The Level of Health Literacy in Medication and Health Products Usage and Factors Effecting among the Older Adults Who Attended the Senior Schools in the Northeastern of Thailand

ABSTRACT

Background and Objective: The selecting and misusing medications and health products may affect the health of the patients. The aim of this study is to determine the level of literacy and factors affecting health literacy in medication and health products usage in the older adults who attended the senior schools in Northeastern of Thailand.

Materials and Methods: A cross-sectional study with face-to-face interviews and self-report questionnaire study were conducted in March - July 2021. The 1,599 older adults were selected by the stratified random sampling method from the 13 older adult schools. Chi-square test and multiple logistic regression were used to test the association between variables.

Results: The analysis showed that most participants have a low level of health literacy in medication and health products usage. The mean score for all six components of the V-shape model by the Department of Health of Thailand was 145.20 ± 37.13 out of 300 points which was less than 50% of total points. The lowest was average of 22.31± 7.03 out of 50 points. The three levels of health literacy were at the low (≤50 points). Factors affecting to low health literacy in medications and health products usage, were single status (OR=2.27, 95% CI: 1.18, 4.40), lack of family support (OR=1.54, 95% CI: 1.24, 1.91), and having a smartphone (OR=1.58, 95% CI: 1.21, 2.06) with the ability to browse the internet (OR=1.72, 95% CI: 1.28, 2.31).

Conclusion: Public and community stakeholders need to encouraging the older adults to have a better level of health literacy in medications and health products usage are required. Activities should be followed and focus on health literacy. Then, it results in good health for the older adults and improves their ability to be self-care as well.

Paper Type: Research Article

Keywords: Health Literacy, Medication Usage, Health Products Usage, Older Adults, The Senior Schools.

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Introduction

Many countries around the world are facing and becoming the Aging Society. The number of people aged more than 60 years old are up to 14% of the world population. In ASEAN, 11% of the whole population is the older adults. In Thailand, older adults are 18% of the total population (1), and most (18.9%) live in the Northeastern region (2). It causes the reduction of productivity at household and societal levels. An occurring burden on medical expenses from diseases and health problems; health deterioration that leads to the reduction of cognitive ability, auditory ability and psychosocial factors; affect the understanding of health literacy (3). The application for the older adults health care causes health problems both directly and indirectly (4).

With the advanced in technology and communication, as well as the spread of COVID-19, people's daily life has been changed. The technology has been used more than before for that reason. However, as a consequence of business strategies, communication, and advertising through modern technology tools in various channels, sometimes the demand for profits made many people ignore their responsibility to society. Therefore, many consumers, who have no media literacy, will be disadvantage from this benefit. The older adults are high-risk group that were taken advantage of due to the absence of necessary skills and experiences. Furthermore, unsuspecting nature of Thai people that often do not doubt exaggerated advertising, which is deceived by acquaintances or famous people, has been the victim of those advertisements. The most products that are found in exaggerated advertising are dietary supplements because it is easy to buy online without any validation and sometimes can cause harmful events (5). Thus, selecting and misusing medications and health products may affect the health of the patients.

Health literacy is the capacity to access, understand, apply, communicate, and make decisions on health care. If the older adults lack health literacy, it may lead to problems in their well-being, complications, an increase in the use of emergency services, the expenses of their family and the public health system (6), as well as a mortality rate (7), especially the older adults who live alone. Health literacy can be classified into three levels as follows: Functional literacy means being able to read and write; Interactive literacy means being able to communicate; and Critical literacy means being able to analyse, evaluate, and apply the data to make decisions that are suited to their lives. The promotion process Health literacy with V – shape model, has 6 components: access, understanding, answering questions and Exchange, decision-making, behavior change and telling more than teaching to know. (8)

