

การวิจัยการใช้กัญชาทางการแพทย์และกัญชาทางการแพทย์แผนไทยระดับเขตสุขภาพที่ 4 Medical Cannabis Use in the Health Region 4 of Thailand

นิพนธ์ต้นฉบับ

Original Article

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กลุ่มงานแพทย์แผนไทยและการแพทย์ทางเลือก สำนักงานสาธารณสุขจังหวัดสระบุรี อ.เมือง จ.สระบุรี 18000

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วารสารไทยเภสัชศาสตร์และวิทยาการสุขภาพ 2565; 17(3):296-307.

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บทคัดย่อ

วัตถุประสงค์: เพื่อพัฒนาและประเมินผลการจัดบริการคลินิกกัญชาทางการแพทย์ตามหลักการวิจัยแบบมีส่วนร่วม (participatory action research; PAR) **วิธีการศึกษา:** ศึกษาในโรงพยาบาลของรัฐทั้งโรงพยาบาลทั่วไปและโรงพยาบาลชุมชนใน 8 จังหวัดในเขตสุขภาพที่ 4 ในช่วงสิงหาคม 2562 ถึงสิงหาคม 2563 โดยศึกษาเกี่ยวกับปัจจัยเอื้อและรั้งต่อการสั่งใช้ยา กัญชาทำในบุคลากร 140 คนในเขตสุขภาพที่ 4 ส่วนความเห็นต่อการสร้างแนวทางคลินิกกัญชาใหม่ในบุคลากร 30 คนที่เป็นคณะกรรมการพัฒนาคลินิกกัญชาของ จ.สระบุรี ดำเนินการพัฒนาแนวทางการจัดบริการคลินิกกัญชาตาม PAR คือวางแผน ดำเนินการ สังเกต และสะท้อน **ผลการศึกษา:** จากทั้งหมด 71 โรงพยาบาลในเขต 4 มีโรงพยาบาลที่มีคลินิกกัญชาจาก 8.70% ในปี 2562 (กันยายนถึงธันวาคม 2562) เพิ่มขึ้นเป็น 32.39% ในปี 2563 (มกราคม - เมษายน 2563) ส่วนสัดส่วนคนไข้ที่ได้รับการสั่งยา กัญชาเพิ่มจาก 23.75% เป็น 78.47% ส่วนใน จ.สระบุรี ซึ่งเป็นจังหวัดที่ผู้วิจัยได้สร้างแนวทางคลินิกกัญชาพบว่าเดิมมีโรงพยาบาล 3 แห่งที่มีคลินิกกัญชาในช่วงมกราคมถึงเมษายน 2563 (ซึ่งการทดลองแนวทางใหม่ในเดือนมีนาคมถึงเมษายน 2563) แล้วเพิ่มเป็นครบ 12 แห่งในช่วงสังเกต (หรือประเมิน) (พฤษภาคมถึงสิงหาคม 2563) และสัดส่วนคนไข้ที่ได้รับการสั่งยา กัญชาเพิ่มจาก 68.84% เป็น 84.81% แต่มีการสั่งใช้ 6 ใน 20 ผลิตภัณฑ์ยา กัญชา สำหรับ 5 ใน 11 กลุ่มอาการ ปัจจัยเอื้อการสั่งใช้ กัญชา 3 อันดับแรก คือ สั่งใช้ตามนโยบาย ผู้ป่วยเรียกหา และยาได้รับการสนับสนุน ส่วนปัจจัยรั้ง 3 อันดับแรก ได้แก่ รูปแบบการจัดบริการที่ไม่เอื้อ ผู้สั่งใช้ยาไม่มีข้อมูล และผู้สั่งใช้ยาไม่มั่นใจประสิทธิภาพ ความพึงพอใจหลังนำแนวทางคลินิกใหม่มาใช้ค่อนข้างสูง (ค่าเฉลี่ย 4.37 จาก 5 คะแนน) **สรุป:** แนวทางบริการคลินิกกัญชาใหม่ทำให้มีสัดส่วนคนไข้ที่ได้รับการสั่งใช้ยา กัญชามากขึ้น ควรปรับปรุงแนวทางบริการให้สะดวกต่อผู้ให้บริการมากขึ้นและให้ข้อมูลด้านประสิทธิภาพและความปลอดภัยของยา กัญชาแก่ผู้สั่งใช้มากขึ้น เพื่อให้มั่นใจในการสั่งใช้ยา กัญชามากขึ้น

คำสำคัญ: คลินิกกัญชาทางการแพทย์, การสร้างแนวทางการจัดบริการคลินิกกัญชา, การวิจัยแบบมีส่วนร่วม, การสั่งใช้ยา กัญชา, ปัจจัยเอื้อและปัจจัยรั้ง, เขตสุขภาพที่ 4, จังหวัดสระบุรี

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Abstract

Objective: To develop and test the new guideline for cannabis clinic as guided by participatory action research (PAR). **Method:** The study was conducted in all 71 public hospitals in 8 provinces in the Health Region 4 of Thailand from August 2019 to August 2020. Promoting and inhibiting factors for cannabis prescribing were studied in 140 healthcare providers in the Health Region 4; while opinions on developing the new cannabis clinic guideline were obtained from 30 members of the committee for medical cannabis use of Saraburi province. The process guided by PAR (i.e., plan, action, observation, and reflection) was conducted. **Results:** Of the 71 hospitals in the Health Region 4, 8.70% and 32.39% of them had cannabis clinic in 2019 (September to December 2019) and 2020 (January to April 2020), respectively. Proportions of patients prescribed with cannabis products increased from 23.75% to 78.47%. In Saraburi province where cannabis clinic guideline was developed and intensively implemented, 3 hospitals had cannabis clinic in January to April 2020 (with the implementation from March to April 2020), then all 12 hospitals did so in observation or evaluation period (May to August 2020). Proportions of patients prescribed with cannabis products increased from 68.84% to 84.81%. Only 6 of 20 approved products and 5 of 11 illnesses approved for cannabis use were prescribed. The 3 most found promoting factors included prescribing as mandated by policy, as requested by patients, and as supported by the government; the 3 most found prohibiting factors were impractice service format, inadequate information for prescribers, and low confidence in products efficacy. Satisfaction toward the new clinic guideline was at a high level (mean = 4.37 out of 5 points). **Conclusion:** The new cannabis clinic guideline increased the proportions of patients prescribed with cannabis products. More practical guidance and information of efficacy and safety of the products could further enhance the prescribers' confidence.

