

Original Research

Pharmacy licensees and their characters that affect Good Pharmacy Practice (GPP) Compliance

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Abstract

Objective: To study the licensee's factors that affect the GPP compliance, including problems and obstacles in the improvement of pharmacies. **Methods:** Samples: 90 of the licensees of the modern pharmacies in Nakhon Ratchasima province that did not pass the GPP evaluation. A cross-sectional analytical research with mixed method was done with 2 parts 1) questionnaire survey to assess the attitude, perception, and perceived difficulty of the GPP based on Theory of planned behavior (TPB). The response rate at 68.89%. 2) Focus group discussion to find the problems and obstacles in pharmacy improvement to meet the GPP requirement. **Results:** the licensees who were a pharmacist have more compliance with the GPP than the non-pharmacist licensees ($p=0.001$), and the open on daytime period pharmacies (≥ 8 hours/day) have more compliance with the GPP than pharmacies that are open for certain hours ($p=0.001$). Attitude, perception and perceived difficulty of GPP from survey and focus group discussion could use as inputs for initiating an empowerment plan for pharmacy licensees. **Conclusion:** For the reasons that have more tendency to comply with the GPP than others, the pharmacists should be promoted to be the licensees, as well as responsible for operating the pharmacies. The pharmacy should have a pharmacist stationed 8 hours/day to provide the customers with professional standard service.

Keywords: pharmacists; modern pharmacy; Good Pharmacy Practice (GPP); attitude; perception

INTRODUCTION

The development of pharmacy standards is aimed to provide professional standard services, as well as promote the safe use of medication to the customers. In 2003, Thailand began to develop pharmacy standards via the cooperation between the Food and Drug Administration, the Pharmaceutical Association (Thailand), and The Pharmacy Council,¹ in line with the Good Pharmacy Practice (GPP) guidelines of the International Pharmaceutical Federation (FIP).² Through the "Accredited Pharmacy" project, the pharmacy provides services to customers under the standards of pharmacy professionals, resulting in the safety of medication use.³ Currently, the Ministry of Public Health has the policy that shaped the pharmacy standards, by legislating the Ministerial Regulation on Application and issuance of a license to modern pharmacies, B.E. 2556 (2013),⁴ issued under the provisions of the Drugs Act, B.E. 2510, which requires licensee and person with a duty to perform at pharmacy shall act in accordance with the regulation's provisions. There are 5 categories of GPP in the community as follows: 1st category: Place requirements; 2nd category: Equipment for sale, store, and control or preserve the quality of drugs; 3rd category: Personnel; 4th category: Quality

control; and; 5th category: Pharmacy service. It required the pharmacies to be evaluated in all domains, each domain shall not be less than 70%, and any critical defects shall not be found. The Ministerial Regulation has immediately come into effect for modern pharmacies, which have been licensed since 25 June 2014. The evaluation is waived for the modern pharmacies that have been issued a license prior to 25 June 2014, to improve their facilities to meet the standards, not more than eight years from the date the Ministerial Regulation comes into effect. From the 3 Phases of GPP model, the licensees need to improve their pharmacy to comply with the requirements in each Phase for the renewal of the license for the years 2018, 2020 and 2022, respectively.⁴ With law enforcement by 2020, GPP is now a hot topic in Thailand.

In Nakhon Ratchasima Province, 2020, There is 409 licensed modern pharmacy still operating, most of them located in the Mueang Nakhon Ratchasima district.⁵ There were 177 or 37.85% of pharmacies which have been issued a license prior to 25 June 2014, met the GPP evaluation, and another 62.15% need to improve. It was found the pharmacy that met the requirement of the 1st category was 86.28%, the 2nd category was 80.87%, and the 3rd category was 44.16%, while the 4th category (quality control) and 5th category (pharmacy service) were only 15.67% and 15.59%, respectively. From the delay problems in pharmacy improvement to meet the requirement, the researcher applied the Theory of Planned Behavior (TPB)⁶ to study the attitude factors and the perception of compliance with the GPP in the community. At the same time, listing the problems and obstacles in pharmacy improvement and pushing them to meet the requirement in a period required by law.