In 2015, the Health Education Division of the Ministry of Public Health assessed health and health literacy. They found that people of working age mostly had knowledge of the health literacy scale at a fair of 47.1% while 39.7% were at a poor level. The health behavior scale at a poor level of 47.9% while 27.5% and 24.6% were at a fair and good scale respectively (9). These results reflect the inappropriate health care, which causes both physical and mental diseases in individual and society in the future. It is in line with the announcement of the World Health Organization (WHO), which suggests that member states should give priority to the health literacy development of their people. The United Nations declare the Sustainable Development Goal (SDGs), which covers and balances economic, social, and environmental aspects for member states to create health literacy development to

maintain individual good health (10). Moreover, the policy of the Ministry of Public Health in 2021, the older adults Person Act, B.E. 2546 (2003), and the proposal of the Health Reform Council to the Twenty-Year National Strategic Plan (2018- 2037) were assigned that a survey should be conducted to monitor and reflect on the progress and achievements of all concerned agencies in the implementation of health literacy. The Success will base on changes in people in the different groups or the whole country in certain topics. The survey should be held every three or five years in order to build and develop the capacity of the individual and sustainably maintain their healthy life. The roadmap has been created as the goal of the Department of Health to Thailand 4.0, in order for Thai society to become a health-literate society by 2036, to create "Smart older adults citizen: Thai older adults people as the milestones and development of surveillance, prevention, as well as promoting the older adults and their caregivers" (11).

For this reason, the level of health literacy and factors affecting health literacy in medication and health products use in the older adults were studied. Such a study was carried out on the older adults who participated in the local senior schools, located in the northeastern region of Thailand. It is in accordance with the 2nd National Older adults Plan (1999-2021), the 1st revision (2009), and the policy to support the older adult's society of Thailand. All of these can promote the exchange of knowledge and skills for physically and mentally health care, as well as exchanging life experiences with each other, which can contribute to increase the sustainable quality of life for the older adults(12). The aim of this study is to determine the level of health literacy in medication and health products usage and factors affecting in the older adults who attended the senior schools in Northeastern, Thailand. It is also intended to be used as a guideline for the development of health literacy programs for those older adults to have a good quality of life.

Methods

Study design and study site

This was a cross-sectional survey design using questionnaire data obtained through face-to-face interviews and was carried out among the older adults at the age of 60 and above who were students in the 13 older adult schools in the Northeastern, Thailand consisting of Maha Sarakham Province in the 7th Health Region, Loei Province in the 8th Health Region, Nakhon Ratchasima Province in the 9th Health Region, and Sisaket province in the 10th Health Region.

Participants and data collection

The initial sample sizes of 1,537 participants were calculated using Cochran's formula (Cochran, 1997 cited in chow et al. 2008(13), with the confident level at 95%, and a variance value of 8.18 (14). In case of a high non-participation rate due to the sensitivity of the issue, we included approximately 20% participants, with a final sample size of 1,922 participants were selected by Multi-stage Random Sampling. All participants who were invited to the study volunteered to participate. The recruitment of participants' criterion was; with or without underlying diseases, with full consciousness, could talk and communicate in Thai and were willing to provide information. It will be excluded in case of hospitalization during the data collection, acuted illness that requires urgent treatment, or was not in the target area during the collection period and was unable to cooperate throughout the study. After excluding some participants who did not complete the questionnaire. Then the correct total amount of the participants was 1,599.

The proportional to the population in each

health region from 13 senior schools in the Northeastern of Thailand consists of the following schools:

Four schools from the 7th health region, with a participant group of 389 people;

Three schools from the 8th health region, with a participant group of 376 people;

Three schools from the 9th health region, with a participant group of 512 people and;

Three schools from the 10th health region, with a participant group of 322 people.

The researcher explained the purpose of the study to all potential participants, their rights to participate and assured them that their information would be kept confidentially. Consent forms were handed out and signed by participants. All participants received a small souvenir after data collection. All recruitment and data collection took place between 1st March -31st July 2021.

