRAK

Ubatan dari atas kaunter (OTC) adalah salah satu rawatan yang mudah dan berkesan untuk merawat kesakitan dan turut diamalkan di kedua-dua negara maju dan membangun. Walaupun ia merupakan rawatan yang selamat, rawatan ini juga boleh mengakibatkan kesan sampingan dan komplikasi berbahaya, bergantung pada cara kita mengamalkannya. Kajian keratan rentas dilakukan pada pelajar Perubatan, Pergigian dan Kejururawatan di Kampus Kesihatan, USM untuk menentukan tahap pengetahuan, sikap dan amalan yang berkaitan dengan analgesik OTC. Selain itu, kajian ini juga bertujuan untuk mengenal pasti perkaitan data sosiodemografi dengan tahap Pengetahuan, Ujian Fisher Exact dan Pearson Chi Square digunakan. Kajian ini juga bertujuan untuk menentukan hubungan antara pengetahuan, sikap dan amalan pada analgesik OTC. Ujian Korelasi Pearson digunakan untuk objektif ini. Daripada 285 pelajar sarjana, 199 merupakan pelajar Perubatan, 53 pelajar Pergigian dan 33 pelajar Kejururawatan dipilih melalui teknik persampelan rawak sederhana. Data dijalankan SPSS versi 26. Sebilangan besar responden adalah pelajar perempuan (58.2%). Penemuan menunjukkan bahawa pelajar sarjana di Kampus Kesihatan USM mempunyai tahap pengetahuan yang sederhana (M = 5. 91, SD = 1.048). Bagi tahap sikap dan amalan, skor menunjukkan 60.4% pelajar dengan sikap baik (M = 23.93, SD = 3.195) dan 61.4% pelajar dengan pelajar yang adil (M = 20.26, SD 3.526). Keputusan menunjukkan tiada hubungan signifikan yang dikesan terhadap data sosiodemografi dengan tahap pengetahuan. Tahap pengetahuan menunjukkan hubungan yang signifikan dengan sikap (r = 0. 292, nilai p < 0.001), dan sikap juga menunjukkan terdapat hubungan yang signifikan dengan amalan (r = 0. 220), p < 0.001). Kesimpulannya, pengetahuan pelajar perlu

ditingkatkan untuk meningkatkan kesedaran mengenai pengamalan penggunaan ubatan dengan cara yang selamat.

ABSTRACTS

Over-the-Counter (OTC) analgesics is one of the convenient and effective treatments for pain used in both develop and developing countries. However, this treatment could lead to the dangerous effect and complication depending on how we utilize it. A cross sectional study was conducted on Medical, Dental and Nursing students in health Campus, USM to determine the level of knowledge, attitude and practice related to OTC analgesics. This study also aimed to identify the association of sociodemographic data with knowledge level by using Fisher Exact Test and Pearson Chi Square. This study also aimed to determine the correlation between knowledge, attitude and practice on OTC analgesic. Therefore, Pearson Correlation test was used for this objective. Out of 285 undergraduate students, 199 from Medical, 53 from Dental and 33 from nursing were selected through simple random sampling technique. The data was run in SPSS the was using SPSS version 26. Most of the students are female students (58.2). The finding shows that undergraduate students in Health Campus USM were having a moderate knowledge level (M = 5. 91, SD=1.048). As for the attitude and practice level, the score revealed 60.4% students with good attitude (M= 23.93, SD=3.195) and 61.4% students with fair practice (M= 20.26, SD 3.526). There was no relationship of any sociodemographic data to be found significant. On the other hand, the knowledge has significant relationship with (r = 0. 292, p value < 0.001). attitude, and attitude also shows significant relationship with practice (r = 0. 220, p value < 0.001). In conclusion, students' knowledge needs to be enhanced to improve the awareness on safe medication practice.

CHAPTER 1:

INTRODUCTION OF THE STUDY

The chapter starts with the background of the study about over-the-counter analgesics. Then it is followed by a problem statement, research questions, and hypotheses of the study. Finally, the significance of the research and the operational definition of key terms are described.