Keywords: medical cannabis clinic, development of cannabis clinic guideline, participatory action research, cannabis prescribing, promoting and inhibiting factors, Health Region 4, Saraburi province

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Introduction

Cannabis is an herb which has been used in traditional medicine worldwide including Thailand. After joining the United Nations Convention on Narcotic Drugs, Thailand repealed the laws in the Narcotics Act BE 2522 (or 1979 AD) which identified cannabis as a schedule 5 narcotic agent. The

new Narcotics Act was passed on February 18, 2019.^{1,2} This new bill allows for access to cannabis for individuals with the need equally and fairly.^{3,4} Based on the policy of the Ministry of Public Health (MoPH), individuals are allowed the access to cannabis and other herbs for safe medical use and

economic opportunity to generate the public income. The MoPH developed the Medical Cannabis Service Plan which initiated the Medical Cannabis Clinic for pilot complementary and Thai traditional medicine practice in 26 hospitals nationwide in the fiscal year 2019.⁵ Of the 26 pilot hospitals, medical cannabis is used in 13 modern medical clinic and Thai traditional medicine clinics equally. At present, the Medical Cannabis Service Plan policy aims at having a cannabis clinic in each of all medical centers, general hospitals (or provincial hospitals), and community hospitals (or district-level hospitals) nationwide, but not sub-district health-promoting hospitals.

All 13 Health Regions in Thailand are expected to adopt the Cannabis Service Plan policy. The Health Region 4, which is in the central part of Thailand, consists of provinces of Saraburi, Nonthaburi, Lopburi, Angthong, Nakhonnayok, Singburi, Ayudthaya, and Pathumthani. In the Health Region 4, two public hospitals in Saraburi province have piloted medical cannabis clinics according to the Medical Cannabis Service Plan policy. However, after providing the service for 6 months, the number of patients receiving the service has been relatively low, i.e., 40 patients seeing the prescribers but only 9 of them were prescribed with cannabis products (22.5%). The performance of all hospitals in the Health Region 4 including Saraburi province has not met the goal according to the Medical Cannabis Service Plan policy. For example, at each hospital, there must be at least incremental 5% of patients receive the service from cannabis clinic annually. For each health region, at least 50% of hospitals must provide cannabis clinic. In the Health Region 4, only two hospitals in Saraburi province have provided service of cannabis clinic (2.81%). In addition, it has been anecdote concerns from practicing physicians including inadequate confidence on safety and efficacy of cannabis products and complicate steps of the service. This could be in part due to a relatively broad guideline on cannabis clinic from the MoPH on guidance on diagnosis and monitoring for cannabis use. As a result, reluctance to provide service in medical cannabis clinic could be expected. Therefore, there is an urgent need for medical cannabis guideline or even protocol specific to different healthcare context which could include demographic and clinical characteristics of the patients under the service in the geographical area and specialties of physicians providing the care in the area. With all concerns mentioned above, there is a need to understand the problems of cannabis clinic and identify solutions to better the clinic service.

In testing the new guideline or protocol for cannabis clinic, the ongoing reflective development should better be incorporated in the research process. Information from all stakeholders should be obtained and used in the development start and feedback for further improvement. The participatory action research (PAR) could serve such purpose.⁶ This present study was guided by the principle of PAR.

This study aimed to develop and test the new guideline for cannabis use at the cannabis clinic in public provincial hospitals (or general hospitals) and community hospitals (or district-level hospitals) in eight provinces of the Health Region 4 of Thailand as guided by the PAR concept.⁶ Situations especially obstacles were identified. The study also aimed to determine the factors promoting and inhibiting prescribing cannabis in healthcare providers in all public hospitals in all 8 provinces of the Health Region 4 involving in cannabis clinic development. The number of patients attending cannabis clinics and proportion of patients prescribed with cannabis products before and after the implementation of the new cannabis clinic guideline were compared. Satisfaction on the new cannabis clinic guideline was also examined. The findings could be useful in further improving cannabis clinics in the Health Region 4 and in other public hospitals nationwide.

Methods

This participatory action research was guided by the concept of PAR of Kemmis and McTaggart.⁶ The study was conducted in public provincial and community hospitals from eight provinces of the Health Region 4 of Thailand from August 2019 to August 2020. Participants included three groups of healthcare providers. The **first group** consisted of 140 healthcare providers (i.e., physicians, pharmacists, Thai traditional medicine practitioners, and nurses) working in cannabis clinics in 71 community and provincial hospitals in eight provinces of the Health Region 4. They had to work in the hospital at least one year or have the training of cannabis use. They were also had to be willing to participate in the study. Based on the Medical Cannabis Service Plan policy, physicians, pharmacists, nurses, and Thai traditional medicine practitioners trained and registered with cannabis clinic were allowed to prescribe cannabis products for patients. In this study, personnel in cannabis clinic with no direct prescribing authority were excluded.

For the **second group**, 30 informants for a brainstorming session were members of the health service development committee for medical cannabis use of Saraburi province. Among these 30 committee members, half of them were cannabis prescribers. The **third group** consisted of 30 healthcare providers (physicians, pharmacists, nurses, and Thai traditional medicine practitioners) working in hospitals in Saraburi province for the in-depth interview. All of them were authorized as cannabis prescribers. All participants in the three groups were selected by purposive sampling technique.

Research procedures

The procedure was divided into 4 phases. The concept of planning, action, observation, and reflection of Kemmis and McTaggart's PAR was incorporated into these 4 phases. The duration of phase 1 was October 1, 2019, to January 31, 2020, while that of phase 2 (developing the new guideline) was February 2020. Phase 3 (implementing the new guideline) was from March 1 to April 30, 2020, while phase 4 (evaluating the new guideline) was from May 1 to August 31, 2020.

