

The Relationship Between Health Product Literacy Among Grocery Store Operators Toward Unsafe Drug Selling: A Case Study of Don Kloi Sub–district, Phibun Ruk District, Udon Thani Province

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Abstract

This cross-sectional analytical study was aimed to 1) evaluate the health product literacy among grocery store operators, 2) explore factors associated with health product literacy among grocery store operators, and 3) explore the relationship between the health product literacy score and score of grocery store quality. The sample was 60 grocery store operators in the Don Kloi community. The statistics were percentage, mean, and standard deviation. The relationship analysis utilized the T-test, One-way ANOVA, and Pearson correlation with a significance level of 0.05. The result revealed that health product literacy among grocery store operators, the aspects that have a moderate to a high level such as understanding, behavior modification, information accessibility, inquiry interaction, and word of mouth. The aspect that has literacy at a low level is decision-making. The survey on selling drugs in grocery stores found that 46.7 percent of the stores do not sell the drug, 30.0 percent sell home medicine, and 23.3 percent sell an unsafe drug. 76.7 percent of the stores get a quality score of 8 scores. Factors that have a relationship with health product literacy among grocery store operators with statistical significance at a 95 % confidence interval were the demand of customers, Sub–district health promoting hospital located far away, inconvenience traveling, not having knowledge or not being a professional, afraid of illegal, having educational materials about medicines sold in grocery stores, having an application for searching an information, using and access to the online media, awareness of news through the media of posters, get the medicine from a pharmacy, and has received inspection from officials within the past one year. The overview correlation between a score of health product literacy and

a score of grocery store quality was inversely related at a low level with no statistical significance ($r=0.0721$, $p=0.584$).

Keywords: Health Product Literacy; Unsafe Drug; Grocery Store Operator; Quality Grocery Store

Introduction

Promoting and increasing the ability of people to health literacy is on the national agenda. It is aimed at developing the capability of individuals and communities to keep healthy. It has been shown in many national development plans, such as the 12th National Health Development Plan 2017–2021, the Health Strategic Plan of the Ministry of Public Health on Health Promotion and Disease Prevention 2017–2021, and the National Reform Plan on Public Health 2017–2036 (Health Administration Division, Ministry of Public Health, 2020). Health literacy will be measured at the individual level (Tanasugarn, 2017). People who receive or access health information can understand basic health information and necessary health services that lead to appropriate decision-making.

In the fiscal year 2022, the Ministry of Public Health has defined the indicator of promoting rational drug use in the community. Every province should promote rational drug use in the community for people to be able to do primary self-care. The problem of drug use among people in the community is crucial, which is caused by the drug user, producer, seller, advertiser, and law enforcement. The problem from the drug user might be a variety of causes, such as being unable to read or understand the label, not daring to ask an information from health personnel, and being unable to evaluate the correctness of online information. From all these causes, people tend to choose the wrong drug, consume it incorrectly, take unnecessary drugs, and not follow the advice from health personnel. This led to complications in the patient, increasing the severity, increasing time for treatment as well as the medical expense (Kreethathorn & Arunakul, 2022).

In the current situation in Udon Thani Province, the report of grocery stores from the consumer protection division of Don Kloi Sub-district Health Promoting Hospital, Phibun Ruk District, Udon Thani Province 2020 found that. Among 60 grocery stores from 11 villages, 16 stores sell harmful drugs, 7 stores sell drug sets, 6 stores sell dangerous cosmetics, 12 stores that sell cosmetics with no notification number, 42 stores that sell food with no FDA number, 42 stores that sell food without showing the expiry date, and 7 stores that sell deteriorated or expired food.

The grocery store operator plays an important role in preventing the primary illness of people in the village. If the grocery store operators lack correct knowledge of drugs and health products, also lack awareness of selling unsafe drugs and health products that might affect the health of people in the village. The appropriate health product-consuming behavior has a relationship with the 4 aspects of health product literacy understanding of a health product, self-management of health products, literacy on media and information about health products, and decision-making for health products. Therefore, literacy on these aspects should be developed to gain appropriate consumption behavior on health products (Kerdsri & Lerkiatbundit, 2018). Also, reduce the number of dangerous drugs that have been sold in grocery stores. The sale of dangerous drugs consists of many factors either from customer or seller. Most of the studies explored the health literacy of the customer but no study focuses on the awareness of the seller or grocery store operator.