1.1 Background of the Study

Analgesic is the medication used to reduce or treat acute to chronic pain derived from two types which are opioid and non-opioid / anti-inflammatory analgesics (Paramalingam et al., 2021). Opioid analgesics are considered narcotic and classified into mild and potent opioids. Codeine and tramadol are mild opioid analgesics, while morphine and methadone are examples of strong opioids. Meanwhile, non-opioid analgesics are considered non-narcotic, and the example includes paracetamol and non-steroid anti-inflammatory drugs (NSAIDs) like Ibuprofen (Salih et al., 2018; Palos et al.,2004).

Those analgesics can be over-the-counter (OTC) without prescription, while some require a prescription. Since OTC medication provides easy accessibility and relatively lower time and costs from meeting physicians, it makes the OTC analgesics from non-opioid become the convenient choice for treating pain among university students, leading to self-medication practice (Bekele et al., 2020). A study conducted in Saudi Arabia to determine university students' awareness about the side effects of analgesics and how it could affect their usage of those medications found that 77.0% of the students use OTC

analgesics (Salih et al., 2018). Meanwhile, a study in Iran shows the prevalence of 76.6% of the students who used analgesics as self-medication (Sarahroodi et al., 2012).

The common OTC analgesics used by students are paracetamol, aspirin and NSAIDs. This probably because those analgesic is the mild types of analgesic that usually treat the common pain like headache, dysmenorrhea, muscle and joint pain and stomachache (Salih et al., 2018; Almalak et al., 2014; Sarahroodi et al., 2012). This could happen because these symptoms are a common illness that affects many people frequently. OTC analgesics for these symptoms are always available in pharmacies or non-pharmacy outlets. This is true because the stress and other educational loads make university students the victims of headaches and other stress-related factors that usually force them to seek OTC analgesics as a basic treatment (Bekele et al., 2020).

Generally, OTC analgesics are widely used and safe. However, taking the medication in larger amounts or misusing it, can still cause side effects and complications that may harm the individual. The side effects include nausea and vomiting, constipation, itching, dizziness and skin rashes (Labianca et al., 2012; Salih et al., 2018). For the complications, damage or impairment to the organ may occur. Paracetamol may affect the liver, while NSAIDs will cause kidney impairment and gastrointestinal complication, increasing cardiovascular effects. These might be the alarming effect of inappropriate analgesics, which need to be prevented (Labianca et al., 2012; Paramalingam et al., 2021).

Concerns about the use of OTC by students are developing in developed countries such as the United States (Kafil et al., 2019). Such media reports are broadcast to the general public, including university students, and can cause misunderstanding and

apprehension about taking OTC analgesics. Because of that, university students who are always under pressure to work hard to reach their goals may make them use analgesics as a 'fast cure' to prohibit chances for minor illness (Bekele et al., 2020).

In relation to the university students, the medical, pharmacy and health science students are highly involved in self-medication, especially analgesics (Bekele et al., 2020; Al Essa et al., 2019; Kafil et al., 2017; Kumar, Vandana & Aslami, 2016). The source of information from their course of study, clinical experience and advice from the medical practitioner made them more knowledgeable and confident to use analgesics to treat minor symptoms or ailments (Kafil et al., 2017; Al Essa et al., 2019).

However, those benefits could not guarantee a safe attitude and practice of analgesics since their many students who still neglect the safe attitude of medication practice. For example, the study by Kumar, Vandana & Aslami (2016), show student consider a waste of time to consult doctor and reading leaflet of medication, always preferring self-diagnosis and know what medication to take, thinking their illness is too minor to be consulted and no adverse effect experienced from the same medication used for the same illness in the past.

The study regarding analgesic use and awareness in Malaysia is not widely discussed. However previous studies on self-medication practice among university students in Malaysia always mentioned the most common medication used are paracetamol, NSAIDs or other analgesics (Mohd Misli et al., 2021, Elkami et al., 2018). Although there were briefly explained or simply mentioned in those studies, it shows that the issue of analgesics uses among students can be considered an issue that should be further studied.