Measurements

Questionnaire

The questionnaire was modified form previous research (15) and was initially developed in Thai. Data were collected by a structured questionnaire which consist of a general data collection of 25 questions, a checklist and open-ended questions. The health literacy assessment questionnaire about the usage of medications and health products developed by the researcher consists of 6 parts (six components of the V-shape model by the Department of Health) (8) and 10 items per each, a total of 60 items as follows, Part 1: access to health information and health services; Part 2: knowledge and understanding; Part 3: communication skills; Part 4: decision-making skills; Part 5: Media literacy; and Part 6: self-management. The content validity of the health literacy assessment questionnaire was examined using the formula of Rovielli and Hambleton, 1977 by 5 experts and found that the IOC value was greater than 0.5 for all 60 items. An assessment of clarity, feasibility and appropriateness was carried out with 30 additional participants who attended the senior schools Northeastern, Thailand. We pre-tested and edited three times and finally, it had a Cronbach's alpha Reliability coefficient of 0.96.

Questionnaire scoring

The questions will be answered by rating scale of 5 levels with a total ranging from 60 - 300 points. The questionnaires were scored as follows: 1) response to the health literacy scores was classified as 'low' for mean scores of less than 50%, 'medium' between 50-74% and 'high' over 75%. (16) 2) The level of health literacy score is as follows: functional health literacy (item; 1, 2, 6, 7, 11, 12, 13, 14, 15, 21, 22, 31, 32, 36, 41, 42, 46, 47, 51,and 52), total 20 items have total score 100 points, communicative health literacy (item ;3, 4, 5, 16, 19, 20, 23, 24, 25, 26, 30, 33, 35, 40, 43, 45, 53, 54, 55, and 60), total 20 questions have total score 100 points and critical health literacy (item; 8, 9, 10, 17, 18, 27, 28, 29, 34, 37, 38, 39, 44, 48, 49, 50, 56, 57, 58, and 59), total of 20 items have total score 100 points. When testing the association between factors and health literacy in the usage of medications and health products by binary logistic regression, level of health literacy was defined as 'low' for scores <150 pts., 'Medium and High levels for those scores ≥ 150 pts.

Statistical analysis

Descriptive statistics were used to describe demographic and level of health literacy. Pearson's chi-squared test was used to find any association between categorical variables. Binary logistic regression method was carried out to find significant predictor and multiple logistic regression was used to test the association between factors. All data were analyzed by

using R studio program.

Results

Social demographic and health literacy data

Of the 1,599 participants, 59.85% were female and the mean age was 62.58 years (range 60-87 years old), education does not exceed grade six (93.36%). 63.10% of the participants were divorced or widowed and unemployed person (39.40 %). 27.52% of the participants had enough money to live and most of them lived in rural areas. 77.67% of the participants had chronic diseases. 77.74% of the participants were took care by caregivers, while most caregivers were children in family. 61.23% of the participants lacked of supporting from medical professionals, 79.92% of the participants had a mobile phone with internet access while 41.21% of the participants could not use mobile phone to access the internet. However, those who needed for health literacy in the usage of medications and health products were at 91.24% (see Table 1).

Table 1: Participants' demographics (N= 1,599).

Personal factors	Number	percentage
Sex Male Female	 642 957	 40.20 59.80
Age (Mean 62.58 (5.96), Min= 60, Max= 87) 1) < 80 years 2) ≥ 80 years	 1,513 86	 94.62 5.37
Education background 1) above grade 6 2) not exceed grade 6	 1,493 106	 93.37 6.63
Marital status 1) Single 2) Divorced or widowed 3) married	 53 1,009 537	 3.31 63.10 33.58
Occupation 1) Employed 2) Unemployed	 969 630	 60.60 39.40
Place of residence 1) urban 2) rural	 43 1,556	 2.69 97.31
Caregiver 1) do not have 2) family members	 356 1,243	 22.26 77.74
Having enough money	440	27.52
Underlying disease	357	22.33
Have a smartphone(s) to access the internet	321	20.08
Have a smartphone(s) and can use it to find health information on the internet 1) proficiency 2) not proficiency 3) cannot use	 285 655 659	 17.82 40.96 41.21
Support from family to provide any help or advice on the usage of medications and health products	843	52.72
Support from medical personnel to provide any help or advice on the usage of medications and health products	620	38.77
The need to promote literacy in the usage of medicines and health products	1,459	91.24

Health literacy in using medications and health products

Most of the participant group had a low level of knowledge in all components, with the highest level of knowledge and understanding of drug and health product usage (mean=24.44 ± 7.78), next level was the decision-making skills in drug and health product usage (mean=23.85 ± 7.58), while the lowest was self-management in drug and health product usage (mean=22.31 ± 7.03). Overall, literacy was found at a low level (mean=145.20 ± 37.13). Most of the participants had a low level of health literacy scores on medication and health product usage (mean = 49.71 ± 13.44) (see Table 2).

