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# Assessing knowledge and attitude of Thai citizens towards cannabidiol products: A cross-sectional observational study

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***Abstract***---Cannabis related products are frequently found in Thailand because Cannabis sativa had passed the law in 2018. This study used cross-sectional survey method aimed to investigate Thai people knowledge and perspectives towards the utilization of cannabidiol products. The survey was done by a set of online questionnaires constructed by the researcher and tested content validity by experts and reliability by Cronbach's alpha. The results showed that there were 470 participants with female majority (57.9%) and aged between 41 – 60 years old (37.0%). 42.8% of them had experience of using cannabinol products, which were for only food and drinks (21.29%), cannabinol oil sublingually (18.32%), massage oil (3.96%), respectively. The mean knowledge regarding cannabinol product use and effects was 6.55 out of 13 (SD±2.95) and mean perspectives toward cannabinol product use was 8.82 out of 12 (SD±2.32). Moreover, I found significant correlation between perspective and experience of cannabinol product use ($p<0.001$) as well as gender ($p<0.001$). Thai people have knowledge on cannabis but with limited extent especially side effect and toxicity of cannabinol substances and observed to hold a positive attitude towards cannabidiol products usage.

***Keyword***---cannabidiol products, Cannabis sativa, Thai people knowledge and perspectives.

## Introduction

Cannabis has a deep history for medical and recreational use in ancient times. The purpose of cannabis usage was to manage several conditions such as anxiety, chronic pain, headaches and, migraines. There are two main types of cannabis which are *Cannabis sativa* and *Cannabis ruderalis*. The reason for therapeutic

purpose in ancient times lies in the chemical in cannabis and cannabinoids have been used for medicinal purposes [1]. Cannabis has psychoactive substance as THC and CBD where both of the chemicals act on endocannabinoid system [2].

The main feature of the recreational use of cannabis is that it produces a euphoriant effect or 'high'. The high can be induced with doses of THC as low as 2.5 mg in a herbal cigarette and includes a feeling of intoxication, with decreased anxiety, alertness, depression and tension and increased sociability. It is not surprising that the overwhelming reason for taking cannabis given by recreational users is simply 'pleasure'. Cannabis produces a euphoriant effect, a study claimed that a small amount at around 2.5 mg can be induces an intoxicating sensation accompanied by decreased anxiety, attentiveness, depression, and tension, as well as increased sociability. This make them to be a useful emotional therapy [3]. In addition, a clinical trial has shown a significant result using cannabis as an adjunct therapy has improve our body daily function, reduction in anxiety and depression symptoms [4]. Cannabis can be used as complementary and alternative medicine (CAM) among cancer patients around the world has revealed a significant trend. For example, young cancer patients in Italy were more likely to use complementary and alternative medicine (CAM) therapy such as nutritional supplements and herbs [5].

There are international restrictions in sales, possession and, consumption in Thailand. However, in 2016, a movement from Thai medical personnel including alternative and traditional practitioners had advocated for cannabis legalization. From this effort, cannabis has been officially legalized on 18th February 2019 [6]. As a result, Thailand is the first country to announce the legalization of cannabis in South East Asia with limited research and possession under the Narcotics act of 2019 [6], [7]. However, with rapid introduction, this has led to misunderstanding and debate about cannabis. For example, 1) believing that every disease can be cured with cannabis, 2) the popularity of illegal cannabis over the social media, and, 3) the application of cannabis towards ineligible patients with little or no evidence supporting the treatment [2]. Nowadays, stores and shops are increasingly using cannabis in food and beverages. Therefore, given the importance of Thailand situation towards cannabis, as well as the relative novelty of cannabis in Thailand. It is obligatory to understand the knowledge and attitude of Thai citizens towards cannabis. Given the increasing popularity of cannabis in Thailand, I am interested in studying knowledge and perspective of Thai citizens. This study aimed to investigate Thai people knowledge on knowledge and perspective towards cannabidiol products.

**Methods and Materials**

This study was a cross-sectional observational study. An online questionnaire was created and made available for Thai citizens through Google Forms from 5th April to the 29st April 2022. The questionnaire was sent via social medias and academic groups in Thailand. In addition, the questionnaire was free and voluntary, and socio-demographic data were collected from the respondents. Furthermore, the objectives of this study were informed as well as ethical guarantee of anonymity and confidentiality. The questionnaire was developed based on clinal trials and literature review including information from World

Health Organization and guidelines from narcotics division of Thai ministry of public health. The preliminary draft of the questionnaires was reviewed by three pharmacology specialists to ensure validity and clarity. The questionnaire was put to test with 30 participants to assess knowledge and perspectives. However, there is some modification with the questionnaire through checking via Cronbach alpha reliability. The final version of the questionnaire consists of 27 questions in total with 8 questions about socio-demographic information about participants, 13 questions on knowledge about cannabis, and 6 questions regarding attitude towards cannabidiol products.