Throughout the researcher's knowledge and the literature reviewed, the researcher found that the knowledge, attitude and practice of OTC analgesic involving university or undergraduate students in Malaysia has not been widely discussed. The importance of knowledge regarding OTC analgesics may reflect toward the attitude and practice of it, which is an important topic to be highlighted to give insight to the youth about awareness on proper medication, which will carry on especially as they work in health care settings and involved with patients. Thus, this aims to determine the relation on the importance of knowledge towards attitude and practice on OTC analgesics among undergraduate students.

1.2 Problem Statement

OTC analgesics is a widely used medication for self-medication, but it is also one of the most common causes of irrational drug usage. Social and economic circumstances are significant variables that drive a person to take medication without a proper diagnosis and prescription (Kafil et al., 2017). Students in high school and university have been shown to utilize a variety of OTC medications including analgesics, to help them cope with academic pressures, exams; and/or increase their work concentration and alertness while studying (Kafil et al., 2017; Almalak et al., 2014).

The growing worries about the use of OTC medicines, particularly NSAIDs, in both developed and developing nations; and misuse has been documented among students due to a lack of information about their use (Li et al., 2014). The lack of knowledge proves that students are still unaware regarding the matter of OTC analgesics, attributed to the incorrect

source of knowledge on analgesics, especially side effects and proper administration (Sarahroodi et al., 2012, Salih et al., 2018). Furthermore, inadequate drug policy implementation and a lack of knowledge on the proper usage, side effects, and drug-drug interactions of NSAIDs add to the challenges with their use (Li et al., 2014; Ravalia et al., 2018).

The privilege of having easy access to medication, self-perceived knowledge by during study courses and clinical training, their health literacy, understanding information in the medical book and internet as well as referring their experienced medical or health sciences seniors, friend and medical practitioner, makes university students especially related to medical and health science more actively use analgesics (Kafil et al., 2017; Vandana & Aslami, 2016). However, the perspective of the frequent utilization of the analgesics as a convenient treatment basis for common illness and a possible adverse effect including hepatic and renal impairment that they may face, reflect that it is important for interventions to be developed to create awareness among students about the possible threatening outcome of the inappropriate or chronic analgesic user (Kafil et al., 2017).

To ensure the safety of analgesic use as an OTC drug, for self-medication, and when prescribed to others, the enhancement toward the study of knowledge, attitude and practice in university students, especially medical and health sciences must always be done. In order to address the students' negative attitudes and improper practices, a combined effort with the pharmacy department and drug regulators might need to be initiated. Although knowledge attitudes and practices have improved over time, some curriculum

changes to introduce the concept and principles of OTC use should be reflected (Kafil et al., 2017).

Moreover, introduction on awareness campaigns also must be supported and students who have better knowledge should demonstrate and give education on the safe practice of OTC analgesics to the population. Also, a collaborative effort can be launched with the drug authorities and the department of pharmacy where on the one hand, the quality of the leaflet could be improved and on the other hand the negative attitude and bad practices of the students could be addressed (Kafil et al.,2017). The policy of medication must be revised and improved by government and drug authorities toward a better practice and prevention of adverse reaction regarding OTC analgesics.

1.3 Research Question

1. What is the level of knowledge, attitude and practice on OTC analgesics among undergraduate students in Health campus USM?
2. Is there any association of selected socio- demographic data (gender, age, academic program, academic year) with knowledge level on OTC analgesics among undergraduate students in health campus USM?
3. Is there any correlation between knowledge, attitude and practice of OTC analgesics among undergraduate students in health campus USM?

1.4 Research Objective

1.4.1 General objective

1. To determine the knowledge, attitude and practice of OTC analgesics among undergraduate students in health campus USM.

1.4.2 Specific Objective

Specific objectives of this study are:

1. To determine the level of knowledge, attitude and practice on OTC analgesics among undergraduate students in Health campus USM.
2. To determine the association of selected socio- demographic data (gender, academic program, academic year) with knowledge level on OTC analgesics among undergraduate students in health campus USM.
3. To determine the correlation between knowledge, attitude and practice of OTC analgesics among undergraduate students in health campus USM.