Hence, strengthening the awareness among grocery store operators especially for the aspect of drug and health products is the starting point to increase the potential for them. For the operators to sell safe and appropriate drugs and health products and make people in the village safe, be able to do primary self-care, and reduce the medical expenses that might be caused by taking unsafe drugs and health products. The author was interested in exploring the relationship between health product literacy among grocery store operators and unsafe drug selling in the community. To be the guideline to strengthen the potential and the awareness of grocery store operators at Don Kloi Sub-district, Phibun Ruk District, Udon Thani Province. Also, to establish the model community for rational drug use (RDU) to be a guideline for developing the operation of "RDU district" for other districts in Udon Thani Province.

Objectives

1. To evaluate the level of health product literacy among grocery store operators.
2. To study factors associated with health product literacy among grocery store operators.
3. To explore the relationship between health product literacy score and score of grocery store quality.

Literature Review

1. Health Literacy

The World Health Organization (WHO) defined the meaning of health literacy as “Skills of perception and socialization that is the motivation determinant and potential of an individual to access, understand, and utilize the information to promote and maintain a healthy life continuously” (World Health Organization, 1998). At present, Thailand facing a health crisis. Also, there is a variety of information that makes people could not make the decision. Therefore, strengthening health literacy is the way to improve the potential of people and organizations systematically. Department of Health has given the idea of a health literate organization principle (Department of Health, Ministry of Public Health, 2018) by promoting health literacy using a “V shape” concept. To enhance the ability of people to access the information and synthesize the information to plan and achieve their behavior modification.

Department of Health has defined the meaning of health literacy as “The ability of an individual to scrutinize, evaluate, and make the decision for utilizing the information to modify their consuming behavior on health services and health products appropriately that led to a better health status”. Health literacy consists of 3 components, 1) functional health literacy such as skills of listening, speaking, reading, and writing. 2) Interactive health literacy refers to intellectual skills and social skills that are important for self-care, such as the interaction between persons which leads to behavioral modification. 3) Critical health literacy consists of skills of analysis and evaluation which are crucial for applying and utilizing information until they can do a planning to prevent and solve the problem (Department of Disease Control, Ministry of Public Health, 2021).

2. The assessment of health product literacy in Thailand utilizing the health product literacy assessment form that was developed from the component of health literacy by Nutbeam (2008) and the Department of Health. The Conceptual Framework for six aspects of health product literacy consists of.

1. Accessing information on health products (Access)
2. Understanding of health products (Understanding)
3. Communication and searching information on health products (Communication)
4. Self-management, attitude, and deciding to modify the behavior (Decision)
5. Analysis and comparison of the information on health products (Behavioral Modification)
6. Society participation and sharing information on health products (Word of Mouth)

3. Health products (Kidpun, 2020) mean products for consuming essentials for living and products that aim for health. As well as products that affect health, which can be classified as.

- Drugs (Drug Act, B.E. 2510, 1967) refer to drugs for prevention, therapy, relief, and treatment of both conventional and modern medicine. Drugs: are drugs for prevention, therapy, relief, and treatment of both conventional and modern medicine. Modern medicine is home medicine, dangerous drugs, especially controlled drugs, and ready-packaged non-dangerous drugs both drugs for humans and animals.

- Food (Food Act, B.E. 2522, 1979) refers to objects or edible or life-sustaining things that are beneficial to the human body, such as meat, water, milk, plants, vegetables, fruit, etc.

- Cosmetics (Cosmetic Act, B.E. 2558, 2015) refers to products for cleaning or maintenance or beauty enhancement such as cream or lotion, cream foundation, facial powder, lipstick, etc.

- Medical Devices (Medical Devices Act, B.E. 2551, 2008) refers to equipment or products that are used for medical or nursing practice and treatment in animals as well. Medical equipment includes condoms, an electrostatic chair, a contact lens, a fashion contact lens, a massage machine, etc.