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Research objective

To study the modern pharmacy licensees' factors affecting the GPP, as well as listing the problems and obstacles in pharmacy improvement to meet the GPP requirement.

Research method

This study consists of two parts: 1) Cross-sectional analytical research by using questionnaires to find the factors affecting the practice to comply with GPP; and; 2) Focus group discussion to find the problems and obstacles in pharmacy improvement to meet the GPP requirement.

Sample group

In part 1, the criteria to select the sample group to answer the questionnaire are as follows: 1) being a modern pharmacy licensee in Nakhon Ratchasima Province, Thailand and such license be issued prior to 25 June 2014; 2) the pharmacy was operating during the study period; 3) had not met the requirement of the GPP (unpassed GPP); found that there are 90 pharmacies eligible to the criteria.

In part 2, the criteria to select the sample group to participate in the group discussion are 1) all stakeholders including who involved in the GPP policy; pharmacy licensees' who passed GPP or unpassed GPP and pharmacists who are in charge of GPP enforcement 2) who were interested in expressing their opinions and 3) voluntarily participate; found 10 participants for this group.

Research tools

This study used the questionnaire, which was developed from the Theory of Planned Behavior, and questions/talking points for the group discussions, as research tools for collecting data.

The questionnaire in this research is divided into 5 subparts as follows:

Subpart I: general information of licensee.

Subpart II: 14 items to evaluate attitude factors to the GPP in the community by using 5 scales of Likert-scale type (5 strongly agree; 4 agree; 3 neutral; 2 disagree; 1 strongly disagree).

Subpart III: 22 items to evaluate the perception of compliance with the GPP in the community by using 3 scales of Likert-scale type (3 fully knowledge; 2 cursory knowledge but need more clarification; 1 unlearned).

Subpart IV: 18 items to evaluate the perception of difficulty in complying with the GPP in the community by using 5 scales of Likert-scale type. (5 easiest; 4 easy; 3 average; 2 hard; 1 hardest).

Subpart V: the GPP evaluation for modern pharmacies by using the 39-item standard assessment according to the Food and Drug Administration, Ministry of Public Health. There are 5 categories of GPP including 1) 9-item of Place requirements; 2) 6-item of Equipment for sale, store, and control or preserve the quality of drugs; 3) 5-item of personnel in pharmacy development; 4) 7-item of Quality control for medication; and 5) 12-item of Pharmacy service or practice in pharmacy. Total

score is 114 and analyzed reported in percentage.

In part 2, the questions/discussing points about problems and obstacles in pharmacy improvement to meet the GPP requirement are open-ended questions for the focus group discussion.

Study tools validation

The content validity of the questionnaire and discussing points were processed by three experts — a pharmacist from the Food and Drug Administration, a pharmacist from the Provincial Public Health office, and a pharmacy lecturer who specializes in behavioural sciences. The reliability of the questionnaire was processed by testing 20 licensees who have the same criteria as the sample group. The questionnaire assessed the attitude, perception, and difficulty in complying with GPP; the Cronbach's Alpha Coefficient was 0.716 to 0.945.

Data collection method

After having approval on the Ethics Committee in Human Research from Nakhon Ratchasima Provincial Public Health office, the reference number NRPH 060, and from Mahasarakham University, the reference number 382-378/2564.

The study in part 1: researcher submitted the questionnaire, both in paper form and electronic form (google form) to 90 pharmacies with notification of response, by the post office, in the period of 15 days after submission.

The study in part 2: researcher coordinates and notifies the study objective, along with scheduling a date and time with the sample group for group discussion. The communication was carried out via Zoom application, and data collection during a group discussion note by 2 trained pharmacists.

Data analysis

In this study, data analysis was processed by the SPSS Statistics program. The statistics used in the research are descriptive statistics, including frequency, rate, percentage, average, and standard deviation. The Multiple Regression Analysis was used to study the relationship between licensee's factors and compliance scores on the GPP.

Study results

The study results can divide into three parts: 1) Data on factors, according to the TPB, that was expected to affect the compliance to GPP; 2) The relationship between factors and GPP scores; and 3) Focus group result, which reflects the problems and obstacles on pharmacy improvement with GPP requirements. The response rate of questionnaires, submitted to the sample group, was 68.89%.