Table 2: The level of health literacy in medications and health product usage by V – shape model, has 6 components. (N= 1599)

The Health Literacy level of Medications and Health Products Usage	Low (N/%)	Medium N (%)	High N (%)	Average score (Mean±S.D.)	Level of HL*
The Health Literacy level of Medications and Health Product Usage by six aspects					
1. access to health information and health services (50 pts.)	1,585 (99.12)	12 (0.75)	2 (0.13)	23.83 ± 7.32	Low
2. Knowledge and understanding (50 pts.)	543 (33.96)	885 (55.35)	171 (10.69)	24.44 ± 7.78	Low
3. communication skills (50 pts.)	893 (55.85)	691 (43.21)	15 (0.94)	22.90 ± 7.37	Low
4. decision-making skills (50 pts.)	792 (49.53)	633 (39.59)	174 (10.88)	23.85 ± 7.58	Low
5. Media literacy (50 pts.)	862 (53.91)	624 (39.02)	113 (7.07)	23.87 ± 7.55	Low
6. Self-management (50 pts.)	896 (56.04)	689 (43.09)	14 (0.88)	22.31 ± 7.03	Low
Total (300 pts.)	998 (62.41)	580 (36.27)	21 (1.31)	145.20 ±37.13	Low
The Health Literacy level classified by Three level					
1. Functional health literacy(100pts.)	917 (57.35)	576 (36.02)	106 (6.63)	49.71±13.44	Low
2. Communicative health literacy (100pts.)	933 (58.35)	647 (40.46)	19 (1.19)	48.32± 12.45	Low
3. Critical health literacy (100 pts.)	1082 (67.67)	502 (31.39)	15 (0.94)	47.33±12.46	Low
Total (300 pts.)	998 (62.41)	580 (36.27)	21 (1.31)	145.20 37.13	Low

*Level of Health Literacy 'Low' : ≤50%, 'Moderate': 50-74% and 'High' : ≥75%)

Factors Affecting to Health Literacy in Medication and Health Product Usage

An analysis determined the factors related to health literacy in medication and health product usage. Whereas a univariate analysis revealed the risk factors for having a level of health literacy in medication and health product usage. Factors affecting on low health outcomes statistically were marital status (OR=2.11, 95% CI :1.09, 406, p=0.023), lacking of family support (OR=1.31, 95% CI :1.07,1.61, p= 0.009), lacking of supporting from medical professionals (OR=1.24, 95% CI: 1.01,1.52, p=0.044), being able to access internet from mobile phone or computer (OR=1.58, 95% CI :1.24, 2.02, p< 0.001), internet browsing proficiency (OR=95% CI: 1.24, 2.45, p=0.001), and those who have smartphone but not able to access internet (OR=1.34, 95% CI: 1.02,1.72 p=0.039). (see Table 3)

For factors that affect health literacy in medication and health product usage, the researchers found the factors that caused the risk of low health literacy were the persons who have a smartphone (OR=1.58, 95% CI: 1.21, 2.06) of those who do not have, non-family support (OR=1.54, 95% CI: 1.24,1.91), whose marital status

Table 3: The analysis of the relationship between factors and health literacy in the usage of medications and health products (N= 1599)