Narcotic drugs refer to substances that affect both physical and mental health when consumed through various means such as ingestion, inhalation, or injection (Office of the Narcotics Control Board, Ministry of Justice, 2021). The important characteristic is the user gradually increases the amount and feels sick when do not use those substances causing health to deteriorate. However, some narcotic drugs are purposively used for medical treatment, such as morphine and codeine.

- Hazardous substances (Hazardous Substances Act, B.E. 2535, 1992) refer to products announced in the Hazardous Substances Act A.D.1992 that might be used in a household, such as pesticides, laundry products, bathroom cleaning products, etc.

4. An assessment of grocery store quality, at present there are many types of tools that have been utilized to assess the quality of the grocery store and these tools have been developed in various ways. However, the utilization depends on the type and needs of users, such as the "Good Grocery (GG)" assessment form, "G-RDU" assessment form, and "Good Grocery Practice (GGP)" assessment form. For this study, the author used the quality assessment form for rational drug use grocery stores (G-RDU assessment form).

Building literacy in choosing health products for people is key to operating consumer protection in a community. If a consumer in the community knows, can protect themselves, and not be a victim of an advertisement, and can analyze information appropriately. They will be able to choose the appropriate and safe health product as well as reduce household expenses. Strengthening literacy among grocery store operators is a part that will help to filter the safe products to sell in the community. Also, it is a way for people to have a basic self-care.

Conceptual Framework

Based on a review of relevant literature and studies, it was found that there are factors that affect the level of health product literacy of grocery store owners, and the level of health product literacy of grocery store owners is related to the score of quality grocery stores. As shown in the research conceptual framework in Figure 1.

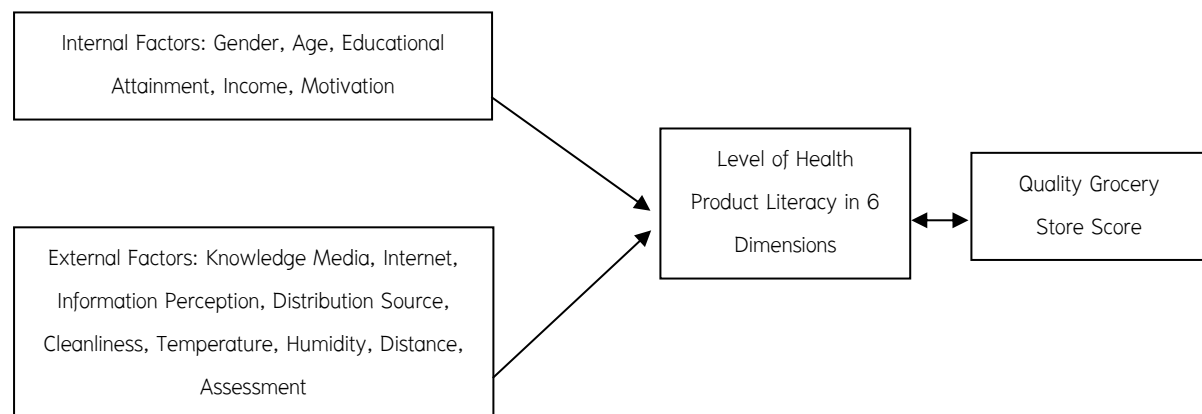


Figure 1. Conceptual Framework

Research Methodology

This study was conducted by using a cross-sectional analytical research type.

The population/sample was the grocery store operators at Don Koi village under the area of responsibility of Don Kloi Sub-district Health Promoting Hospital, Phibun Ruk District, Udon Thani Province.

Inclusion criteria – Every grocery store operator from the grocery store register of Don Kloi Sub-district Health Promoting Hospital, Phibun Rak District, Udon Thani Province of 60 stores.

Exclusion criteria – The grocery store operator that was rejecting to participate or provided incomplete information.

Data collection

1. The preparation of the health product literacy assessment form consists of 3 parts.

Part 1 Demographic characteristics of the grocery store operators.

Part 2 The result of surveying the drug selling in grocery stores according to the G-RDU assessment form (obtained 8 scores for the quality grocery store in the category of rational drug use and grocery stores found to be selling unsafe drugs received an evaluation score of 6.)