Factors of the modern pharmacy licensee

Personal factors of the modern pharmacy licensee

The licensee who responded to the questionnaire were 62 or 68.89%; they were female with an average age of 39.52±8.97 years old, and most of them were aged 36-45 years old (40.32%); the average period of business operation were



16.98±15.80 years, 58.06% were running their business around 5-10 years; 90.32% of licensees were both the licensee and pharmacy pharmacist, and 85.48 graduated with a Bachelor of Pharmacy; 69.35% were pharmacy located in Mueang Nakhon Ratchasima district, 82.26% were stand-alone pharmacy, and 69.40 were open on daytime (8 hours/day); the data are shown in Table 1.

Information	Number of people	percentage
Female	42	67.74
Aged 28-75 years old, average aged (year) 39.52 ± 8.97		
Period of the business operation 8-83 years, in average years 16.94 ± 15.80		
The licensee was the pharmacist in the pharmacy	56	90.32
Graduated with a Bachelor of Pharmacy	53	85.48
Pharmacy located in Mueang Nakhon Ratchasima district	43	69.35
Stand-alone pharmacy	51	82.26
Open on daytime (8 hours/day or more)	43	69.35

The attitude factors on compliance to the GPP

95.16% of the licensees who responded to the questionnaire reflected a positive attitude to the GPP in the community, while 4.84% reflected nothing. Topics with the least average score were “the requirements in GPP will increase workload to the licensee”, “the pharmacy improvement to comply with GPP causes the difficulty”, and “the GPP are the business obstacle”, the average scores were 3.53, 3.13, and 3.05, respectively, the data are shown in Table 2.

The perception factors on compliance with the GPP

96.77% of the licensees had the perception and correct knowledge of the GPP in the community. Topics with the

least average score were “the modern pharmacies that have been issued a license prior to 25 June 2014 need to improve to meet the GPP requirements before the end of 2022”, “the modern pharmacies need to comply with the GPP requirements not more than eight years from the date the Ministerial Regulation comes into effect”, and “pharmacy’s staff members understand about drug-related laws, assigned tasks, and always being trained”, the average scores were 2.82, 2.81, and 2.74, respectively, the data are shown in Table 3.

Factors on the perception of difficulty in complying with the GPP

48.39 % of the respondents on the perception of difficulty in complying with the GPP in the community were in the easiest to practice level, while 41.94% were easy to practice level, and 9.68 were moderate level. The topics “The warehouse document system is correct and up-to-date”, “Patient screening and referral process”, and “ADR monitoring and reporting, medicine quality problem and report to competent authorities” were the least average score topics with 3.84, 3.69, and 3.68, respectively, the data are shown in Table 4.

Evaluation results of Licensees’ compliance to the GPP

The total GPP percentage of 5 categories are in the range of 59.65%-68.42% from 100, with an average of 65.71±2.83, no pharmacy passed in total of GPP requirement. Compliance to the GPP in percentage and number of licensees that did pass the GPP standard, which means all categories should pass or meet the score of 70%. The details of GPP compliance among 62 licensees were shown in Figure 2.

The relationship between licensee’s characters and compliance on the GPP

An analysis of the relationship of licensee’s characters affecting the compliance on the GPP in the community found that

Licensees’ attitude on GPP		S.D.	attitude
1. GPP is a standard that should be complying	4.53	0.564	strongly positive
2. GPP Announcement is the law for sustainability	4.40	0.689	strongly positive
3. GPP pharmacy will provide services to the customers with professional standard	4.47	0.671	strongly positive
4. GPP requirements are practicable	4.37	0.683	strongly positive
5. Improving the pharmacy is the duty of the licensee	4.53	0.564	strongly positive
6. The pharmacy improvement to comply with GPP causes the difficulty	3.05	1.165	neutral
7. Money is required for improving the GPP pharmacy	3.94	1.038	positive
8. The requirements in GPP will increase workload to the licensee	3.13	1.180	neutral
9. The GPP are the business obstacle	3.53	1.004	positive
10. The GPP pharmacy benefits the licensee	3.95	0.948	positive
11. The GPP pharmacy benefits the customer	4.44	0.760	strongly positive
12. The GPP pharmacy will benefit society as a whole	4.40	0.819	strongly positive
13. The GPP can promote the role of the community pharmacist notably	4.39	0.797	strongly positive
14. The supporting will make pharmacies improve faster	4.45	0.739	strongly positive
overall	4.34	0.571	positive