In the **first phase**, from October 1, 2019, to January 31, 2020, 140 healthcare providers in 71 public community and provincial hospitals from eight provinces of the Health Region 4 were asked to complete the self-administered questionnaire on factors promoting and inhibiting setting cannabis clinic and prescribing cannabis.

In addition, the researcher identified the number of cannabis clinics in all provincial and community hospitals in the Health Region 4. Based on medical record data, the number of patients receiving care at the cannabis clinic from March to April 2020, and the number of patients prescribed with cannabis were identified. This short duration before the development of the new guideline for cannabis use was due to the proactive concern of Saraburi Hospital which acted as the secretary of the coordinative committee of the Health Region 4.

The data collection was done by three research assistants who were workers in the Thai Traditional Medicine Department of Saraburi Health Administration Office. These assistants were trained by the researcher on study objectives, questions, and steps of data collection. The questionnaire was distributed through (1) the regular meeting at the Saraburi Provincial Health Administration Office and (2) at the follow-up visits at cannabis clinic of each hospital.

The **second phase** involved developing the new guideline for cannabis clinic services. This second step took one month to complete (February 2020). First, the policy to promote cannabis clinic at the provincial level of Saraburi was established. The provincial committee was appointed and its planning and monthly evaluation on the progress were scheduled. The researcher was one of the Saraburi provincial committee members. As appointed by the committee, the researcher drafted the guideline by examining related documents, guideline and manual of cannabis clinic.⁷ The clinic service included structures and processes, or what and how to do, from registering individual patients at each visit, to laboratory investigation, meeting the prescribers for diagnosis and prescriptions, to receiving cannabis products. Clinic structure also included resource and budget allocation whether shared or separate physical space from other clinics and task force independent or dependent from other clinics or departments. For drug distribution system, it included, for example, whether the cannabis product should be dispensed at the clinic or the pharmacy department. For physicians and other practitioners who were authorized to prescribe cannabis, or cannabis prescribers, the issues included diagnostics and monitoring steps for the prescribers to follow.

The draft was presented to the three experts in medical cannabis use for recommendations for cannabis clinic setting and promotion. The researcher conducted the discussion with a researcher assistant to take note. Discussion issues included problems and barriers influencing prescribing cannabis and service format and step of the preferable cannabis clinic. The discussion took two hours to complete. Recommendations were used for revising the drafted guideline. After revision by the researcher, the revised guideline was further presented for a brainstorming with 30 members of the health service development committee for medical cannabis use of Saraburi province. The session took one day. Provided with the information of situations of cannabis clinic, policy and survey results, the discussion was to shape the service measures, structure, and process. Participants in the brainstorming session shared opinions, experiences, needs, concerns, and possible solutions, directions, and target indicators as guided by the Planning step of the PAR concept of Kemmis and McTaggart.⁶

With the agreement, it was determined that the researcher and 30 members of the health service development committee for medical cannabis use of Saraburi province were expected

to promote the policy and knowledge and confidence among all cannabis prescribers in the Health Region 4 in the third phase. In this second phase, the distribution management of cannabis products was determined and expected to be followed up and monitored in the next phase. Plan for promoting cannabis use and continuous following up and monitoring by the researcher and the 30 members of the health service development committee for medical cannabis use of Saraburi province for all hospitals in Saraburi province in the next phase was made.

In the **third phase**, the new cannabis clinic guideline was implemented and tested for its effectiveness in 12 clinics in 12 hospitals in Saraburi province (1 provincial and 11 community hospitals). The implementation took 2 months from March 1 to April 30, 2020. This phase was guided by the Action step of the PAR concept of Kemmis and McTaggart.⁶ The researcher and 30 members of the health service development committee for medical cannabis use of Saraburi province carried out public relation activities to promote the policy and knowledge and confidence among all providers with cannabis prescribing authority in the Health Region 4. The provision to promote understanding the new cannabis use guideline was carried out. Academic conferences and knowledge management and sharing between cannabis clinics to enhance understanding prescribing and monitoring cannabis use were held. Distribution of cannabis products was followed up and monitored. This included reports of adverse events associated with cannabis use, referrals of patients with such cannabis related adverse events as guided in the guideline, prescribing pattern such as less than two weeks of cannabis supply which was inconsistent with the criterion of the supply of at least of two weeks for the patient with first time cannabis prescription. For cannabis products distribution management, up-to-date recorded balance of the number of products received and prescribed were monitored and advised.

In addition, in conducting this PAR-based research, the researcher continuously feedbacked the results to all 30 members of the health service development committee for medical cannabis use of Saraburi province through LINE™ application throughout the whole PAR process. The 30 members were informed about the progress of the research so the continuity of the research could be maintained. This conduct was guided by the Reflection step of the PAR concept of Kemmis and McTaggart.⁶

In the **fourth phase**, the evaluation on performance of cannabis clinic as guided by the guideline took place in 12 hospitals in Saraburi as mentioned in the third phase. This phase 4 was from May 1 to August 31, 2020. This phase was guided by the Observation step of the PAR concept of Kemmis and McTaggart.⁶ The actual service of the clinic at each hospital was observed by the researcher using non-participatory observation method. The actual service could be, for example, based on criteria in the new guideline, the researcher inspected whether there were any reports of adverse events associated with cannabis use, if any, and whether there were any referrals of patients with such cannabis related adverse events as guided in the guideline.

In addition, the researcher looked for prescribing pattern such as less than two weeks of cannabis supply which was inconsistent with the criterion of the supply of at least of two weeks for the patient with the first-time cannabis prescription. For cannabis products distribution, the researcher also looked for up-to-date recorded balance of the number of products received and prescribed.

In addition to the non-participatory observation, in-depth interview with five purposively selected healthcare providers at the clinic were also done by the researcher. Opinions on the new guideline were requested. For example, difficulties or troubles faced using the new guideline such as how easy to follow, any steps requiring improvement, or any contents inadequate. For example, how the routine laboratory works for all patients attending cannabis clinics affected the flow of care. These works included complete blood count (CBC), kidney function tests (i.e., blood urea nitrogen (BUN), and serum creatinine (SCr)), and liver function tests (i.e., aspartate transaminase (AST) and alanine aminotransferase (ALT)).