1.5 Research Hypothesis

1. Hypothesis 1

Ho - There is no significant association between selected socio-demographic data (gender, age, academic courses & academic year) with knowledge level regarding OTC analgesics among undergraduate students of Health Campus USM.

Ha - There is a significant association data (gender, age, academic courses & academic year) with knowledge level regarding OTC analgesics among undergraduate students of Health Campus USM.

2. Hypothesis 2

Ho - There is no significant correlation between knowledge with attitude (score) regarding OTC analgesics among undergraduate students of Health Campus USM.

Ha - There is a significant correlation between knowledge with attitude (score) regarding OTC analgesics among undergraduate students of Health Campus USM.

3. Hypothesis 3

Ho - There is no significant correlation between knowledge with practice (score) regarding OTC analgesics among undergraduate students of Health Campus USM.

Ha - There is a significant correlation between knowledge with practice (score) regarding OTC analgesics among undergraduate students of Health Campus USM.

4. Hypothesis 4

Ho - There is no significant correlation between attitude with practice (score) regarding OTC analgesics among undergraduate students of Health Campus USM.

Ha - There is a significant correlation between attitude with practice (score) regarding OTC analgesics among undergraduate students of Health Campus USM.

1.6 Conceptual and operational definition

Table 1.1: Conceptual and Operational definition

Knowledge	awareness, understanding, or information that has been obtained by experience or study, and that is either in a person's mind or possessed by people generally (Cambridge Academic Content Dictionary, 2019). In this study the level of knowledge of student regarding OTC analgesics will be assessed the Section B of the questionnaire
Attitude	A relatively enduring and general evaluation of an object, person, group, issue, or concept on a dimension ranging from negative to positive. Attitudes provide summary evaluations of target objects and are often assumed to be derived from specific beliefs, emotions, and past behaviour associated with those object (American Psychology Association Dictionary, 2020) Attitude will be derived into good, fair, poor attitudes regarding OTC analgesics. In this study, the attitude of the student will be assessed in section C of the questionnaire.

Practice	the customary, habitual, or expected procedure or way of doing of something in a particular organization or situation (Oxford Learner's Dictionary, 2021). The practice can be categorized as good, fair and poor practice. The good practice applies a safe measurement in practice while bad practice applies risky or harmful measurement. In this study, the practice of the student regarding OTC analgesics will be assessed in section D of the questionnaire
Over- the-counter drug (OTC)	A non-prescription medicine that can be bought without a prescription, which is safe and effective to use when followed the directions on the label and as directed by the health care professional (U.S. Food & Drug Association, 2018).
Analgesics	The class of drug that is functioning to relieve pain selectively without blocking the conduction of nerve impulses, markedly altered sensory perception, or affecting consciousness (Bloom, 2017).
Undergraduate students	a student at a college or university who has not received a first and especially a bachelor's degree (Merriam Webster Dictionary, 2019) In this study, undergraduate students will refer to medical, dental and nursing students.

1.7 Significance of the study

OTC analgesic is a choice of pain reliever which can bring good benefits toward the treatment of the individual as long as it is used in the proper way as instructed by the label of the medication and advice from the pharmacist. The choice of medication to be used also must be accordingly to the symptom or type of pain, and the side effect must be resolved by consulting the professional health provider. Therefore, this study will provide information regarding the knowledge, attitude and practice regarding OTC analgesics and also give the knowledge on the awareness of the use of OTC analgesics among the undergraduate students in Health Campus USM.

Referring to the knowledge, attitude and practice elements, this study will help to give the understanding on the point of view of the students about their level of knowledge and how it reflects toward the attitude and practice of the OTC analgesics as well as giving the idea and awareness toward the safety of the use of analgesics, through the information poster that attached at the end of questionnaire. Later, the result of analysis from this study hopefully may help contribute to the other future studies by providing the information regarding the OTC analgesics among the undergraduate students, which can be used for improving the safe practice.