Perception of compliance with the GPP		S.D.	Levels or perception
1. Law stated that pharmacies need to meet the GPP requirements	2.92	0.275	Aware and understand correctly
2. Pharmacies need to comply with the GPP requirements within eight years	2.81	0.507	Aware and understand correctly
3. Phase of GPP waived period	2.76	0.468	Aware and understand correctly
4. Pharmacies need to meet the GPP requirements before the end on 2022	2.82	0.385	Aware and understand correctly
5. Selling/consulting areas not less than eight sq.m.	2.97	0.178	Aware and understand correctly
6. Consulting areas must have tables, chairs, and sign	2.97	0.178	Aware and understand correctly
7. Have the equipment which is required by law	2.97	0.178	Aware and understand correctly
8. Staff members have the knowledge and are trained	2.74	0.510	Aware and understand correctly
9. Other staff members' clothes differ from the pharmacist's	2.98	0.127	Aware and understand correctly
10. Setting the clear duties and responsibilities for each staff member	2.98	0.127	Aware and understand correctly
11. Medicines must store at a temperature not exceeding 30°C and avoid sunlight	2.98	0.127	Aware and understand correctly
12. System to inspect the expiration and deterioration of medicines	2.97	0.178	Aware and understand correctly
13. System for returning and destroying expired medicines	2.97	0.178	Aware and understand correctly
14. System to inspect the quality of returned or changed medicine	2.90	0.298	Aware and understand correctly
15. The warehouse document system is correct and up-to-date	2.85	0.399	Aware and understand correctly
16. Appropriate containers with labels	2.97	0.178	Aware and understand correctly
17. Medicine labels and containers show all the necessary information	2.92	0.275	Aware and understand correctly
18. Delivery of dangerous/specially-controlled medicine by pharmacists	2.92	0.329	Aware and understand correctly
19. Patient screening and referral process	2.87	0.338	Aware and understand correctly
20. The ADR monitoring and reporting	2.87	0.338	Aware and understand correctly
21. Media or advertising in the pharmacy has the correct information	2.95	0.216	Aware and understand correctly
22. Health activities approved by a pharmacist	2.85	0.355	Aware and understand correctly
overall	2.97	0.178	Aware and understand correctly

Difficulty in complying with the GPP		S.D.	Difficulty Levels
1. Selling/consulting areas not less than eight sq.m.	4.19	0.698	Easy to practice
2. Consulting areas must have tables, chairs, and sign	4.03	0.923	Easy to practice
3. Have the equipment which is required by law	4.37	0.683	Easiest to practice
4. Staff members have the knowledge and are trained	3.87	0.983	Easy to practice
5. Other staff members' clothes differ from the pharmacist's	4.68	0.471	Easiest to practice
6. Setting the clear duties and responsibilities for each staff member	4.44	0.822	Easiest to practice
7. Medicines must store at a temperature not exceeding 30°C and avoid sunlight	4.24	0.824	Easiest to practice
8. System to inspect the expiration and deterioration of medicines	4.27	0.750	Easiest to practice
9. System for returning and destroying expired medicines	4.10	0.844	Easy to practice
10. System to inspect the quality of returned or changed medicine	4.16	0.751	Easy to practice
11. The warehouse document system is correct and up-to-date	3.84	0.978	Easy to practice
12. Appropriate containers with labels	4.34	0.626	Easiest to practice
13. Medicine labels and containers show all the necessary information	4.13	0.896	Easy to practice
14. Delivery of dangerous/specially controlled medicine by pharmacists	4.47	0.620	Easiest to practice
15. Patient screening and referral process	3.69	0.934	Easy to practice
16. The ADR monitoring and reporting	3.68	0.989	Easy to practice
17. Media or advertising in the pharmacy has the correct information	4.32	0.647	Easiest to practice
18. Health activities approved by a pharmacist	4.27	0.793	Easiest to practice
overall	4.17	0.793	Easy to practice



the licensees who were a pharmacist have more compliance with the GPP than non-pharmacist licensees, the open on daytime period pharmacies (8 hours/day or more) have more compliance with the GPP than pharmacies that are open for certain hours. Licensee's attitude on GPP, perception on GPP and perception on the difficulty of GPP did not associate with their GPP compliance. The compliance to the GPP could be predicted by two factors at 40.90%. The data are shown in Table 5.

