วารสารวิทยาศาสตร์สุขภาพแห่งประเทศไทย
Health Science Journal of Thailand

Ya Chud and Polypharmacy Situation of Muang District in Suphanburi Province

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Abstract

Ya Chud is a type of self-medication that is used to treat various ailments such as pain and common cold. It's also considered a form of polypharmacy that is particularly affiliated with drug-related problems (DRPs). This cross-sectional study aimed to investigate the prevalence of Ya Chud use and polypharmacy situation, and assess the factors that were associated with this situation. In total, 353 people participated in the study. All participants lived in the Muang district, Suphanburi province. Data collection was performed using an interview questionnaire. We calculated descriptive statistics for general demographic information and the prevalence of medication use. Moreover, we utilized logistic regression to evaluate the factors related to polypharmacy. The majority of the participants were female, and about half of them were more than 60 years old. The prevalence of Ya Chud usage was about 37%. The symptoms or diseases of Ya Chud use were pain and the common cold. The prevalence of polypharmacy (using more than 5 medications) among Ya Chud users was 58.46%, while the prevalence was 32.58% among all participants. Having cardiovascular disease was associated with polypharmacy in the age-adjusted model (OR = 3.05, 95% CI = 1.28-7.59). Ya Chud use contributed to an increase in polypharmacy. To prevent and reduce this problem, health care practitioners should set up more vigorous programs on pharmacy health literacy to increase people's awareness, particularly in those who have cardiovascular diseases. A surveillance system for polypharmacy and Ya Chud use would also help address this continuing problem in the community.

Keywords: Ya Chud, polypharmacy, drug-related problems (DRPs), cardiovascular diseases

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Received: May 24, 2022; Revised: Sep 27, 2022; Accepted: Oct 20, 2022

https://doi.org/10.55164/hsjt.v5i1.258017

Citation:

Makboon K, Pongpaew W. Ya Chud and polypharmacy situation of Muang district, Suphanburi Province. Health Sci J Thai 2023: 5(1): 56-63. (in Thai); https://doi.org/10.55164/hsjt.v5i1.258017

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Introduction

One of problems of inappropriate drug use that still exists in Thailand particularly in the rural area is the use of a set of medicine or "Ya Chud." (ยาชุด) The definition of Ya Chud is a set of several non-prescribed medicines which can be purchased for self-medication over the counter and normally available in grocery stores in Thailand. The type of Ya Chud is varied depending on the purpose of use for example a set for pain (such as back pain, and knee pain), fever, and allergy. Basically, in one set or combination of Ya Chud contains at least 3 medications.[1-3] Although Ya Chud is illegal, this kind of medicine can normally be found at the groceries, drug peddlers, private clinics, and from doctors performing illegal injections in the villages, especially in the suburbs.[2] However, patients purchasing Ya Chud do not receive supervision from pharmacists or healthcare personnel providing correct drug information.[2-4] At the present time, people can even order Ya Chud via the Internet as well.[5]

In addition, Ya Chud is a form of polypharmacy that has been defined as inappropriate drug use of multiple medications at the same time from one or more than one source. Other definitions for polypharmacy that apply to Ya Chud use include: the use of medications more than clinical indication,[6-10] the use of two or more drugs for the same treatment,[7, 11] and the use of two or more drugs that are in the same chemical group.[7] The cut-off value for the minimum number of medications taken simultaneously used to define polypharmacy is variable and varies among experts. However, the number of medications that normally used to define polypharmacy is the use of 3 to 5 medications per day.[6, 12] The excessive use of medications from polypharmacy has been proved to cause negative health outcomes[13] that may be arise from the adverse outcomes of drug therapy or drug related problems (DRPs) such as drug adverse events, drug-disease interactions and drug-drug interactions.[14-17] Factors inconsistently associated with polypharmacy in the previous studies include gender, age, socio-economic status, having a comorbidity or chronic illness, and place of living (ie. urban or rural).[3, 6]

Although there are restrictions and the threat of law enforcement against Ya Chud, it's still not difficult to find Ya Chud in the community. The outstanding problems due to the use of Ya Chud arise due to: 1) some drugs are always added to a set of Ya Chud such as a steroid entity, 2) having DRPs involving polypharmacy from the use of Ya Chud itself, or Ya Chud together with other medications such as prescribed medicines.