Part 3 The literacy on health products among grocery store operators. The literacy on health products among grocery store operators. The survey was comprehensively measured in all six aspects, which developed from a health literacy survey form from the study named Health Product Literacy and Its Association with Appropriate Consumption of Health Products in Thai Population (Jaroenkul & Ruengorn, 2022). The reliability test for this assessment form obtained the Cronbach's alpha coefficient of 0.92.

2. This study was approved by the Human Research Ethics Committee, Udon Thani Provincial Health Office was issued on 23 May 2023, No. UDREC 8366.

3. The data was collected by interviewing the grocery store operators. The questionnaire consists of general characteristics of the grocery store (size of the store, storage environment, temperature, and cleanliness) and the literacy of the grocery store operators using the interview form according to guidelines for assessing literacy in all 6 aspects. The author has summarized the utilization of the tools, defined the agreement for data collection, checking the correctness of the data, and set the meeting to explain to the research team to make sure everyone understands all the details of the tool. The researcher was the pharmacist in the Consumer Protection and Public Health Pharmacy Group, Udon Thani Provincial Health office. We conducted the data collection together with the pharmacist from Phibun Rak Hospital, Phibun Rak District, Udon Thani Province, and the public health technician officer from Don Koi Sub-district Health Promoting Hospital, Phibun Rak District, Udon Thani Province.

Place/duration: we conducted the study in 60 grocery stores located in Don Koi Sub-district, Phibun Rak District, Udon Thani Province between March and June 2023.

Data analysis

1. The analysis of quantitative data adopted descriptive statistics such as frequency, percentage, mean, and standard deviation. The analysis of the relationship between factors and level of literacy score adopted inferential statistics such as T-test, one-way ANOVA, and Pearson correlation with the significance level of 0.05.

2. The assessment of health product literacy was applied and modified from the criteria and assessment method of Bloom (Kreethathorn & Arunakul, 2022), which is divided into 3 levels. The highest level obtained more than 80 percent of the score means have a high level of health product literacy and practice appropriately. The moderate level obtained 60–79 percent of the score means to have a good level of health product literacy but might not be enough to practice appropriately. A low level obtained less than 60 percent of the score means not having enough health product literacy to practice appropriately.

Result

Part 1 Demographic characteristics

Most of the operators were female (66.7%), average age of 43.2 ± 13.7 years, marital status was a couple (70%), had a primary education (36.6%), average income of $17,466.7 \pm 11,152.6$ baht, and had insufficient income (38.3%). Most of them did not control temperature and humidity in the store (98.3), 86.7% were clean, 47 stores provided educational media about drugs sold in the store (78.3%), only 10% had an application to monitor the information sources, while 90.0% accessing online media such as Internet, Facebook, Line, Instagram, and TikTok. Channels for receiving information about health products were television/radio 25.5%, training from health personnel 1.7, brochure/poster/academic documents 41.7%, social media/internet 40.0%, people in the village such as neighbors/village health volunteers/public broadcasting/grocery stores 63.3%, and peddlers/drug peddlers 1.7%. The average distance between the grocery store and the sub-district health-promoting hospital was 6.2 ± 3.1 kilometers and 61.7% had undergone inspection by the officer in the past year. (Table 1)

Table 1 Demographic characteristics of samples (n=60)

Demographic characteristics	Number	Percent
Gender		
Female	40	66.7
Male	20	33.3
Average age (Year) \pm SD	43.2 \pm 13.7	
Marital status		
Single	10	16.7
Couple	42	70.0
Widow/Divorced/Separate	8	13.3
Educational Attainment		
Illiterate	3	5.0
Primary	22	36.7
Junior high school	8	13.3
Senior high school/ Vocational Certificate	12	20.0
Diploma	11	18.3
Bachelor and higher	4	6.7
Average monthly income (Baht) \pm SD	17,466.7 \pm 11,152.6	
Sufficiency of income		
Sufficient	9	15.0
Sufficient and left for saving	12	20.0
Insufficient	23	38.3
Insufficient and in debt	16	26.7
Temperature and humidity control in the store		
No	59	98.3
Yes	1	1.7
The cleanliness		
Clean	52	86.7
Should be improve	8	13.3
Providing educational media about drugs sold in the store		
Yes	13	21.7
No	47	78.3
Having an application to monitor the information sources		
Yes	6	10.0
No	54	90.0
Using or accessing online media such as Internet, Facebook, Line, Instagram, and TikTok		
Yes	54	90.0
No	6	10.0