It was crucial to note that this information obtained was proposed for the second cycle of participatory action of development. However, with a time-constraint problem, this study did not take the second cycle. Finally, 30 members of the health service development committee for medical cannabis use of Saraburi province were asked about satisfaction toward cannabis clinic development using a self-administered questionnaire.

Research instruments

Five instruments were developed based on informants and literature and previous research. All instruments were

examined for content validity by three experts. Their comments were used for content revision.

The **first tool** was the questionnaire on factors promoting and inhibiting prescribing cannabis was developed based on information obtained from literature and eight staff members from two hospitals in Saraburi province providing cannabis clinic service, one provincial hospital and one community hospital. The drafted questions were examined for content validity and language by five experts on medical cannabis use, i.e., a pharmacist who was the head of the Thai Traditional Medicine Department of Saraburi Provincial Health Administration Office, three prescribers responsible for cannabis clinic at Saraburi Hospital, and a pharmacist responsible for cannabis clinic from a community hospital. After revision, the questionnaire consisted of two parts. The first part asked about factors promoting and inhibiting prescribing cannabis (10 items); while the second part asked about problems of and barriers to prescribing cannabis (10 items). The response was a 5-point Likert-type scale ranging from 1-totally disagree to 5-totally agree. This self-administered questionnaire was applied in the first phase of the study.

The **second tool** was a meeting record used in the study second phase of developing the new guideline for cannabis clinic services. This meeting consisted of pre-defined topics for discussions namely structure and process of cannabis clinic, responsibilities of each worker in the clinic, personnel and resource allocation, time schedules of the clinic, clinic preparations, cannabis products distribution management, and further guidance for the cannabis clinic development.

The **third tool** was the observation form which was used in the non-participatory observation in the fourth phase. The topics in the form included reports of adverse events associated with cannabis use, referrals of patients with such cannabis related adverse events as guided in the new guideline. Other topics included prescribing pattern such as less than two weeks of cannabis supply which was inconsistent with the criterion of the supply of at least of two weeks for the patient with first time cannabis prescription. The topic of up-to-date recorded balance of the number of products received and prescribed was also in the observation form. For informal in-depth interview, this observation form included the topic of difficulties or troubles faced using the new guideline such as how easy to follow, any steps needing improvement, or any contents inadequate.

The **fourth tool** was the questionnaire on satisfaction after implementing the new guideline of cannabis clinic developed by the researcher. The content of the questionnaire was based on the previous research. Ten questions asked about, for example, difficulties in managing cannabis clinic according to the new guideline, how much the new guideline served the cannabis clinic purpose, benefits gained, and cost-benefit worthiness. The response was a 5-point rating scale ranging from 1-least satisfied to 5-most satisfied. With the standardized score of 1 – 5 points, satisfaction was categorized as lowest, low, moderate, high, and highest levels (1.00 - 1.50, 1.51 - 2.50, 2.51 - 3.50, 3.51 - 4.50, and 4.51 - 5.00 points, respectively).⁷ The questionnaire was tested for content validity by three experts, specifically one expert from the Department of Thai Traditional Medicine of the MoPH, and two experts in cannabis use in the hospitals. The questionnaire was found to have an acceptable content validity with a content validity index of 0.83. The internal consistency reliability was tested in 30 individuals with characteristics comparable to the prospective participants. The questionnaire was found to have an acceptable reliability with a Cronbach's alpha coefficient of 0.75.

The **fifth tool** was the form to extract the data on performance of all cannabis clinics in Saraburi province from the nationwide C-MORPH report. The form collected the data of structures and process of all cannabis clinics, signs/symptoms leading to the cannabis clinic service, and adverse events of cannabis products prescribed.

Based on the 20 cannabis products that were approved⁸, the number and respective percentage of cannabis products actually prescribed were determined. In addition, of the 11 groups of illnesses of the conventional and Thai traditional medicine practice that were allowed for cannabis prescription⁸, the number and respective percentage of illnesses leading to cannabis prescription were determined.

The number of patients attending cannabis clinics and being prescribed with cannabis products

To compare performance of cannabis clinics in Saraburi province, certain outcomes before and after implementing the new cannabis clinic guideline were compared using data from the nationwide database called C-MORPH report of the MoPH. From the C-MORPH report, the researcher extracted the information of structures and process of each cannabis

clinic in each hospital in Saraburi province, and in each of all clinics in other provinces in the Health Region 4. Data of signs/symptoms leading to the cannabis clinic service, and adverse events of cannabis products prescribed were also extracted. The data from September, 2019, to August, 2020 were extracted to reflect the performance before and after implementing the new guideline.

We compared performance of cannabis clinics in all hospitals in 8 provinces in the Health Region 4. The numbers of cannabis clinics, patients receiving care at the clinic, and patients prescribed with cannabis in each province and all provinces combined in the year 2019 (September 1 – December 31, 2019) and 2020 (January 1 – April 30, 2020) was compared. This period of January 1 – April 30, 2020, could cover the two-month implementation period (March 1 to April 30, 2020).

At the Saraburi province level with the intensive implementation of the new cannabis clinic guideline, the numbers of cannabis clinics, patients receiving care at the clinic, and patients prescribed with cannabis between two period (i.e., before-evaluation and evaluation periods) were compared. The before-evaluation period of January 1 to April 30, 2020, included the pre-implementation period (January 1 to February 29, 2020) and two-month implementation period (March 1 to April 30, 2020); while May 1 to August 31, 2020, was the evaluation period.

Participant ethical protections

This study was approved by the Ethics Committee for Human Research of Saraburi Provincial Health Administration Office (approval number: 004/2562). All prospective participants were informed about the research project's objectives and process.