Based on the annual community-based survey conducted by Sirindhorn College of Public Health, Suphanburi, it was found that Ya Chud, or a non-prescribed poly-pharmaceutical pack, is commonly available at the local retail stores around Muang District where patients can freely buy it whenever they want to. This study, therefore, aimed to explore the situation of the excessive use of medications from Ya Chud and polypharmacy among participants in Muang District, Suphanburi Province. Moreover, we also assessed the factors that were associated with polypharmacy among participants. The information from the study will be used to establish pharmacy programs that expand health literacy to reduce polypharmacy, increase awareness about rational drug use (RDU), prevent the adverse drug events, and lower health care costs from the inappropriate use of medications of people in the community.

Objectives

1) To investigate the prevalence of Ya Chud use and polypharmacy situation

2) To assess the factors that were associated with Ya Chud use and polypharmacy situation

Methods

Study design and study population

We conducted a cross-sectional study. Our study population were people who lived in Muang district, Suphanburi province, Thailand. We calculated the sample size using Hair et al. criteria for multivariate data analysis (with alpha = 0.05, the effect size = 0.2).[18] The optimal sample size should be at least 200 participants. Then, we conducted multistage random sampling to select participants into our study. We randomly enrolled

and proportionately selected participants from 3 subdistricts of the Muang district of Suphanburi Province, including the Tubteelek, Tarahad and Ruayai subdistricts. The eligibility criteria for this study included age of over 20 years old and included on the list of subdistrict (thambol) health promoting hospital for each selected subdistrict. People with disabilities or had mental disorders and communication difficulties were excluded from this study. In total, 353 villagers were eligible and interviewed in the study. Data were collected from May through June 2016. The study protocol was approved by the Institutional Review Board (IRB) of Sirindhorn College of Public Health, Suphanburi. All study participants provided their informed written consent before participating in the study interview.

Data Collection

The participants were interviewed by well-trained pharmacy technician students. The study questionnaire included demographic, anthropometric, socio-economic information, as well as illness history and medication use information. Ya Chud was defined as a set of medications which normally consists of 3-9 tablets/capsules in a pack using to treat specific symptoms such as pain, infection and diarrhea. The examples of the questions about medication use were: 1) "Have you ever used Ya Chud since last month?", 2) "If yes, for what reason?", 3) "How many medicines were in each set?", 4) "How many medicines do you receive from the hospital since your last visit?", and 5) "Have you ever used Ya Chud together with prescribed medicines since last month?". Additionally, polypharmacy was defined as the concurrent use of either 3 or more or 5 or more medications. We assessed polypharmacy by counting all the items of medication use from Ya Chud and prescribed medications. Then, we categorized polypharmacy into 2 levels: 1) use of 3 or more medications, and 2) use of 5 or more medications.

Statistical Analysis

We conducted descriptive statistics to gain of various lifestyle factors from participants including anthropometric measurements, socio-economic factors, and comorbidities. Moreover, we also explored descriptive statistics for use of prescribed medication and self-medication from Ya Chud use. Then we applied logistic regression to evaluate the association of factors such as age, gender, socio-economic factors, and comorbidities with medication use. The categorical outcome was based on the combined number of medications, including prescribed medication and Ya Chud, that a participant reported taking. The outcome had 2 categories: 1) less than 5 medications, or 2) 5 or more medications. First, we investigated the bivariate associations for the relationship between each variable and the categorical medication use. We selected all the variables with statistically significant associations ($p < 0.05$) with medication use. To construct the final age-adjusted model, we added all selected variables into the model.