Demographic characteristics	Number	Percent
Channels for receiving information about health products		
Television, radio	15	25.0
Training from a health personnel	1	1.7
Brochure, poster, and academic document	25	41.7
Social media, internet	24	40.0
People in the village such as neighbors, village health volunteers, public broadcasting, grocery stores	38	63.3
Peddlers/drug peddlers	1	1.7
The store inspection by the officer in the past year		
Yes	37	61.7
No	23	38.3
Distances between the grocery store and sub-district health-promoting hospital (Kilometer)	6.2±3.1	
± SD		

Part 2 The result of surveying the drug selling in grocery stores according to the G-RDU assessment form (The quality grocery store in the category of rational drug use)

Found that 28 stores were not found selling drugs (46.7%), 18 stores sold only essential drugs (30.0%), and 14 stores sold dangerous drugs (23.3%). Source to buy drugs for selling in grocery stores found that pharmacies with a pharmacist on duty (Pharmacy 1) 41.7%, pharmacies without a pharmacist on duty (Pharmacy 2) 5.0%, delivery trucks or peddler 18.3%, there is no online buying, buying from "TD Tawandang Co., Ltd." 3.3%, and buying from a wholesale mall such as Makro 1.7%. Motivation to sell drugs in grocery stores was the request from a customer 38.3%, health-promoting hospitals and hospitals located far away and inconvenience travelling 5.0%, being a refuge for customers at night 16.7%, and getting higher profit than other goods 1.7%. Motivation to not sell drugs in grocery stores was lack of knowledge or not being a professional 48.3%, afraid of illegal 33.3%, and low profit or not worth 5.0%. Scores for the quality grocery store G-RDU, a store that obtained 8 scores was 76.7%, and a store that obtained 6 scores was 23.3%. (Table 2)

Table 2 The result of surveying the drug selling in grocery stores (n=60)

Surveying Result	Number (Store)	Percent
The situation of selling drugs in grocery stores		
No drug selling found	28	46.7
Selling only home medicine	18	30.3
Selling an unsafe drug	14	23.3
Source to buy drugs for selling in grocery stores		
Pharmacy with a pharmacist on duty (Pharmacy 1)	25	41.7
Pharmacy without a pharmacist on duty (Pharmacy 2)	3	5.0
Delivery truck or peddler	11	18.3
Buying via an online platform	0	0
Buying from TD Tawandang Co., Ltd.	2	3.3
Buying from a wholesale mall such as Makro	1	1.7
Motivation to sell drugs in grocery store		
The request from a customer	23	48.3
Health-promoting hospitals and hospitals located far away and inconvenience travelling.	3	5.0
Be a refuge for customers at night	10	16.7
Get higher profit than other goods	1	1.7
Motivation to not sell drugs in grocery store		
Lack of knowledge or not being a professional	29	48.3
Afraid of illegal	20	33.3
Low profit or not worth	3	5.0
Scores for the quality grocery store G-RDU		
8 scores	46	76.7
6 scores	14	23.3

Part 3 The information on health product literacy among grocery store operators

The average score on health product literacy among grocery store operators in all 6 aspects, which are access, understanding, communication, decision, behavioral modification, and word of mouth. The scores were 16.3 ± 3.0 , 28.7 ± 4.0 , 16.4 ± 2.4 , 17.5 ± 4.8 , 18.5 ± 3.0 , and 16.3 ± 3.0 , respectively. The sum of health product literacy in 6 aspects was 113.7 ± 15.8 . The health product literacy that was at the moderate to high level were understanding, behavioral modification, access, communication, and word of mouth. The health product literacy that was at a low level was a decision. (Table 3)