In addition, the study can help the students to understand and prepare better for health education. Since they will be the health promoter and advocators, they are responsible for helping the practitioner to understand the appropriate and safe method of medication practice. Besides, the knowledge, attitude and practice level on the OTC analgesics and demographic data (age, gender, program of study, academic year) may help determine which group has the high knowledge, good attitude and safer practice. This data will give insight into the improvement that can be done toward the group,

such as providing activity or topic in the syllabus to emphasize more on the safe usage of OTC analgesics to increase understanding and awareness of these groups.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the current literature related to OTC analgesics in terms of knowledge, attitude and practice. The literature search was done by using main keywords OTC and analgesics including knowledge/awareness, attitude and practice/use of OTC analgesics. This chapter also discussed the theoretical and conceptual framework that was used in this study.

2.2 OTC Analgesic

Analgesics are drugs that work on the central nervous system or peripheral pain receptors to considerably relieve pain without compromising consciousness. Narcotic or opioid analgesics and non-narcotic or anti-inflammatory medicines are the two types of pharmaceuticals (Paramalingam et al., 2021). The most recommended medications for pain management are nonsteroidal anti-inflammatory drugs (NSAIDs) and paracetamol as they serve for the common mild to moderate pain treatment and are relatively available for over the counter (OTC) in pharmacies and non-pharmacy retail outlets without prescription, which has become one of the contributions toward self-medication (Bekele et al., 2020).

NSAIDs become the choice of treatment due to anti-inflammatory, analgesic, and antipyretic properties for the treatment of persistent mild to moderate pain like fever, rheumatoid arthritis and toothache. NSAIDs act by inhibiting two cyclooxygenases (COX) enzymes, which prevents the formation of prostaglandins (PGs). Many biological processes rely on PGs, including gastrointestinal cytoprotection,

hemostasis and thrombosis, inflammation, renal hemodynamic, cartilage turnover, and angiogenesis (Gunaydin & Bilje, 2018). Non-selective NSAIDs, also known as COX inhibitors, are associated with a higher risk of significant upper gastrointestinal problems such as ulceration, perforation, and bleeding. Meanwhile, COX-2 inhibitors were introduced as an NSAIDs based alternative with enhanced gastrointestinal safety but a higher risk of cardiovascular side effects (Labianka et al., 2012).

As for paracetamol, it serves as analgesics and antipyretic, which widely become the choice for patients who cannot be treated with nonsteroidal anti-inflammatory drugs (NSAIDs). It includes those who have bronchial asthma, peptic ulcer disease, haemophilia, salicylate - sensitized people, children under the age of 12, and pregnant or breastfeeding women. Paracetamol produces side minor side effect on the gastrointestinal and is practically safe for use. Despite the fact that paracetamol is a well-tolerated medicine, there are a growing number of reported cases of paracetamol-induced liver poisoning still occurring. (Jóźwiak-Bebenista & Nowak, 2014)

On the other hand, opioid analgesics are strictly regulated due to their potential for opioid dependence and abuse. Opioid dependence is a condition of opioid use regulation caused by recurrent or continuous opioid usage. The manifestation of a strong internal drive to use opioids leads to an inability to control use and persistence of use despite harm or negative consequences (WHO, 2021). itching, constipation, increased biliary tract pressure, urine retention, and hypotension (Paramalingam et al., 2021).

Although multiple strategies arise to manage non-opioid and opioid analgesic therapy-related adverse events, a better understanding of the mechanisms involved in the development of specific drug-related adverse effects, as well as proper prescribing

practices and adequate physician/patient education, is required. In addition to the risks associated with pain management drugs, there is a need to be aware of the widespread and often significant consequences of poorly managed pain.

2.3 Knowledge regarding OTC Analgesics

The level of knowledge regarding OTC analgesics was ranged differently according to previous studies. In the study conducted in Bangladesh, some students demonstrated basic knowledge and awareness of analgesics. It was reported 34.9% of students know the proper dose of the painkiller they generally intake for any analgesics, while 64.6% of the students take the painkillers without having a clear idea about the dose. However, a bigger percentage of students lacked knowledge of side effects and risks of chronic use (Sarker & Moonajilin, 2018).