Results

There were 353 people in this cross-sectional study. Most participants in this study were female (77.90%), and about half of them were over 60 years old (49.57%). A majority of them were married (82.72%), had 1-3 births (62.32%), and had normal body mass index (BMI) (51.27%). In addition, a minority of participants had monthly income of more than 10,000 Thai baht (13.03%), bachelor's degree (7.37%), and occupation in government sector (7.65%). Most of them were non-smokers (85.84%) and non-drinkers (85.84%). However, about 53.26% of these participants had cardiovascular diseases as shown in Table 1.

Table 1 Demographic characteristics among Ya Chud users and non-users (n = 353)

Characteristics	n (%)
Age (years)	
< 30	15 (4.25)
30-60	163 (46.18)
> 60	175 (49.57)
Gender	
Male	78 (22.10)
Female	275 (77.90)
Marital status	
Single	44 (12.46)
Married	292 (82.72)
Divorced	17 (4.82)

Table 1 Demographic characteristics among Ya Chud users and non-users (n = 353) (Continued)

Characteristics	n (%)
Parity	
Nulliparous	67 (18.98)
1-3 births	220 (62.32)
>3 births	66 (18.70)
Body Mass Index (BMI, kg/m2)	
<18.5	20 (5.67)
18.5-24.9	181 (51.27)
25.0-29.9	105 (29.75)
>30	47 (13.31)
Income (Thai baht per month)	
No income	138 (39.09)
Less than 5,000	107 (30.31)
5,000-10,000	62 (17.57)
More than 10,000	46 (13.03)
Education	
High school	304 (86.12)
High vocational	23 (6.51)
Bachelor	26 (7.37)
Occupation	
Government	27 (7.65)
Farmer	48 (13.60)
Own business	71 (20.11)
Company worker	74 (20.96)
Other or unemployed (no job)	133 (37.68)
Smoking	
Non-smoker	303 (85.84)
Former smoker	25 (7.08)
Current smoker	25 (7.08)
Alcohol consumption	
Non-drinker	303 (85.84)
3 times per month	15 (4.25)
Less than 3 times per month	35 (9.91)
Comorbidities	
None	123 (34.84)
Cardiovascular diseases	188 (53.26)
Others	42 (11.90)

The prevalence of Ya Chud use was approximately 37.00% (n = 130). Basically, most participants used Ya Chud for pain (38.46%) and common cold (35.38%). Other reasons for using Ya Chud included diarrhea, migraines, allergies, stress, and gastric ulcers. But about 12.30% of participants did not specify their exact the reason for Ya Chud use. Thus, we classified the participants Ya Chud use in the "unidentified" category as shown in Table 2.

Table 2 Symptoms and diseases for using Ya Chud reported by study participants (n = 130)

Symptoms or diseases	n (%)
Pain	50 (38.46)
Common cold	46 (35.38)
Diarrhea	3 (2.31)
Migraine	4 (3.08)
Allergy	5 (3.85)
Stress	3 (2.31)
Gastric ulcer	3 (2.31)
Unidentified*	16 (12.30%)

* "Unidentified" included "use on regular basis," "use for health tonic," and others

We looked at the polypharmacy situation among only Ya Chud users and among all types of medication users by using 2 cutoffs for defining polypharmacy, either more than 3 medications or more than 5 medications simultaneously. Using these two different cutoffs and study subgroups, we found distinctly different patterns. When using 3 medications or more as the cutoff (first cutoff), everyone in the subgroup of Ya Chud users would be defined as having the polypharmacy condition. However, when using 5 or more medications as the cutoff (second cutoff), nearly 60% of Ya Chud users had the polypharmacy condition as shown in Table 3.