Table 3 The average score on health product literacy among grocery store operators in all 6 aspects (n=60)

Health product literacy (average score± SD)	Level of health product literacy		
	Low Number (%)	Moderate Number (%)	High Number (%)
1. Access (16.3±3.0)	3(5)	17(28.3)	40(66.7)
2. Understanding (28.7±4.0)	5(8.3)	36(60.0)	19(31.7)
3. Communication (16.4±2.4)	2(3.3)	17(28.3)	41(68.3)
4. Decision (17.5±4.8)	22(36.7)	17(28.3)	21(35.0)
5. Behavioral Modification (18.5±3.0)	3(5)	37(61.7)	20(33.3)
6. Word of Mouth (16.3±3.0)	1(1.7)	20(33.3)	39(65.0)
The sum of health product literacy in 6 aspects (113.7 ± 15.8)	2(3.3)	35(58.3)	23(38.3)

Factors associated with health product literacy among grocery store operators.

The following are the factors associated with health product literacy among grocery store operators, with statistical significance at the 95% Confidence Interval. There are internal factors such as customer requests, hospitals promoting health, hospitals that are inconvenient to travel to, lack of knowledge or professional qualifications, and fear of illegal activities. External factors include providing educational media about drugs sold in the store, using online media such as the Internet, Facebook, Line, Instagram, or TikTok, receiving information about health products through brochures, posters, or academic documents, stocking only drugs purchased from pharmacies with a pharmacist on duty, and undergoing inspection by the relevant authorities in the past year. (See Table 4 for more details.)

Table 4 Factors associated with health product literacy among grocery stores operators (n=60)

Factors	Average literacy score ±SD	p-value
Internal factors		
Gender		0.331*
Female	110.9±14.5	
Male	115.2±16.5	
Average age (Year) ± SD	113.7±15.8	0.307**
Marital status		0.483**
Single	107.4±10.2	
Couple	115.6±16.4	
Widow/Divorced/Separate	110.2±18.2	

Factors	Average literacy score \pm SD	p-value
Educational Attainment		0.277**
Illiterate	96.0 \pm 5.3	
Primary	111.7 \pm 18.8	
Junior high school	118.4 \pm 17.8	
Senior high school/ Vocational Certificate	121.0 \pm 11.4	
Diploma	111.9 \pm 13.2	
Bachelor and higher	112.3 \pm 6.4	
Sufficiency of income		0.129**
Sufficient	120.1 \pm 16.5	
Sufficient and left for saving	120.5 \pm 18.2	
Insufficient	110.4 \pm 15.1	
Insufficient and in debt	109.8 \pm 13.1	
Motivation to sell drugs in grocery store		
The request from a customer	120.2 \pm 13.9	0.018**
Health-promoting hospitals and hospitals located far away and inconvenience travelling.	131.7 \pm 9.3	0.043**
Be a refuge for customers at night	121.5 \pm 13.5	0.089*
Get higher profit than other goods	NA	NA
Motivation to not sell drugs in grocery store		
Lack of knowledge or not being a professional	106.5 \pm 14.5	< 0.001*
Afraid of illegal	107.6 \pm 14.3	0.033*
Low profit or not worth	104.4 \pm 6.1	0.279*
External factors		
Temperature and humidity control in the store		0.178**
No	113.4 \pm 15.7	
Yes	135.0 \pm 0.0	
The cleanliness		0.085*
Clean	115.1 \pm 15.3	
Should be improve	104.8 \pm 17.1	
Providing educational media about drugs sold in the store		0.021*
Yes	122.6 \pm 12.7	
No	111.3 \pm 15.9	
Having an application to monitor the information sources		< 0.001*
Yes	116.0 \pm 14.9	
No	93.3 \pm 5.9	
Using or accessing online media such as Internet, Facebook, Line, Instagram, and TikTok		< 0.001*
Yes	122.6 \pm 12.1	
No	111.3 \pm 15.9	