Factor	Low level N(%)	Medium -High level N(%)	ORcrude (95%CI)	Chi-squared
1. Sex male female	 405 (63.08) 593 (61.96)	 237 (36.92) 364 (38.04)	1.05 (0.85,1.29)	0.65
2. Age 1) ≥ 80 years 2) < 80 years	 58 (67.44) 940 (62.13)	 28 (32.56) 573 (37.87)	1.26 (0.79,2.01)	0.322
3. Education background 1) above grade 6 2) not exceed grade 6	 71 (66.98) 927(62.09)	 35 (33.02) 566 (37.91)	1.24 (0.82,1.88)	0.315
4. Marital status 1) Single 2) Divorced or widowed 3) married	 41 (77.36) 333 (62.01) 624 (61.84)	 12 (22.64) 204 (37.99) 385 (38.16)		0.023 * 0.948
5. Occupation 1) doing 2) no	 621 (64.09) 377 (59.84)	 348 (35.91) 253 (40.16)	1.2 (0.97,1.47)	0.087
6. Place of residence 1) rural 2) urban	 972 (62.47) 26 (60.47)	 584 (37.53) 17 (39.53)	1.09 (0.59,2.02)	0.789
7. Caregivers 1) do not have 2) have	 232 (65.17) 766 (61.63)	 124 (34.83) 477 (38.37)	1.16 (0.91,1.49)	0.224
8. Types of caregivers 1) spouse 2) child/children	 81 (66.64) 685 (61.05)	 40 (33.06) 437 (38.95)	1.29 (0.87,1.92)	0.206
9. Financial status 1) not enough 2) enough	 286 (65.00) 712 (61.43)	 154 (35.00) 447 (38.57)	1.17 (0.93,1.47)	0.188
10. Underlying disease 1) have 2) do not have	 225 (63.03) 773 (62.24)	 132 (36.97) 469 (37.76)	1.03 (0.81,1.31)	0.787
11. Have a smartphone(s) to access the internet 1) have 2) do not have	 826 (64.63) 172 (53.58)	 452 (35.37) 149 (46.42)	1.58 (1.24,2.02)	<0.001 **
12. Have a smartphone(s) and can use it to find health information on the internet 1) proficiency 2) not proficiency 3) cannot use	 207 (72.63) 415 (67.04) 204 (60.36)	 78 (27.37) 204 (32.96) 134 (39.64)	1.74 (1.24,2.45) 1.34 (1.02,1.76) 1	0.001 ** 0.039 *
13. Support from family to provide any help or advice on the usage of medications and health products. 1) do not have 2) have	 497 (65.74) 501 (59.43)	 259 (34.26) 342 (40.57)	1.31 (1.07,1.61)	0.009 *
14. Support from medical personnel to provide any help or advice on the usage of medications and health products 1) do not have 2) have	 630 (64.35) 368 (59.35)	 349 (35.65) 252 (40.65)	1.24 (1.01,1.52)	0.044 *
15. The need to promote literacy in the usage of medicines and health products 1) want 2) do not want	 913 (62.58) 85 (60.71)	 546 (37.42) 55 (39.29)	1.08 (0.76,1.54)	0.664

* Significant ($p < 0.05$), ** Significant ($p < 0.01$)

*Level of Health Literacy was defined as 'Low' average <150 pts.), 'Medium - High level' ≥150 pts.

is single (OR=2.27,95% CI: 1.18,4.4), and those who have the ability to use a mobile phone to browse information on the internet (OR=1.72, 95% CI: 1.28,2.31) of those who have not, as shown in Table 4.

Table 4: The results of analyzing many factors at a time (multiple logistic regression; backward stepwise: likelihood ratio) on health literacy in using medications and health products (N= 1599)

Factor	OR crude (95%CI)	OR adjusted (95%CI)	p valuea
Smartphone (have vs do not have)	1.58 (1.24,2.03)	1.58 (1.21,2.06)	< 0.001**
Family support (have vs do not have)	1.31(1.07,1.61)	1.54 (1.24,1.91)	< 0.001**
Marital Status (single vs married)	2.1 (1.1,4.03)	2.27 (1.18,4.4)	0.015*
Can use smartphone (able to use vs unable)	1.75 (1.32,2.33)	1.72 (1.28,2.31)	< 0.001 **

aWald's test, * Significant ($p < 0.05$), ** Significant ($p < 0.01$)

P(x) = 1.58(Have smartphone) + 1.54(Not have Family support) + 2.27(Single) + 1.72 (Can use smartphone)

From the p-value of the Hosmer and Lemeshow goodness of fit (GOF) test = 0.319, it is concluded that the information can be compatible with this model.