This question consisted of age, gender, background information about their chronic disease and experience to cannabidiol products. A selection of boxes was assigned for each question. If the participant has an experience towards cannabidiol products, the information regarding the sources, different utilization methods, usage frequency, and the purpose of using cannabidiol products will be asked. The assessment consisted of 13 multiple choices questions and participants were asked to select one correct answer from three choices (Yes, No, or Not sure). The contents include background knowledge about cannabis, symptoms associated with cannabis usage and specific information on cannabis. The calculations were made by assigning a point to correct answer, while incorrect answer and answer that is undefined were given no point. The sum of the result answer reflected the individual knowledge about cannabis to what degree of extent.

Table I
Difference in outcomes according to the socio-demographic information of participants (n=470)

| Socio-demographic characteristic | n (%) | Knowledge about cannabis (Range 0-13) | | Attitude towards cannabidiol products (Range 0-12) | |
|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD |
| | | 6.55 | 2.95 | 8.82 | 2.32 |
| Gender | | | | | |
| Male | 191 (40.6) | 6.47 | 2.92 | 9.27 | 2.00 |
| Female | 272 (57.9) | 6.63 | 2.99 | 8.45 | 2.46 |
| Not prefer to say | 7 (1.5) | 5.57 | 1.99 | 11.00 | 1.73 |
| Age | | | | | |
| 15-20 years | 83 (17.7) | 7.18 | 2.67 | 9.07 | 2.15 |
| 21-40 years | 117 (24.9) | 6.24 | 2.85 | 9.28 | 2.17 |
| 41-60 years | 174 (37.0) | 6.49 | 3.11 | 8.48 | 2.58 |
| More than 60 years | 96 (20.4) | 6.49 | 2.94 | 8.67 | 2.07 |
| Diagnosed with chronic disease | | | | | |
| No | 334 (71.1) | 6.45 | 3.01 | 8.83 | 2.35 |
| Yes | 134 (28.9) | 6.80 | 2.78 | 8.80 | 2.26 |
| Have an experience with | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| cannabis | | | | | |
| No | 269 (57.2) | 6.35 | 2.97 | 8.38 | 2.53 |
| Yes | 201 (42.8) | 6.82 | 2.90 | 9.42 | 1.86 |

This question comprised of 6 items and the response categories consisted of a three-point Likert scale (from 3-totally agree, 2-no opinion or 1-totally disagree), with a higher score implies a more positive attitude towards cannabidiol products. The analysis was performed by SPSS program for mac version 26 in order to analyze psychometric of attitude towards cannabidiol products: Socio-demographic information, knowledges, and attitudes toward cannabidiol products. The descriptive studies were presented in absolute (*n*) and relative (%) frequencies, mean (M) and standard deviations (SD) to evaluate the differences between variables (knowledge and attitude towards cannabidiol products). Furthermore, Pearson chi-square P values was calculated and the statistical significance was defined as $P<0.05$. (see Table V)

**Results**

This study comprised a total of 470 Thai citizens. Sociodemographic characteristics of the participants (see Table I). Most of the participants were female (n=272, 57.9%) followed by male (n=191, 40.6%) and not prefer to say participants group (n=7, 1.5%). Considering the age range, most of the participants were in 41-60 years (n=174, 37.0%), followed by 21-40 years (n=117, 24.9%), then >60 years (n=96, 20.4%) and 15-20 years (n=83, 17.7%). Most of the participants were female (n=272, 57.9%) followed by male (n=191, 40.6%) and not prefer to say participants group (n=7, 1.5%). Considering the age range, most of the participants were in 41-60 years (n=174, 37.0%), followed by 21-40 years (n=117, 24.9%), then >60 years (n=96, 20.4%) and 15-20 years (n=83, 17.7%). Regarding the chronic disease that participants suffer, most of the participants had no chronic disease (n=334, 71.1%) followed by those with chronic disease (n=134, 28.9%). The majority of participants has no experience with cannabis (n=269, 57.2%) followed by those who had an experience with cannabis (n=201, 42.8%).