Factors	Average literacy score \pm SD	p-value
Channels for receiving information about health products		
Television, radio	115.6 \pm 16.8	0.602*
Training from a health personnel	NA	NA
Brochure, poster, and academic document	121.4 \pm 14.4	< 0.001*
Social media, internet	118.2 \pm 13.8	0.073*
People in the village such as neighbors, village health volunteers, public broadcasting, grocery stores	112.4 \pm 17.2	0.413*
Peddlers/drug peddlers	NA	NA
The store inspection by the officer in the past year		0.032*
Yes	117.2 \pm 14.8	
No	108.2 \pm 16.2	
Source to buy drugs for selling in grocery stores		
Pharmacy with a pharmacist on duty (Pharmacy 1)	121.3 \pm 17.9	<0.001*
Pharmacy without a pharmacist on duty (Pharmacy 2)	112.3 \pm 3.8	0.876*
Delivery truck or peddler	109.2 \pm 15.2	0.295*
Buying via an online platform	NA	NA
Buying from TD Tawandang Co., Ltd.	130.0 \pm 7.1	0.141*
Buying from a wholesale mall such as Makro	NA	NA

Note: * = T-test, ** = one-way ANOVA

Pearson's Correlation coefficient between the score of health product literacy and quality grocery store score at the 95% Confidence Interval

The score of health product literacy and quality grocery store score were inversely related at the low level with no statistical significance. (Table 5)

Table 5: Pearson's Correlation coefficient between the score of health product literacy and quality grocery store score (n=60)

	Access	Understanding	Communication	Decision	Behavioral Modification	Word of Mouth	Total
Pearson's Correlation	0.0705	0.0287	0.0011	0.2512	0.0227	0.0193	0.0721
p-value	0.592	0.828	0.993	0.053	0.8634	0.884	0.584

Discussion

Several factors were found to be associated with health product literacy among grocery store operators, including requests from customers, health-promoting hospitals, hospitals located far away or inconvenient to travel to, lack of knowledge or not being a professional, fear of illegal activities, providing educational media about drugs sold in the store, using or accessing online

media, receiving information about health products via brochures, posters, or academic documents, and ensuring that drugs sold in grocery stores were bought from pharmacies with a pharmacist on duty and undergone inspection by an officer in the past year. It was also observed that there was an inverse relationship between the score of health product literacy and the quality of grocery store score at the low level.

Comparing with the previous study

This study found that health product literacy among grocery store operators was at a moderate to high level, such as access, communication, word of mouth, understanding, and behavioral modification. This corresponded with the study of Kreethathorn and Arunakul (2022), which found that the health product literacy of Thai citizens was at a moderate level. However, the difference is that the highest average score is behavior modification. Also, the corresponding factors associated with literacy are using the internet and perceived information on health products from various media.

New Knowledge

The new knowledge obtained from this study is that a quality grocery store or a grocery store with a quality grocery score of 8 points has no relationship or effect on the level of health product knowledge or the health product knowledge score of the grocery store operator, which means the quality grocery store operator can have a low or high level of knowledge about health products, as the results of this study concluded. The score of health product literacy and quality grocery store score were inversely related at the low level with no statistical significance.

This study generates new knowledge, which is an important factor that has a relationship with health product literacy among grocery store operators, with statistical significance at a 95 % confidence interval, as shown in Figure 2.