Data analysis

Descriptive statistics including mean with standard deviation (SD) and frequency with percentage were used to summarize all quantitative variables. For qualitative data, keywords and issues were identified. These entities were linked to make rationales and grouped to make distinctive themes. All information was inspected at all steps for correctness for reliable themes and conclusions. Interpretation of the information was tested. Information grouped and summarized from data was compared. Information from different sources, i.e., discussion, in-depth interview,

observation, and quantitative measures were compared for similarity and discrepancy. Once discrepancy was found, all sources of such data were re-checked to reconcile the issue.

Results

The situation of cannabis clinic service in the Health Region 4 of Thailand

In this PAR, the new guideline of cannabis clinic had been implemented in March and April 2020. Before implementing the new cannabis clinic guideline (September 1 to December 31, 2019), out of the 71 hospitals in eight provinces of the Health Region 4, there were only two cannabis clinics in the Health Region 4 (8.70%), both of which were two hospitals in Saraburi province (i.e., Saraburi General Hospital and Saohai Community Hospital) (Table 1). From January 1 to April 30, 2020, the number of cannabis clinics was 23 out of 71 hospitals in the Health Region 4 (32.39%). Of these 23 hospitals, most of them were in Saraburi province (12 hospitals). In all eight provinces of the Health Region 4, a total of 19 of 80 patients visiting the cannabis clinic (or 23.75%) from September 1 to December 31, 2019, were prescribed with cannabis products; while the number increased to 707 of 901 patients (or 78.47%) in 2020 (January 1 to April 30, 2020).

From January 1 to April 30, 2020, cannabis products prescribed in all provinces in the Health Region 4 both for conventional medicine and Thai traditional medicine were Yathumlaiprasumen (2,289 packs), Yasuksaiyart (2,094 packs), tetrahydrocannabinol (THC) oil (462 bottles), tetrahydrocannabinol and tetrahydrocannabinol oil (48 bottles), Yakaelomkaesen (363 packs), and Mordecha oil (28 bottles). Of the 20 cannabis products that were approved⁸, only 6 of them were prescribed (30.0%). Of the 11 groups of illnesses of the conventional and Thai traditional medicine practice that were allowed for cannabis prescription⁸, only 5 illnesses were prescribed with cannabis products including insomnia (60.0% of the patients), terminal cancer (27.0%), palliative care (8.0%), Parkinson's disease (3.0%), and stress (2.0%). There were 57 adverse events of 724 prescriptions (7.87%). With no severe adverse events, most reported events were dry mouth and dizziness.

Table 1 Number of cannabis clinics and patients prescribed with cannabis in provinces in the Health Region 4 by the year 2019 (September 1 – December 31, 2019) and 2020 (January 1 – April 30, 2020).*

Province	No. of cannabis clinics by province and year	No. of patients receiving care at cannabis clinic	No. of patients prescribed with cannabis	% of patients prescribed with cannabis
Saraburi				
2019	2	80	19	23.75
2020	12	382	263	68.84
Nonthaburi				
2019	0	0	0	0
2020	1	189	187	98.94
Pathumthani				
2019	0	0	0	0
2020	1	33	27	81.82
Ayudthaya				
2019	0	0	0	0
2020	4	197	168	85.27
Angthong				
2019	0	0	0	0
2020	1	32	12	37.50
Lopburi				
2019	0	0	0	0
2020	2	11	6	54.54
Singburi				
2019	0	0	0	0
2020	1	23	17	73.91
Nakhonnayok				
2019	0	0	0	0
2020	1	34	27	79.41
Total				
2019	2/71	80	19	23.75
2020	23/71	901	707	78.47

* January 1 – April 30, 2020, included the implementation period of March and April 2020.

Factors promoting and inhibiting prescribing cannabis

Of the 140 respondents to the questionnaire, the three highest-ranked promoting factors were prescribing policy mandate, being requested by patients, and being supplied by cannabis products free of charge (4.20, 3.59, and 3.28 out of 5 points, respectively). Three inhibiting factors with the highest rank were being discouraged by service management of cannabis clinic, prescribers having inadequate information to prescribe, and prescribers having low confidence in doses and therapeutic effects of cannabis products (4.32, 3.28, and 3.15 out of 5 points, respectively) (Table 2).

For the actual situation of cannabis clinic in the Health Region 4, problems and shortcomings relating to structure and process existed (Table 3). Uncertainty about structure and process of the cannabis clinic existed and needed more clarification. There was still an ongoing need for training cannabis prescribers because of a high turn-over rate of workforce. There was certain inconvenience in cannabis products distribution, namely the return and exchange of the products among hospitals. Only return and exchange with the authorized agencies were allowed (Table 3).

Table 2 Opinions on factors promoting and inhibiting cannabis prescribing (N = 140).

Factors	Mean*	SD
Promoting factors		
1. Prescribing as mandated by the policy.	4.20	0.45
2. Being requested by patients.	3.59	0.57
3. Being supplied by cannabis products free of charge.	3.28	0.47
4. Trusting in efficacy and safety of cannabis products.	3.13	0.57
5. Prescribing cannabis products complementary to conventional medicine to enhance therapeutic effects.	3.12	0.55
6. Prescribing cannabis products as an alternative for conventional drugs not listed in the hospital formulary.	3.05	0.49
7. Saving some hospital budget with cannabis products supply free of charge.	3.04	0.65
8. Prescribing as influenced by societal preference.	2.86	0.46
9. Being confident that cannabis products are safer than conventional drugs.	2.81	0.66
10. Comparing efficacy of cannabis products with conventional drugs.	2.13	0.45
Inhibiting factors		
1. Being discouraged by service management of cannabis clinic.	4.32	0.48
2. Prescribers having inadequate information to prescribe.	3.28	0.52
3. Prescribers having low confidence in doses and therapeutic effects of cannabis products	3.15	0.45
4. Prescribers having inadequate knowledge about cannabis products or to prescribe the products safely and effectively.	3.12	0.65
5. Prescribing system for cannabis complicate and troublesome.	3.09	0.42
6. Encountering adverse effects of cannabis products.	3.05	0.80
7. Patients having difficulties using and keeping cannabis products.	3.04	0.40
8. Being worried patients will not trust in cannabis products.	2.97	0.42
9. Having difficulties procuring cannabis products.	2.82	0.49
10. Complicate report system.	2.17	0.42

* Score range: 1-totally disagree, to 5-totally agree.