Thai citizens who participated revealed a moderate level of knowledge, with the average score of 6.55 (SD=2.95) out of 13. To be explicit, female participants demonstrate a higher level of knowledge (M= 6.63, SD=2.99) when compared to male and not prefer to say group. The participants who had an age range of 15-20 years have the most average score (M=7.18, SD=2.67) than other age groups. Considering participants who has a chronic disease performed better (M=6.80, SD=2.78) than non-chronic disease participants. Participants who had an experience with cannabis showed better results (M=6.82, SD=2.90) than those who had no experience with cannabis. Looking thoroughly towards the participants who had an experience with cannabis, considering the purposes for cannabis use, the majority had the main purpose of doing by friend recommendations (n=43, 21.29%) followed by alleviating insomnia (n=21, 10.40%), then relieving stress and anxiety (n=14, 6.93%), enhancing appetite (n=10, 4.95%), and others purposes (see Table II).

Table II
Different cannabis utilization purposes (n=202)

| Purposes for using cannabis | n | (%) |
|---|---|---|
| Friend recommendations | 44 | 21.78 |
| Insomnia alleviation | 21 | 10.40 |
| Relieving stress and insomnia | 13 | 6.44 |
| Improving appetite | 9 | 4.46 |
| Beauty purposes | 5 | 2.48 |
| 2 or more purposes | 110 | 55.46 |

The cannabis usage methods were observed to had used cannabis with both food, and beverages (n=42, 20.79%) the most then, cannabidiol oil extract (n=37, 18.32%), use cannabis with food only (n=26, 12.87%), and using cannabis with beverages only (n=21, 10.40%), and other more methods (see Table III).

Table III
Different methods for cannabis utilization (n=202)

| **Methods for using cannabis** | **n** | (%) |
|---|---|---|
| Used with food and beverages | 43 | 21.29 |
| Oil extract | 37 | 18.32 |
| Oil fragrance | 10 | 4.95 |
| Smoking | 8 | 3.96 |
| Massage oil | 9 | 3.96 |
| Beauty products | 4 | 1.98 |
| 2 or more methods | 91 | 45.05 |

Regarding the frequency usage, the majority had used cannabis rarely, less than once a week (n=129, 63.86%), then sometimes used about 1 to 2 times per weeks (n=58, 28.71%), after that, often used about 3 to 5 times per week (n=11, 5.45%), and almost every day (n=4, 1.98%) (see Table IV).

Table IV
The frequency of cannabis usage per week (n=202)

| Cannabis frequency usage | n | (%) |
|---|---|---|
| Rarely used (less than once a week) | 129 | 63.86 |
| Sometimes used (once or twice a week) | 58 | 28.71 |
| Often used (three to five times a week) | 11 | 5.45 |
| Almost every day (more than five times a week) | 4 | 1.98 |

The majority acquired cannabis (see from friends, and relatives (n=82, 40.59%), followed by restaurant and cafes (n=34, 16.83%), internet (n=25 ,12.38%) (see Table V).

Table V
Various sources for cannabis acquisition

| Sources of cannabis in Thailand | n | (%) |
|---|---|---|
| Close friend or relatives | 82 | 40.59 |
| Restaurant/cafes | 34 | 16.83 |
| Internet/social media | 25 | 12.38 |
| Medical clinics | 21 | 10.40 |
| Medical research center | 15 | 7.43 |
| Pharmacy | 12 | 5.94 |
| Hospital | 10 | 4.95 |
| Plant by themselves | 4 | 1.98 |

Regarding the attitude towards cannabidiol products, Table x showed that Thai participants had positive attitude with the average score at 8.82 (SD = 2.32) out of 12. Not prefer to say group has higher mean attitude scores (M=11.00, SD=1.73) than both males (M=9.27, SD=2.00) and females (M=8.45, SD=2.46). Considering the age group, 21-40 years age group held a higher attitude score (M=9.28, SD=2.17) than 15-20 years age group (M=9.07, SD=2.15), >60 years (M=8.67, SD=2.07), and 41-60 years old (M=8.48, SD=2.58). In terms of those with chronic disease, those have no chronic disease (M=8.83, SD=2.35) have a better attitude mean score than those who were diagnosed with chronic disease (M=8.80, SD=2.26). Discussing in those who had an experience with cannabis, it is evident that those who had an experience with cannabis (M=9.42, SD=1.86) got more attitude mean score than those who had no experience with cannabis (M=8.38, SD=2.53). The analysis of Pearson's Chi-square indicated that there is a significant relationship between gender and those who had an experience with cannabis and attitude towards cannabidiol products ($r<0.001$, $P<0.05$) (see Table VI).