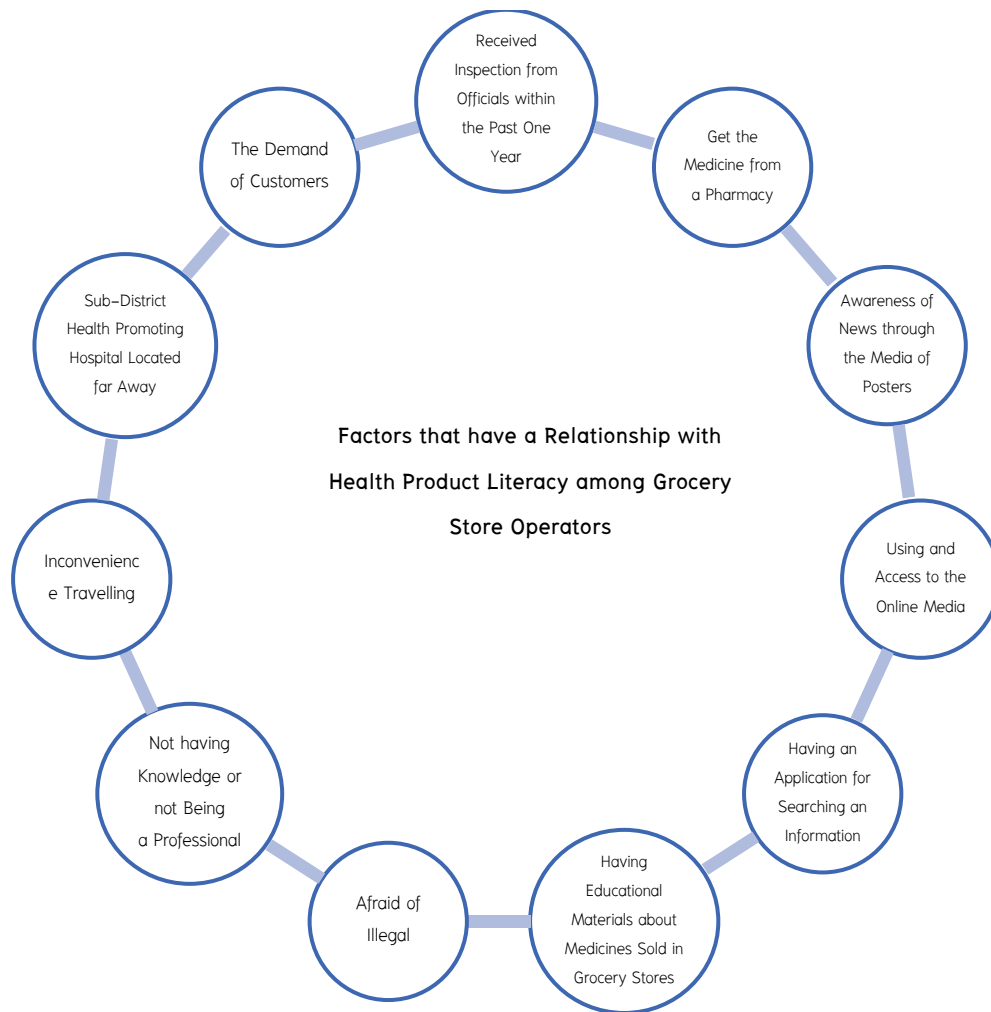


Figure 2 Factors that have a relationship with health product literacy among grocery store operators.

Conclusion

1. The result revealed that health product literacy among grocery store operators is moderate to high in aspects such as understanding, behavior modification, information accessibility, inquiry interaction, and word of mouth. The aspect that has low literacy is decision-making.

2. Factors that have a relationship with health product literacy among grocery store operators with statistical significance at a 95% confidence interval were the demand of customers, Sub-district health promoting hospital (SHPH) located far away, inconvenience travelling, not having knowledge or not being a professional, afraid of illegal, having educational materials about medicines sold in grocery stores, having an application for searching an information, using and access to the online media, awareness of news through the media of brochures, posters and academic documents, get the medicine from a pharmacy that has a pharmacist on duty, and has received a grocery store inspection from officials within the past one year.

3. The overall correlation between a score of health product literacy and a score of grocery store quality was inversely related at a low level with no statistical significance.

Suggestion

1. Suggestions for Usage

The results of the study should be used to plan for the development of people in the community, especially grocery store operators. The results of this study found that the knowledge level of health products among grocery store operators in all six aspects was at a moderate level. Therefore, awareness among grocery store operators should be raised to a higher level to increase the potential of grocery store operators to be able to make safe and appropriate decisions about buying medicines and health products to sell in grocery stores. Also, the level of health product knowledge of grocery store operators should be measured after raising awareness to know that the grocery store operators actually have higher knowledge to lead as a guideline for creating awareness in other communities.

2. Suggestions for Further Research

This study was conducted only in one area (One sub-district). Therefore, the obtained data was only from a small area, which cannot refer to the whole area of Udon Thani Province. The next study should be conducted with the whole district or province in the future to be able to use the data to develop further.

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