Table 5. Licensee's characters affecting the compliance on the GPP

Model Factors of the licensee	Unstandardized Coefficients		Standardized Coefficients	t	p-value
	B	Std. Error	Beta		
Constant	69.228	1.039		66.619	<.001
Being pharmacists	4.262	1.170	.393	3.641	.001*
Opening hours (≥8-hr Day time)	2.632	.751	.378	3.507	.001*

R² = 0.409 Standard Error = 2.52691
F-statistics = 20.413 p-value<0.001* with a statistical significance level of 0.05

required by law and necessary. In this regard, the government sector should have a budget to support the pharmacies.

... "Money is needed, most of the expenses are pharmacy area, air conditioner, glass walls, and the electricity bill will increase" (Licensee No. 01)

... "If the government reduce the fees, it can help the pharmacies" (Licensee No. 01)

Personnel problems: other staff members have never attended any training related to pharmacy practice, such as medicine-related laws because the sectors or organizations have not held the training yet.

... "Assistant in the pharmacy did not attend any training, it has no training being held" (Pharmacist No. 02)

... "Provincial Public Health office should organize the training for pharmacies staff member before issue the license" (Licensee No. 01)

Lack of support from other organizations or agencies: providing information and giving advice are not 100% correctly yet, the GPP model pharmacy that guides the pharmacy improvement; mentoring the staff members; on-site suggestions in the improvement of the pharmacy; can manage such problem.

... "the GPP model pharmacy can be a guideline for improvement" (Licensee No. 03)

... "In the district, Public Health officials can provide recommendations" (Public Health officer No. 02)

Workload problems: increasing quality requirements such as records, forms, reports, and pharmacy accounts that cause the increase in workload.

... "It is impossible for pharmacies with a lot of customers and no store assistant to update their reports" (Licensee No. 02)

... "Provincial Public Health office should provide forms and records that can be used in the same format for the whole province" (Pharmacist No. 01)

Problems and obstacles on pharmacy improvement with GPP requirements

From the Focus Group Discussion among 10 participants, can list the problems and obstacles as follows:

Budget problems: The expenses for renovating the facility and purchasing equipment in the pharmacies such as air conditioners, glass walls, curtains covering, dangerous medicine, fire extinguishers, and pharmacist wages which it all

Public relations problem: customers cannot differentiate between the GPP pharmacy and the general pharmacy. Therefore, being the GPP pharmacy does not affect sale volume and the number of customers. Consequently, there can be no accelerated pharmacy improvement. To deal with this problem, the government should publicize and have a symbolic format such as a sign to make a difference.

... "there is no difference between the GPP pharmacy and other, hence the customers cannot differentiate it and do not know how good it is" (Licensee No. 04)

... "The government should publicize and make GPP pharmacy different" (Pharmacist No. 04)

Action plan for empowering licensees to comply with GPP

From the results above, in the focus group discussion, all ten participants have given the idea of empowerment for the unpassed pharmacy licensee to comply with GPP using the TPB (Figure 1) as a grounded theory of the action plan and its activities as shown in Table 6.

DISCUSSION

From the development of modern pharmacy in Nakhon Ratchasima province to meet the GPP requirements in 5 categories, 39 items, found that 18 items can meet the GPP requirements. The most common item that still cannot meet the requirements were: two items from the 1st category (place requirements); one from the 2nd category (equipment for sale, store, and control or preserve the quality of drugs); three items from the 3rd category (personnel); six items from the 4th category (quality control); and six items from the 5th category (pharmacy service); From the study of factors affecting the compliance of the said item, namely, personal factors of the licensee, attitudes, perceptions, perceptions of difficulty in GPP and obstacles in the pharmacy improvement. There are significant topics that should be discussed as follows:



Action plan for Licensee	Activites
1) Group empowerment Activities	1.1 Review GPP criterion and understanding on the main purpose of each item, guiding by the GPP officers and Licensees who have passed GPP (Understanding and Perception on GPP) 1.2 Reinforce positive attitudes towards GPP, especially on items with low score on GPP attitude (Attitude) 1.3 Share experiences in managing GPP and tips for success with licensees who have passed GPP (Subjective norm)
2) Individual empowerment Activities	2.1 Train licensee on how to make a GPP self-assessment (SAR) 2.2 Identify problems and obstacles on each pharmacy improvement with GPP requirements 2.3 Make a solution with the timeline to monitor and achieve the problems and obstacles by consulting GPP officers 2.4 Monitor every 2-4 weeks for improvement by the GPP officer team, do as a PDCA cycle.

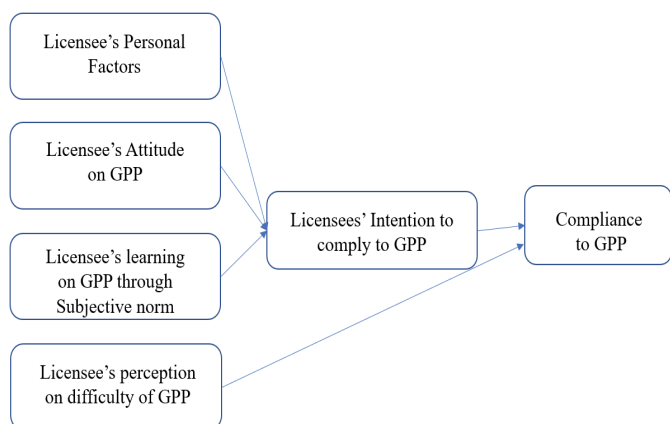


Figure 1. GPP compliance based on TPB

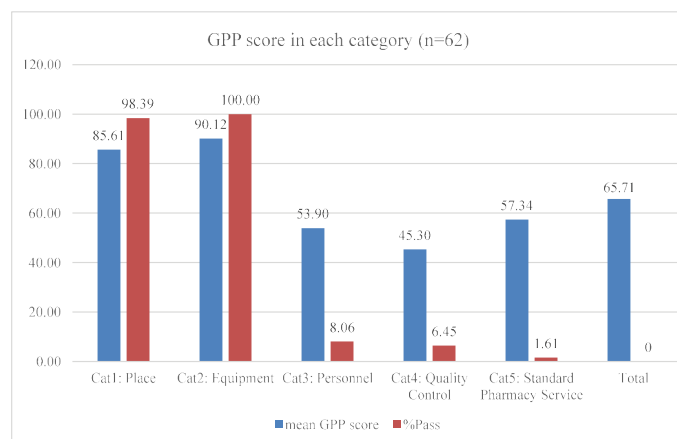


Figure 2. GPP score and percentage pass

The personal factors of the licensee, such as being a pharmacist and the pharmacy open in the daytime (8 hours/day or more), can affect the cooperation to comply with the GPP. For the reason that pharmacies have pharmacists operating in order to provide services, there is a tendency to improve pharmacies to meet the GPP requirements because the curriculum of the Faculty of Pharmacy is in line with the Drugs Act, B.E. 2510, various ministerial regulations, and the provisions relating to the professions practice under the Pharmacy Profession Act, B.E. 2537.^{7,8} Thus, pharmacists understand the relating laws and provisions. In addition, as pharmacists who trained to become proficient in the pharmaceutical profession, especially in the 5th category of GPP (Pharmacy services in pharmacies), which is related to pharmacy profession services by pharmacists. As a result, pharmacies with pharmacists have higher GPP compliance scores than pharmacies with no pharmacists. It is in accordance with the study by Suthinee Luewwong (2018),⁹ which studied the implementation of the policy on standard development of pharmacy in Udon Thani province and found that pharmacies with pharmacists all the operating time would well-know the details in the ministerial regulations. In line with the study of Wanna Weeraphasuk (2014)¹⁰ studied the factors affecting cooperation in the GPP, found that the licensee who were a pharmacist has more readiness to comply with GPP than the other.