Discussion

Health Literacy Level in Medication and Health Product Use in Older Adults

The participants consisted of students from senior school, older adults with chronic

illnesses risk groups and healthy groups. These people always are ready to learn, because developing health literacy is the first development at the individual level. Therefore, it is very important to know the level of knowledge and health literacy in selecting medicines and health products in order to find a solution to the problem.

When classified into six components of the V-shape model by the Department of Health(8), it was found that most of the older adults have a level of low health literacy in medication and health product usage in all components. When sorting the score by levels of health literacy, it can be found that most of them are at the functional level. The result is in line with the study of Kamlasong et al. (2022), which studied the health literacy and behaviour of the Muslim older adults and found that most of them are at the functional level (98.98%) (17). When the researcher considered the information of the participants found that most of their background in education was not more than grade six, which was in line with many studies in the past showing that having high education was likely to have higher health literacy than those who were not. It can be said that a low-education background will affect the receipt and usage of information, as well as access to various health services, which can lead to lack of the self-care ability(18). A low-education background can affect health conditions directly and indirectly(19) because when able to read and write they will have the ability to search and seek the information, which can well understand health information. They also have the ability to make better decision-making in medication and health product usage. The reason that the group of participants had a low health literacy in using medications and health products in all six areas because they lacked the ability to assess the accuracy and reliability of the health information obtained from various sources, whether from people or other mediums such as radio, television, and the internet. Moreover, the participant group is unable to ask or request for any health information confidently and lacks of the decision power to use medications and

health products by themselves. These results are consistent with the study of Kittiporn Nausuwan et al. (2017), which found that the older adults had low health literacy. Most of them are at fair and bad levels. It may cause by personal factors that the participant group are the older adults and mostly educated only in primary school. Furthermore they may have problems with their memory, which is less remembered and easy to forget(20). In the same way, a study of health literacy and the quality of life of the older adults in the Central-Northeastern region found that the average score on the overall health literacy level was low (21). The study of health literacy in Thai older adults in Bangkok older adult club found that 99.50% had health literacy at the functional level(22). From the results of this study, the older adults should be developed to have a better health literacy in using medications and health products in all six components. So that they will have skills to access information or knowledge and understanding to analyze, evaluate and practice in self-management which can create personal motivation and the ability to use medications and health products, which will gain the good health. When the older adults have sufficient health literacy, it will benefit in preventing the various risking factors for the health of the older adults.

Factors Associated with Health Literacy in Medication and Health Product Usage

From a univariate analysis, it was found that the risking factors showing a statistical association with the level of health literacy in medication and health product usage were: marital status, lack of family support, lack of support from medical professionals, people with smartphone or computer with internet access, and those who have the ability to browse the internet. Having analyzing several factors, it was found that factors at risk of low health literacy in medication and health product usage are those with smartphone, those who lack of family support, those who are single, and those who can use a smartphone to browse the internet.

Marital status: single

Single status has an opportunity of having a low level of health literacy in medication and health product usage compared to those who are married. If there were a spouse, there would be someone to support in care-taking or discuss some health-care problems with each other. When staying alone, there was no one to consult. Hence the risk of low literate (23). However, it was different from the work of Natcha Ruangkiatkul found that marital status and living with family members were not associated with health literacy (24).