Meanwhile, the study in Taif indicated 31.3% of medical students had “high knowledge”, 62.3% had “moderate knowledge”, & 6.4% had “low” knowledge regarding the knowledge on paracetamol used (Kafil et al., 2017). As for study in Saudi Arabia, medical students reported 22.7 % of ibuprofen knowledge and 37.1% of paracetamol knowledge which both are higher scores compared to computer sciences and art students (Salih et al., 2018). This evidence shows many components in knowledge regarding OTC analgesics are needed to prevent adverse reactions and the risk toward the health hazard like drug interaction with drug, food, disease, or alcohol, abuse and adverse reaction like complications to the organs.

According to Paramalingam et al. (2021), inappropriate prescription or failure to notice how the medicine is administered and a lack of information about how to use

analgesics properly may raise the risk of developing toxicity and potentially dangerous ill effects. Concerning this, knowledge and awareness are believed to be the attribution in prevention. As for the students who learned about pharmacology and are involved in clinical settings like medical and health science students, the knowledge and information gained could be a good contribution toward safe medication practice. The study by Salih et al. (2018) revealed that awareness level was generally poor, but among all students, medical students had a higher knowledge level compared to others.

This shown that having medication knowledge is a must to prevent OTC analgesic complications and adverse reactions. Medication knowledge includes the comprehension of understanding in clinical pharmacology and therapeutics and the skills to apply that knowledge in daily practice (Berhe, Taxis, Haaijer-Ruskamp & Mol, 2018). Hence, a good knowledge on OTC analgesics will need the understanding on the basic information on the disease, the class of medication, how and when to administer the medication, the dosage need or maximum can be taken, side effect, the precaution to use medication, how to store medication and specific drug interactions. The knowledge that practitioners have either pre-existing or currently learn may influence and be a reason for them in practising OTC analgesics.

The study in Bangladesh revealed the source of information regarding the use of analgesics were from the manager of the pharmacy, relatives or friends, self-knowledge media, internet and others. It is supported by the study done in Iran that shows almost the same source of information for the use of analgesic was from friends and family, previously prescribed medications, their knowledge on medical and recommendation by the pharmacist. As for medical students, their knowledge influences their actions in

taking analgesics. In contrast to non-medical students, their friends and families are as knowledgeable about medicines as medical students (Sarahroodi et al., 2012).

Overall, the knowledge regarding self-medication is an important component to increase the awareness of the safe practice with OTC analgesics. Having knowledge makes the student realize the importance of information about the medication, which may influence them to carefully use the analgesics, always ask the pharmacist or medical practitioner regarding the medication and always read the label of medication to ensure no hazard during the usage. As for health-related students, it may impact their roles as health educators in the future, thus making them need to demonstrate proper and safe medication practice. Therefore, the implementation toward the enhancement of knowledge regarding OTC analgesics should be more highlighted in students and all populations.

2.4 Attitude regarding OTC Analgesics

The attitude regarding OTC analgesics can be derived into negative and positive attitudes or good and poor attitudes which are determined by the agreement toward response in the situation related to OTC analgesics attitude. In the study by Kafil et al. (2017), reading the pamphlet before prescribing medications to anyone would be beneficial to 54.4% of students, whereas 44.8% did not believe it was necessary. As for those students who show negative attitudes, the barriers in the information, including the extensive amount of inexplicable text, small font size, quality of the information, the medical jargon and the use of foreign language, could be the reasons.

This effect on the negative attitude is worrisome as students accepted the use of analgesic medication based on the consideration of the low price, efficacious and safe drug as the reason for practice (Kafil et al., 2017). According to the previous study by Kafil et a (2017), this attitude was evaluated to see if it had changed as the academic year progressed. As a result, positive attitudes on reading the medication information fell from 59.5% in the second year to 57.6 % in the third year and 45.2% in the fourth year. This may be due to the familiarity with the medication making them reluctant to read the information. This attitude should be avoided in order to ensure safe medication use.

On the other hand, a study conducted by Salih et al. (2018) reported only 26% of students stated that they always read the drug instructions sheet, while 36.1% of all students stated that they might use other techniques to understand the medication. This attitude was more prevalent among medical students. In contrast, only 22.4% of computer science students and 25.9% of art students always read the medication label. (Salih et al., 2018). The information proves the understanding of medication making will influence the perception towards the attitude regarding OTC analgesics.