In general, the licensee in Nakhon Ratchasima Province has a positive attitude to the GPP requirements, the evaluation processes are beneficial and can shape the standards of the pharmacies. The pharmacies that meet the GPP requirements will have a good service quality system and comply with

pharmaceutical professional standards. It is consistent with a study by Selvaraj j, Redzuan, and Hatah (2020)¹¹ found that Malaysian pharmacists have a positive attitude toward providing pharmaceutical services and benefit the customers from consulting the pharmacists. The study by Hanafi et al. (2013)¹² found that a positive attitude to the GPP requirements leads to pharmaceutical services being more likely to comply with the GPP. Furthermore, it was also found that the topic of the GPP pharmacy improvement causes difficulty, the GPP requirements can increase the workload, the money is needed, and to benefit from GPP pharmacies — the licensees do not have or show a positive attitude towards these issues. It is in line with qualitative data from the group discussion process that reflects the problems on budget, workload, and lack of public relations — because the costumers cannot see the differences, and the GPP pharmacy does not affect the sale volume and the number of customers, which is problems and obstacles to the improvement of pharmacies. Therefore, making a positive attitude to those issues, for example, giving licensees a sense of the benefits of the GPP pharmacies, reducing their workload, and publicising to the customers for the GPP pharmacies will increase the cooperation in compliance with the GPP requirements. It is in line with the study of Pongnuwat Sombatphuthorn (2021)¹³, it was found that pharmacies that participated in the Accredited Pharmacy project and met the requirements in Chonburi province, the licensees want to be praised by the certificates and published, through media, to the public, will benefit the pharmacies. The study by Natnee Hasitpanichkul and Wirot Jesadalak (2014)¹⁴ found that customer feedback can bring positive effects to pharmacies.



The overall licensees' perception of compliance to the GPP was aware and understood correctly. The 18 GPP requirements that most modern pharmacies do not meet the standard, such perception was also aware and understood correctly. For the reason that the GPP requirements have come into effect for the 8th year and the pharmacies are constantly improving, moreover, the Nakhon Ratchasima Provincial Public Health Office has clarified and emphasized the requirements of the Ministry's announcement to the licensee continuously every year since 2014. The competent officials also visit the pharmacy every year to provide the GPP information and encourage the pharmacy's improvement to meet the requirements, which leads to the correct perception. However, it is necessary to emphasize to the licensees about the GPP waived period the pharmacies must be improved on time before the evaluation for renewing the license at the end of 2022. It is the same as the study of Hanafi and team¹¹ found that one who understands the GPP is more likely to comply with the GPP. Therefore, educating the licensee and emphasizing the important information will cause continuous awareness leading to correct practice.

In terms of the perceived difficulty in complying with the 18 GPP requirements was easy to practice. The topics of "The warehouse document system is correct and up-to-date", "Patient screening and referral process", and "The ADR monitoring and reporting, medicine quality problem and report to competent authorities" was assessed as more difficult to comply with than others. Similarly, the study by Surasak Jariyasirisuk and Surasak Saokaew (2020)¹⁵ found that qualitative requirements such as document preparation and service system are new to pharmacies and have been assessed as difficult. Additionally, a study by Badro, Sacre, Hallit, Amhaz, and Salameh (2020)¹⁶ found that only 23.3% and 13.20 of Lebanese pharmacies could handle the topic of data management and storage, respectively. Consistent with the qualitative data commented that such requirements were a workload problem. The most common pharmacy type is a stand-alone pharmacy or the licensee as the pharmacist without the store assistant. The paper tasks must be done by the licensee themselves, with a large number of customers and have no supporting system in the storage and accounting cause it not be able to operate in a timely manner and not up-to-date. Same with the patient screening and referral process system, as well as the ADR monitoring and reporting, is a systemic matter that the licensee has never done before. Therefore, there is no clear practice guideline for pharmacies to implement. In line with the study of Usah Chantaravichit (2020)¹⁷, found that the difficulty of complying with the requirements was the other factor affecting the cooperation in the implementation of the GPP. The study by Wiwat Thawornwattanayong et al. (2016)¹⁸ found that the operator commonly begins to choose the requirements that are easy to improve to meet the standard. However, the licensees in Nakhon Ratchasima province have a correct perception and understanding of the GPP. In this way, if they were supported to reduce the restrictions or the system made the thing easier to operate, it led the licensee to improve and meet the GPP requirement.