Lack of Family Support

Lack of support, assistance, or advice from family, has an opportunity to have a low level of health literacy in older adults. Families that have a good relationship, assistance, advice, communication, and taking care of each other can be led to participate in joint decision-making and bring the appropriate health behaviors (25). Good interactions with their family members will enhance the older adults' knowledge and the ability to access and understand health issues more clearly(26). Nevertheless, if there were not much family or social support or they felt that not enough social support from their families, it might decrease their literacy and resulted in worse health requiring more hospitalizations. Besides predicting health literacy level in the older adults with chronic disease in the community and found that was positively related with statistically significant to older adults health literacy ($r = 0.234$, $p < 0.001$) (27), such as the family played a supporting role, supported on health information, interaction, and exchange of information, so the older adults can make

the right decisions about choosing the health information in populations at risk of diabetes and high blood pressure (28).

Lack of medical professionals' support

The older adults who received advice from medical personnel, go for check-ups and visit the doctor, there was a moderate positive relationship with health literacy (29). They could improve higher health literacy(30), including medical professionals play a role in supporting health information and exchanging health information can increase the health literacy of the older adults to care for their own(28).

Having a Smartphone and Having a low Level of Health Literacy

With a smartphone there is a lot of opportunity to search for information. But a smartphone could lead the older adults into both believable and false information or sources, in case of getting some misinformation it could get a low risk of health literacy as well. Those older adults who accessed to digital technology mostly through smartphones to access social media applications such as Facebook, Line, Twitter, and YouTube with the problem in technology skills were at a high level. Females had higher problems accessing and using digital technology than males with the statistical significance (31).

The Ability to Use a Smartphone to Seek Information and Having a Low Level of Health Literacy

Having the ability to search a lot of information on the Internet is to have a chance to find a lot of information to make medical decisions and to have more understanding about eHealth than those who were advised by a doctor(32). Moreover, the health information-seeking behaviour from online media related to the older adults' health literacy in a positive manner with the statistically significant ($r = 0.163$, $p< 0.05$) and predicted the health literacy among the older adults with chronic disease in the local community (27), the older adults with sufficient health literacy were capable of selecting a piece of information, and had the capability to use it for self-care appropriately(23).

The reason that the older adults use online media is more dangerous than the younger generation is due to inexperience in being scammed. Adults in the baby boomer generation or Hippies ('60 - '70s) grew up with one-way communication and were screened by the government or news agencies. Therefore, in the modern era, when they receive information — that anyone can write such information, people in this group tends to believe without considering the facts, needing only a source or reference (which may not be true) can easily believe (or deceived). In particular, information about health issues is shared and spread across a wide network with misleading. When the older adults uses the internet and social media, it is often together with social friends, especially their old friends that send a piece of messages, information, news, and misinformation to spread quickly(33). Therefore, if desired to encourage the older adults to have better health literacy in using medications and health products, family supporting is needed. Family members should be involved in the health care of the older adults. Furthermore, the older adults with smartphone can access a wide range of information, and the screening for accuracy is missing, which will lead to the receiving and believing of misinformation such as exaggerated advertising or false information. The result of this situation is a low health literacy. The solution to this problem is necessary to advise and facilitate the older adults using smartphone to browse for information from trustworthy sources. The older adults will receive knowledge and understanding of proper health care, which will bring them healthy and able to rely on themselves.

Limitations: This research collected data during the COVID-19 outbreak, thus, the research team was unable to complete it in the timeframe. Due to government measures for the prevention of the spread of COVID-19, researchers cannot collect data physically in the target areas. Therefore, it has been solved by four methods: calling the participant group by telephone, asking the participant to answer the online-questionnaire, sending the questionnaire by post, and adding research team members in the target areas to assist in collecting data. After the Covid-19 situation had been reduced, the research team was able to go to the target areas physically to collect data.

Conclusion

In summary, those older adults in the Northeastern of Thailand had a low level of health literacy in medication and health product usage in all components of the V-shape model by the Department of Health, and most of them have knowledge at the functional level. It was found that the factors of the lacking of family support, single status, and having a smartphone for searching information are the risk factors that result in low health literacy.

The recommendation for applying this research is that the relevant personnel should determine measures that will foster health literacy in medication and health product usage in all aspects and encourage the older adults to have healthcare behaviors in using the proper medications and health products. The suggestion for future research is to study the model and develop some program to improve health literacy in medication and health product usage, so they can appropriately manage themselves effectively.

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