Besides, the review also demonstrates that a total of 24.6% of medical students accurately responded that they would prefer paracetamol over other NSAIDs because they believe it is safer (Kafil et al., 2017). The result shows that from 24% and 21% of positive attitudes of paracetamol being safer than other NSAIDs in the second and third years, the improvement of attitudes seen to roughly 30% in the fourth year. The fact that when students' academic levels rise, and they are exposed to more practical courses, their knowledge and comprehension of drugs and diseases improves, allowing them to make better drug choices for mild disorders at the very least. As a result, students

appear to rely on their own understanding and take common medications that feel safe on themselves (Kafil et al., 2017).

Apart from that, students also showed an attitude of choosing the analgesics based on the brands and seemed to be based simply on what was to hand. Students may select the wrong type of analgesic for the pain they are experiencing based on these terms, which can be harmful (Golar, 2011). This could lead to needlessly prolonged use, which could have negative consequences. Besides, they also show delaying medical advice up to 2 weeks if the symptoms persist while taking analgesics (Golar, 2011). Seeking medical advice is a vital act, especially when the symptom still persists and confirming the diagnosis to avoid any delaying of appropriate treatment. The attitude of delaying the consultation will result in danger to the student if the illness is serious or chronic.

All of this information on the attitudes showed that a good attitude may help in safe medication practices. Since university students are the most educated part of the population, they should help in demonstrating good attitudes by being alerted about the dangers of inappropriate using OTC analgesics and the negative effects of various pain relievers through various ways such as not neglecting the reading of medication labels and always consult with the professional for better advice. Therefore, this implements the importance of assessing the attitude level of students regarding OTC analgesics (Sarker & Moonajilin, 2018).

2.5 Practice regarding OTC analgesic

Practice on OTC analgesics is commonly described as self-medication with analgesics in several studies. In the study by Kafil et al., 2017, most study participants (73.3%) had fair practices, 0.7% had good practices, and 26% had poor practices when it came to paracetamol use. The results showed that 79.7% of students used paracetamol just as needed, whereas 8.5% used it at least once a month. The use of analgesics, in general, should not be used too often or in a prolonged time to prevent dangerous effects such as drug toxicity.

It was also shown that more than 75% of students in the second to fourth years recommended paracetamol to their relatives and friends. Also, most of the participants (97%) avoided prescribing the medicine to minors, indicating that good standards were followed (Kafil et al., 2017). The recommendation of medication should only be done by those with medical qualifications like pharmacists and doctors.

However, as for students, even if they have knowledge in medication, it could be risky to prescribe it to others without supervision by a medical practitioner, especially for analgesics that are not commonly used. However, still, the student must advise others to always read the medication information, including the types of analgesics, dosage allowed per use and expiry date to prevent any possible side effects.

In many studies, headache and dysmenorrhea become the common causes of using analgesics, including OTC (Sarahroodi et al., 2012; Kafil et al.,2017, Salih et al, 2018). Meanwhile the less common causes include toothache and muscle pain. As for the factor that influences the use of analgesics, a study in Bangladesh revealed that the dissatisfaction about available medical facilities became the main influence followed by cost-effectiveness, the thought of pain is minor and suggestions from others. In contrast,

the study in Taif revealed the consideration of the cheap cost, efficacious and safe drug as the reason for practising analgesics (Kafil et al., 2017).

As for the most common OTC analgesics Sarahroodi et al (2012), Salih et al (2018), and Kafil et al. (2017), found that the most common analgesics used paracetamol or NSAIDs. The study by Bekele et al (2020), also stated paracetamol and NSAIDs as the commonly used OTC drugs among students. Apart from that, in the study by AlMalak et al (2014), the use of NSAIDs was shown to be highest during examinations in general.

NSAIDs were used by nearly 80% of the respondents to relieve headaches and moderate pain that may interfere with their sleep schedule during exams. Overall, it can be concluded that paracetamol and NSAIDs become the most OTC analgesics used among students. The various aspect regarding the practice of OTC analgesics could be the standpoint to provide the understanding towards the students' choice and reflection by the factors and influences of knowledge and belief and experience and situation while taking analgesics.