Problems and obstacles of the licensees in Nakhon Ratchasima

to comply with the GPP requirements were problems in the budget, personnel, Lack of support from other organizations or agencies, workload, or public relations. However, the GPP is required by law, it needs to be followed. Therefore, the supporting in problem and obstacle solving is necessary, such as a central budget for the pharmacies, training for other staff members of pharmacy, the model pharmacy, on-site consultation, standard paper and electronic forms, public relations, Pharmacy society that cooperation between government and the society member, and law enforcement. It is consistent with the study of Phimonphan Onprasert and Pongthep Sutheerawut (2016)¹⁹ found that the guidelines for the improvement of pharmacy quality by creating incentives through supporting the benefits and promoting business, partial funding, including supporting services that will help the pharmacy to operate conveniently, Public relations by held the public activities to make people know about the differences of the pharmacies. It is to contribute to improving the "Accredited Pharmacy".

CONCLUSION

GPP is the pharmacy professional standard with the main purpose of promoting the medication safety to patients and customers and enhancing pharmacist's role on pharmacy practice. According to the legislating the Ministerial Regulation on Application and issuance of a license to modern pharmacies, B.E. 2556, under the Drugs Act, B.E. 2510, all pharmacy licensees have to meet the GPP requirement within 2022. To encourage and support pharmacy licensee to comply with GPP, their factors that affect their GPP compliance are key of achievement possibility. Two significant factors on GPP compliance among unpassed GPP licensees were; 1) licensees who were a pharmacist, they have more compliance with the GPP than the non-pharmacist licensees and 2) pharmacies that opening on daytime with 8 hours/day or more, they have more compliance with the GPP than pharmacies that are open for certain hours. These two factors could predict the GPP compliance for 40.90%. Even though, licensee's attitude, perception and perceived the GPP difficulty have no significant effect on the GPP compliance, but the issues from some items of the questionnaire survey and the focus group discussion found that those factors are still important for the compliance and should keep in consideration for making an action plan to give the empowerment for pharmacy licensee and the plan should be implemented as soon as possible.

Recommendations from this research

From this study, the following are the interesting issues that have been found and can-do further research in the future.

Pharmacists should be promoted to be the licensees, as well as responsible for operating the pharmacies. The pharmacy should have a pharmacist stationed 8 hours/day to provide the customers with professional standard service. Regularly assess and examine the non-pharmacist licensees and the pharmacies that open less than 8 hours/day because this group have a lower tendency to comply with the GPP than another group.



Data obtained from quantitative studies, such as problems and obstacles to complying with the GPP requirements, cause incomplete data, suggesting that the use of the qualitative study should be increased for more insights data.

Apply the results of this study in order to plan the improvement to comply with the GPP requirements of other types of modern pharmacies, such as modern pharmacies to sell only ready-packed modern medicines which were not dangerous or specially-controlled medicines (DS2) and only ready-packed modern medicines for animals (DS3), including being used in other areas.

AUTHOR CONTRIBUTIONS

Piyanuch Punturungsee: Conceptualization, Formal Analysis, Methodology, Project Administration, Validation, Writing – Original Draft Preparation, Writing – Review & Editing; Chanuttha Ploylearmsang: Conceptualization, Investigation, Methodology, Validation, Data curation, Writing – Original Draft Preparation, and Final article review and editing.

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INSTITUTIONAL REVIEW BOARD STATEMENT

This study was approved by the Ethics Committee of Mahasarakham University with an approval number of 382-378/2564 and by the Ethics Committee in Human Research from Nakhon Ratchasima Provincial Public Health office, the reference number NRPH 060.

INFORMED CONSENT STATEMENT

Informed consent was obtained from all subjects involved in the study. Written informed consent has been obtained from the participants in focus group discussion.

DATA AVAILABILITY STATEMENT

The data presented in this study is some part of the thesis of the master degree student in the primary care pharmacy program. The thesis is approved by the faculty of graduate studies.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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