| Socio-demographic characteristic | n (%) | Attitude towards cannabidiol products (Range 0-12) | | *P*-value |
|---|---|---|---|---|
| | | Mean | SD | |
| Gender | | | | < 0.001 |
| Male | 191 (40.6%) | 9.27 | 2.00 | |
| Female | 272 (57.9%) | 8.45 | 2.46 | |
| Not prefer to say | 7 (1.5%) | 11.00 | 1.73 | |
| Age | | | | 0.24 |
| 15-20 years | 82 (17.4%) | 9.07 | 2.15 | |
| 21-40 years | 117 (24.9%) | 9.28 | 2.17 | |

| | | | | |
|---|---|---|---|---|
| 41-60 years | 174 (37.0%) | 8.48 | 2.58 | |
| More than 60 years | 97 (20.6%) | 8.67 | 2.07 | |
| Diagnosed with chronic disease | | | | 0.906 |
| No | 334 (71.1%) | 8.83 | 2.35 | |
| Yes | 136 (28.9%) | 8.80 | 2.26 | |
| Have an experience with cannabis | | | | < 0.001 |
| No | 269 (57.2%) | 8.38 | 2.53 | |
| Yes | 201 (42.8%) | 9.42 | 1.86 | |

**Discussions**

A total of 470 participants, most participants were female (n=272, 57.9%), have an age range between 41-60 years (n=174, 37.0%), not diagnosed with chronic diseases (n=334, 71.1%), and have no experiences with cannabis (n=201, 42.8%). The mean knowledge of the participants was 6.55 out of 13 questions (SD=2.95), indicating that they had a moderate knowledge level towards cannabis. In addition, the attitude level demonstrated that the majority have a positive view towards cannabidiol products with the mean score of 8.82 out of 12 (SD=2.32). Focusing on the knowledge towards cannabis, the results showed no correlation between socio-demographic factors, and knowledge about cannabis. However, one of the research assessing students on cannabis knowledge found out that medical students, and non-medical students such as pharmacology students who participated in the survey had shown some knowledge level that is quite different. While the majority of medical students correctly stated that glaucoma is an indication of medical cannabis, most of non-medical students answered correctly on depression, and attention deficit hyperactivity disorder or ADHD that cannabis have a tendency to alleviate. In addition, this research suggested that this uncertainty might be caused by a lack of formal education in the university [10]. Furthermore, another research conducted in the United States had demonstrated that most pharmacists have knowledge of medical cannabis regarding on the sources of cannabis but serious concerns arises when the knowledge level was assessed further, only 10% of the pharmacist had a professional knowledge on medical cannabis. This result was clearly explained by the interaction between pharmacists and their patients. Thus, more interaction and discussion on medical cannabis with patients has a contribution to a higher knowledge level [8]. Therefore, socio-demographics factors had no correlation with the knowledge level but the background knowledge of the individuals, as well as responsibility, especially in those who is involved in medical field might have a significant effect.

While the attitude towards cannabidiol products, the study has demonstrated a significant relationship between on gender ($P<0.001$), and experiences with cannabis ($P<0.001$) towards the cannabidiol products attitude. One of the cross-sectional surveys in Washington State demonstrated that gender has impact cannabis products attitude, men and women who had an experience with cannabis for not longer than 90 days are observed to have utilized cannabis in various forms. In addition, men had a tendency to report the benefits of cannabis usage in increasing appetite, memory improvement, and enthusiasm [9].

Another research conducted in Lebanon showed that the majority of Lebanese pharmacists who had an experience with cannabis through customers, and university lectures assured that the benefits would outweigh the risks that cannabis poses [10]. From these findings, this may suggest the reason why gender and cannabis experiences had a significant impact on attitude towards cannabidiol products due to the benefits that cannabis provides. The focus of the study population consists of many groups. As a result, assessing the knowledge, and the attitudes are made to moderate level of difficulty. The strength of this study is that it uses Google forms to collect information, and results which is convenient. However, the paper questionnaire is made as an adjunct to an online questionnaire has to be made as a result of the technological barrier among some groups of study, especially elderly participants. Therefore, with both types of questionnaire platforms provides flexibility, which allows survey respondents to participate in this survey.

## Conclusion

This study revealed that Thai citizens have a moderate level of knowledge about background knowledge, symptoms associated, and specific information regarding cannabis utilization. The attitude of Thai citizens towards cannabidiol products were found to held a positive view. In addition, the results indicates that there is a positive relationship between the knowledge about cannabis, and attitude towards cannabidiol products among individuals who have an experienced with cannabis. Therefore, government as well as medicinal divisions, and organizations should provide more knowledge and application of cannabis. As this would yield a higher level of cannabis knowledge, and a positive perspective towards cannabidiol products.

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