2.6 Theoretical / Conceptual Framework

In this study, the researcher chose to set the parameters by using the theory of Health Belief Model (HBM), which was proposed by Hochbaum, Rosenstock and others in 1950. HBM is a theory that is used to predict human health behaviour in relation to the adoption of health education and promotion of health. The Healthy People 2020 report, which is the assessment developed by the U.S Department of

Health and Human Service in 2009 highlighted the health promotion and disease prevention programme.

In summary, there are 38 focus areas which underscore the importance of health promotion, and one of them is health promotion regarding medical product safety (Sharma & Romas, 2012). This program has a correlation to HBM, also suggests that an individual's health behaviour will be influenced by modifying factors, thus can promote health. HBM consists of 6 constructs, which are perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy and cues to action (Sharma & Romas, 2012).

Perceived susceptibility is when an individual believes that there will be a chance for him to get a disease or be in the harmful condition as a result of health behaviour. This would vary depending on individual perception of susceptibility and would affect the likelihood of his or her will to take preventive measures. The second construct, perceived severity, is an individual belief which is subjective, on being in the extent of harm because of disease or harmful state if implementing a certain health behaviour. This perception also varies depending on the person, which one might be concerned with the symptom, while others are concerned with the adverse effect of harm in a broad perspective.

Third, the perceived benefits represent the individual belief to get advantages by the methods suggested to reduce risk or worsening condition of the disease or harmful from the health behaviour. It refers to providing alternatives to reduce the perceived susceptibility or perceived severity of the condition, which will be rewarding (Sharma & Romas, 2012). The fourth construct, which is a perceived barrier, believes the concerning actual and imagined cost of the following behaviour. The individual

believed the perceived susceptibility could be decreased by action but found it to be inconvenient or costly. Next, cues to action mean precipitating forces that make a person feel the need to act. The cues depend on the degree of perceived susceptibility or perceived severity, which when it is low, then a very intense stimulus is needed as a cue to action. Lastly, self-efficacy which explains the person's confidence in the ability to pursue behaviour (Sharma & Romas, 2012).

As in the term of this study, these constructs will be applied as it helps to determine the health behaviour which is the practice of having OTC analgesics is influenced by modifying factors that are associated with knowledge, can change the individual belief and attitude regarding the behaviour of this practice (perceived susceptibility). For example, the higher years of study, which experience more clinical training and learning, can influence the attitude on OTC analgesics and may lead to potential hazards by the irresponsible way of practice and lack of knowledge (perceived severity).

Therefore, improving knowledge in self-medication, including correct types of medication used for the correct diagnosis or symptom, the side effects of medication, potential drug/ food interaction, proper dosage and administration and storage of medication, may reduce the risk of harmful effects from medication (perceived benefits). They may include reading the leaflets and consulting with the qualified medical practitioner, rather than depending on internet sources.

However, they must also understand that the degree of implementing OTC analgesics as a part of self-care must be controlled, since the number of unfavourable incidents still happens due to the neglect in the practice of analgesics used, for example, taking medication because having the same symptom as other people, without

confirming the actual diagnosis (perceived barrier). It also can be dangerous since the OTC analgesics can be obtained at other than pharmacies such as groceries or buying online.

Therefore, the awareness must be spread in the population and community on the importance of not self-medicating without having a consultation with expert medical practitioners like pharmacists, without reading the leaflet and must have the medication in a controlled amount, without sharing with other people and not using it past expiry date (cues to action). As a result, a person's behaviour on self-medication can improve to a good attitude and safe practice, making the person more careful and aware (self-efficacy).

In conclusion, health promotion and awareness regarding OTC analgesics can be conducted when people believe in the importance of safe medication practice. Determining the level of knowledge, attitude and level regarding OTC analgesics can provide information on the area of concern, and plausible action can be taken to improve the concern. It is believed that the factors from sociodemographic data may influence the way of perception (attitude and belief) due to the pre-existing knowledge is obtained under those conditions, thus result in the way of practice, either acceptable to be good and safe or must be avoided.