Table 3 Situation of cannabis clinic in the Health Region 4.

Structure and process	Cannabis clinic for conventional medicine	Cannabis clinic for Thai traditional medicine
Structure	Cannabis clinics were usually set up at the out-patient department. The clinics were guided and monitored by the committee consisting of 1 – 2 physicians, a pharmacist, a nurse, a Thai traditional medicine practitioner, and a laboratory technician. For hospitals unable to set the cannabis clinic, they were uncertain about structure and process of the clinic.	
Cannabis prescriber preparation	To prepare the taskforce, assigned providers, i.e., physicians, practitioners in Thai traditional medicine and applied Thai traditional medicine, and pharmacists, were trained to be cannabis prescribers in cannabis clinic training course.	
Service offered and time schedule	The clinic could be scheduled for 1 to 2 days per week, depending on the number of patients. At the early state, most cannabis clinics in general hospitals offered consultation on cannabis use, not cannabis prescription. Community hospitals offered cannabis clinic. However, in the early state of service, public relation was inadequate.	
Management of cannabis products	With no additional budget for cannabis products, some budget for conventional drugs was allocated to procure cannabis products. As narcotics, cannabis products were not allowed for exchange between hospitals. Only return and exchange of cannabis products between hospitals and supply agencies were allowed. These supply agencies were the Department of Thai Traditional Medicine and certified manufacturers (i.e., hospitals producing cannabis products).	Cannabis products for Thai traditional medicine were supplied from the Department of Thai Traditional Medicine and from hospitals producing cannabis products. However, cannabis products were not allowed for exchange between hospitals since they were narcotic drugs. Return and exchange of cannabis products between hospitals and the Department of Thai Traditional Medicine were allowed.
Management of personnel	With a relatively high turn-over rate of personnel providing conventional medicine, there was a shortage of certified cannabis prescribers. Training for the new prescribers was always needed.	With a relatively limited number of personnel providing traditional medicine who were certified cannabis prescribers, training for the new prescribers was still needed. Training for management of cannabis products was also needed.
Management of service	The service was multidisciplinary oriented. Laboratory investigations were mandatory for the first cannabis clinic visit which could be more costly and delay the care.	
Clinic setting	Cannabis use in conventional medicine practice.	Cannabis use in Thai traditional medicine practice.
Cannabis products storage	Products stored and controlled for access by pharmacy department with the same strict rules as narcotic drugs.	
Report and monitoring of adverse events	Adverse events related to cannabis products were recorded and reported by pharmacist at the cannabis clinic.	

The development of the new medical cannabis clinic guideline

In phase 2, i.e., development of the new guideline, was February 2020. The development of cannabis clinic in Saraburi province was based on the research on the access to cannabis clinic by Inthapiboon and colleagues⁹ which revealed that success factors were participations in thinking and developing the service, reflecting and sharing of problems and obstacles, and correcting wrongdoings. Based on the PAR of Kemmis & McTaggart (1988)⁶, the development of the new cannabis clinic guideline and its implementation was successful.

In this development of the new cannabis clinic guideline in Saraburi province, all steps were completed as follows. The policy to promote cannabis clinic at the provincial level was established. The committee was set and its monthly evaluation was scheduled. As assigned by the committee, the researcher developed the guideline based on all stakeholders successfully. Cannabis prescribers were provided with necessary information. Academic conferences were successfully held and prescribers were more confident to prescribe the products. Sharing experiences among cannabis clinics also helped enhance the confidence.

In terms of the service system management, it included the system to monitor the safety of cannabis use, referral system for adverse events, and product distribution system. The information regarding these systems was used to determine precise steps for prescribers to follow. In addition, the Saraburi Provincial Office of Public Health Administration agreed to provide channels including LINE™ application and Saraburi cannabis clinic for prescribers in other cannabis clinics to contact for consultation. The topics of consultation could range from how to initiate a cannabis clinic, how to obtain permission to open the clinic, how to improve the clinic service, how to attend training, how to prescribe cannabis products, and how to request for cannabis product support.

In monitoring the progress of implementing the new cannabis clinic guideline, regular follow-ups were successfully carried out. Results with problems were used in the monthly committee meeting. Evaluations and recommendations to further solve problems or improve the service were made and disseminated to the clinics.

Situation after implementing the new cannabis clinic guideline

Non-participatory observation revealed that after two months since the start of the new cannabis clinic guideline implementation (March 1, 2020) in Saraburi province, cannabis prescribers followed the guideline in prescribing the products, monitoring adverse events, referring patients with adverse events, and managing products distribution. With the prescriptions, information on indications of and how to take the cannabis was given to the patients as guided by the new guideline. All steps of cannabis clinic services were followed by prescribers. The in-depth interview also revealed that prescribers were concerned about how to follow steps guided by the new cannabis clinic guideline.

In 3 cannabis clinics in Saraburi province, there were 382 patients receiving care at the cannabis clinics before and during the new guideline implementation (January 1 – April 30, 2020) which included the implementation period in Saraburi province (March 1 to April 30, 2020) (Table 4). A relatively low proportion of patients was prescribed with cannabis products (263 patients or 68.84%). During the evaluation period (May 1 – August 31, 2020), all 12 hospitals in Saraburi province operated the cannabis clinic. Even though a smaller number of patients received care at the clinic (79 patients), a high proportion was prescribed with cannabis products (67 patients or 84.81%).

Table 4 Number of patients prescribed with cannabis in Saraburi province before and during the new guideline implementation compared with the evaluation period.*

Province	No. of cannabis clinics	No. of patients receiving care at cannabis clinics	No. of patients prescribed with cannabis	% of patients prescribed with cannabis
1) Before and during the implementation	3	382	263	68.84
2) During the evaluation period	12	79	67	84.81

* Duration for reported cumulative numbers of patients:

The implementation of the new guideline period: March 1 to April 30, 2020.

Before and during the implementation of the new guideline period: January 1 – April 30, 2020.

During the evaluation period (phase 4): May 1 – August 31, 2020.

Of the 30 respondents in Saraburi province, the overall satisfaction with the new cannabis clinic guideline was at a high level (mean = 4.37 out of 5 points) (Table 5). The most satisfied issue was that the new guideline enhanced prescriber's knowledge about cannabis prescription which was a highest level (mean = 4.55 points) followed by the opinion

that the new guideline supported the need of the prescriber (mean = 4.48 points) (Table 5).

Table 5 Satisfaction of cannabis prescribers on the new cannabis clinic guideline (N = 140).

Aspects of satisfaction	Mean*	SD	Level
Not complicate or difficult to follow.	4.37	0.95	High
Supporting the need of the prescriber.	4.48	0.82	High
Enhancing prescriber's knowledge about cannabis prescription.	4.55	0.73	Highest
Serving the need of the prescriber.	4.47	0.83	High
Clear and easy to understand cannabis clinic management.	4.28	0.92	High
Beneficial for the hospital to implement the new guideline.	4.29	0.73	High
Enabling the prescriber to prescribe with clear indication and specific dosage.	4.39	0.88	High
Providing reliable guideline for prescribers to follow.	4.28	0.72	High
Services in the guideline supporting the need of the prescriber.	4.30	0.44	High
Satisfied with the new guideline.	4.37	0.95	High
Overall score	4.37	0.95	High

* Possible scores of 1 – 5 points.

Discussions and Conclusion

The development and implementation of the new cannabis clinic guideline based on PAR concept of Kemmis & Mc Taggart, 1988 was successfully conducted.

First, tangible outcomes are discussed. In all 8 provinces in the Health Region 4, the total number of cannabis clinics increased from 2 clinics of 71 hospitals (or 8.70%) in 2019 (September 1 – December 31, 2019), to 23 clinics of 71 clinics (or 32.39%) in 2020 (January 1 – April 30, 2020). In terms of patients, a total of 19 of 80 patients visiting the cannabis clinic (or 23.75%) were prescribed with cannabis products in 2019; while the number increased to 707 of 901 patients (or 78.47%) in 2020. Based on these results, the performance of cannabis clinics in the whole Health Region 4 was relatively moderate. The performance of hospitals in Saraburi province was, however, at a higher level with 2 cannabis clinics in 12 public hospitals (or 16.67%) in 2019 (September 1 – December 31, 2019) to 12 clinics (or 100.00%) in 2020 (January 1 – April 30, 2020).

It was worthy noting that during the new guideline implementation (January 1 – April 30, 2020) which included the implementation period in Saraburi province (March 1 to April 30, 2020), of the number of 382 patients attending 2 cannabis clinics in Saraburi, 263 of them were prescribed with cannabis products (68.84%). However, during the later evaluation period (May 1 – August 31, 2020), a small number of patients attending the clinics (79 patients), but a high

proportion was prescribed with cannabis products (67 patients or 84.81%). This lower actual number of patients attending cannabis clinics could be due to more cannabis clinics were readily available in other provinces in the Health Region 4. More patients did not have to travel to hospitals in Saraburi province for the cannabis clinic service. A more prominent finding was that prescribers were more confident to prescribe cannabis products for their patients (from 68.84% to 84.81%).

Even though the prescribers were more likely to prescribe cannabis products for the patients, the extent of cannabis products prescribed and the illnesseses the patients sought the cannabis clinic care has been relatively limited even after the new guideline implementation. With the 20 groups of illnesses that cannabis products were approved for prescribing, chief complaints of illnesses leading to care at the clinic were limited mainly to insomnia (60.0% of the patients), terminal cancer (27.0%), palliative care (8.0%), Parkinson's disease (3.0%), and stress (2.0%). As for the 20 cannabis products that were approved^{REF}, only 6 of them were prescribed (30.0%). In terms of safety profile, reported adverse events associated with cannabis products prescribed were mostly mild ones. These findings indicate that there has been room for improvement in the confidence in efficacy of cannabis products and prescribing the products. A longer duration such as a few years of service could provide more evidence of the efficacy and safety of cannabis products which could be reflected by a broader range of cannabis products prescribed. More confidence in a broader range of illnesses to be diagnosed could also be expected.

This limited confidence in prescribing cannabis products also indicate the limited perception and understanding both on prescriber and patient sides about the illnesses that can be treated with cannabis products. The findings on promoting factors also in accordance with this limited perception. Among the three highest-ranked promoting factors, i.e., prescribing as mandated by the policy, being requested by patients, and being supplied by cannabis products free of charge, the factor of prescribing as requested by patients supported such limited healthcare seeking behavior and understanding of the patients.

The factors inhibiting prescribing cannabis were of great concern. The three most ranked inhibiting factors were being discouraged by service management of cannabis clinic, prescribers having inadequate information to prescribe, and prescribers having low confidence in doses and therapeutic

effects of cannabis products. With being discouraged by service management of cannabis clinic, more diverse and flexible measures and management styles for cannabis clinic should be initiated.

It was found in this study that one of the reasons to prescribe cannabis products was the trust in benefits and safety of the cannabis as indicated by a moderate score on the item "Trusting in efficacy and safety of cannabis products" (mean = 3.13 out of 5 points). This finding is consistent with the study of Weeradanaiwong in 2021 revealing that among healthcare personnel cannabis use was associated with promoting factor regarding benefits and safety of the cannabis.¹⁰

The three highest-ranked promoting factors were prescribing as policy mandate, being requested by patients, and being supplied by cannabis products free of charge. This finding is also consistent with the work of Weeradanaiwong revealing that more use of cannabis products was associated with positive attitude toward the products' benefit and safety profile.¹⁰

As the most rated promoting factor, prescribing as policy mandate could also reflect the opinion that prescribers might not agree with the use of medical cannabis. In addition, two relatively high-ranked inhibiting factors (i.e., prescribers having low confidence in doses and therapeutic effects of cannabis products, and prescribers having inadequate knowledge about cannabis products or to prescribe the products safely and effectively) also suggested such hindrance to cannabis prescribing. All of these disagreements could demote the cannabis prescribing among the prescribers and hence the low access level to medical cannabis. Such demoting perception was also found in the study in Lampang Hospital in the north of Thailand.¹¹

In terms of service system, the cannabis clinic should be readily accessible for the patients and prescribing protocol should be easy and practical for the prescribers to follow. It was found that the inhibiting factor of "Prescribers having inadequate knowledge about cannabis products or to prescribe the products safely and effectively" was ranked number four. Therefore, we could conclude that prescribers had inadequate information to prescribe, and prescribers having low confidence in doses and therapeutic effects of cannabis products. One of the obstacles for promoting cannabis clinic is the limited evidence-based recommendations. Therefore, more evidence-based

recommendations are needed. Our finding is also consistent with the work of a previous work revealing that manpower development for cannabis clinic was inhibited with limited evidence-based recommendations.¹²

In the cannabis clinic before implementing the new guideline, there was a multidisciplinary team of 1 to 2 physicians, one pharmacist, one nurse, one Thai traditional medicine practitioner, and one medical technician. These providers were physicians and Thai traditional medicine practitioners who were trained to be cannabis prescribers. Each of them worked 1 – 2 days per week to see the patients in the clinic depending on the number of the patients.

At the first stage of cannabis clinic, public relation was inadequate. In addition, most hospitals were unable to provide the service since it was unclear about the structure, roles and responsibilities of the personnel, and rules on the narcotic drugs. For the rule, cannabis products for Thai traditional medicine practice were supplied directly from the Department of Thai Traditional Medicine, the MoPH. On the other hand, products for conventional medicine practice were purchased from private manufacturers. These products could not be exchanged between hospitals since they are narcotics. The products are under strict control on distribution from manufacturers to healthcare settings. More practical coordinations among all related organizations are needed for products exchange and return.

For personnel aspect, there was a problem that cannabis prescribers were allocated from cannabis clinic to other units which caused the deficit of providers. The vacant positions for cannabis prescribers could not be filled in a timely fashion since training new cannabis prescribers needs the annual training planning. For workload aspect, mandatory laboratory investigations (i.e., liver and kidney function tests) for all patients attending cannabis clinic deemed unnecessary. Such works and their related data inputting to the computerized system were resource- and time-consuming.

After implementing the new cannabis clinic guideline, prescribing rate for cannabis increased and the satisfaction of the prescriber was at a high level (mean = 4.37 out of 5 points). The positive trend and attitude could be due to a clear guideline for cannabis prescriptions. Hence, prescribers were more confident in prescribing cannabis products. Clear and distinctive steps of cannabis clinic service could also allow for fast and efficient diagnosis and prescribing. At the organizational level, a clear policy was established to facilitate

cannabis clinic guideline and enhance understanding, knowledge, and confidence among the prescribers. It could be concluded that more efficient systems were developed for cannabis use monitoring, transferal, and product distribution. To implement these systems in other settings, continuous participations among stakeholders in developing and learning are needed so that the systems could be fine-tuned for their own context. From this finding, cannabis clinic could be improved and sustained using more research on cannabis efficacy and safety. A previous study on medical cannabis use situation in Thailand also suggested that the indications for cannabis should be revised to be based on more up-to-date evidence, and more accessible for patients. More practical cannabis product distribution system should also be developed.¹³

Regarding cannabis clinic service, our study revealed that various factors inhibited cannabis clinic from success. These factors included the need for multidisciplinary tasks, limited evidence based on clinical research on efficacy and safety of cannabis products, and limited understanding and knowledge about medical cannabis use. It is suggested that more clinical evidence be produced to help prescribers be more confident in prescribing the product. Regarding the system, various workloads caused relatively unnecessary burdens. These included cannabis clinic permission request, personnel training, and completing various regular reports. It is recommended that all reports should be integrated into a singular, more practical report. Based on these obstacles, it was recommended that more training on cannabis product efficacy and safety for all related healthcare providers, not only the cannabis prescribers. Confidence in all related providers is needed to disseminate information to the patient and to facilitate all steps of cannabis clinic service. Cannabis prescribers should be trained and provided with continuous information and update on diagnosis and cannabis prescribing. Formulary and monographs of cannabis products should be developed in the same fashion as those conventional medications. Database of cannabis products and their indications and usage should also be developed for easy retrieval and update. Smartphone applications should also be developed for a convenient access. In terms of quality accreditation, integrated multidisciplinary cannabis clinic team should be established, mentor system should be created, consultation for providers when problems arise should be set, annual training for new providers and prescribers should be

planned and budgeted, and monitoring process for service quality assurance should be sought and scheduled. More research on efficacy and safety of cannabis products should be conducted. All related knowledge should be accumulated and systematized. Finally, practical protocols and tasks of medical cannabis clinic in a multidisciplinary approach fashion should be established.

At the policy making level, medical cannabis clinic is an element in the Healthy Public Policy of Thailand which aims at good quality of life of the Thai people. Medical cannabis clinic is an alternative and/or complementary medicine service which could be considered an option for health care. Medical cannabis clinic also helps push the agenda of the first National Policy on Thai Herb Promotion (2017 – 2021) with a proponent indicator of Herbal City.¹⁴ In promoting medical cannabis clinic, most facilitating measures was cannabis product support which could be measured objectively and easily. However, what was lacking was knowledge and confidence in efficacy and safety of cannabis products among prescribers as found in our study. Practical steps of clinic service were also lacking and needed improvement.

This study had certain limitations. This study examined only perspectives of providers, not those of the patient. For the availability of access to the cannabis clinic, perspectives of patients should be included in future studies. In addition, opinions of policy makers were included; the reasons behind some obstacles relating these individuals were not known. Therefore, policy makers should be included in future studies.

In conclusion, the most prominent obstacle in developing medical cannabis clinic in Saraburi province was limited confidence among cannabis prescribers in prescribing cannabis products. The new cannabis clinic guideline helped improve the confidence of prescribing cannabis products as the proportion of patients with cannabis prescriptions increased.

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