Table 3 Polypharmacy situation considering two different cutoff values among study participants

Number of total medications used for each cutoff	n (%)
Ya Chud users subgroup (n = 130)	
First cutoff	
< 3 medications	-
≥ 3 medications	130 (100.00)
Second cutoff	
< 5 medications	54 (41.54)
≥ 5 medications	76 (58.46)

Table 3 Polypharmacy situation considering two different cutoff values among study participants (Continued)

Number of total medications used for each cutoff	n (%)
All participants (n = 353)	
First cutoff	
< 3 medications	149 (42.21)
≥ 3 medications	204 (57.79)
Second cutoff	
< 5 medications	238 (64.42)
≥ 5 medications	115 (32.58)

On the contrary, polypharmacy prevalence calculated for all study participants was not as high as the prevalence for the Ya Chud users subgroup using both cutoffs. For the first cutoff, about 58% of all study participants were in polypharmacy condition. However, for the second cutoff, only 33% of all study participants were in polypharmacy condition. Moreover, when considering the sources of polypharmacy among only Ya Chud users, the average number of medications used from only Ya Chud use was about 4 medicines. However, more than half of Ya chud users (n = 69, about 53.08 %) used both Ya Chud and prescribed medications from the hospital at the same time. In addition, among Ya Chud users who simultaneously used prescribed medications, the average number of medications used rose to 7.55 (nearly 8) medications per person as shown in Table 4.

Table 4 Source of polypharmacy and the average number of medications used among Ya Chud users (n = 130)

Source of medication	Number of users	The average number of medication (mean ± sd)	Min	Max
Ya Chud	130	4.1 ± 1.12	3	10
Ya Chud plus prescribed medication	69	7.55 ± 2.68	4	15

In the bivariate model between each variable and categorical variable for the total number of medications used (<5 medications; 5+ medications), a statistically significant association was only found for having cardiovascular diseases (OR = 3.47, 95% CI = 1.59-7.62). Finally, in the final age-adjusted model, the association of cardiovascular diseases and the total number of medication use was still statistically significant. However, the magnitude of the association was attenuated (OR = 3.05, 95% CI = 1.28-7.59).

Discussion

The prevalence of Ya Chud use in this study was moderate (~37%). Ya Chud is a form of self-medication that can also reflect polypharmacy in this community. This because the number of medicines in each set of Ya Chud is consistent with the definition of polypharmacy (3 or more medications taken at one time). The reasons highlighted for Ya Chud use were pain and common cold. In addition, more than of half of the participants used both Ya Chud and prescribed medication at the same time. Among Ya Chud users, the average total number of medications used at one time was almost about 8 medications in each individual. The average number of drugs used per person in our study was rather high compared to other studies in developed countries.[14, 19, 20] The prevalence of polypharmacy in this study ranged from 33-58% depending on the cutoffs which were used to define polypharmacy. Our results were in the same range as average rates of self-medication among Thais from national surveys.[3] Our study was consistent with other studies that found an increasing trend in the prevalence of polypharmacy.[21-23] This scenario may ultimately lead to higher risk of getting negative health outcomes from multiple drug use. An 11–year cohort study revealed using 5 or more medications contributed to an increased risk of adverse drug events.[24] Moreover, in past studies, each additional medicine taken led to an increase in the risk of falls, fractures, and hospitalization and a rise in healthcare costs.[25-27] A factor that was associated with polypharmacy in this study was having cardiovascular diseases in both unadjusted and age-adjusted models. This finding was parallel with other studies in which

cardiovascular disease was one of the significant factors that were associated with polypharmacy[14, 28, 29]

The inappropriate use of medicines from polypharmacy is a cause of drug related problems (DRPs) and failure to comply with rational drug use (RDU). DRPs which are caused by polypharmacy vary depending on type of drug use, therapeutic index of each medicine, characteristics of patient. Elderly patients may be particularly sensitive because drug absorption and distribution is different in older patients than younger ones.[21, 30, 31] In addition, the more medications people use, the higher the risks are for drug- drug interactions, drug-disease interactions and adverse drug events.[21] In this study, the average number of medication used among participants did not reach excessive polypharmacy (EPP), which was defined as the use of nine/ten or more medicines at the same time.[23] However, the number of medications used was near this cutoff. We found that some of the participants in our study were already in this category. According to Thailand's health system, people have many choices to get medications other than prescribed medications from hospitals they regularly visit for their health services. Ya Chud is a problem in which prohibited drugs are still accessible within the country (Thailand). Moreover, the use of Ya Chud while using other medications, including those prescribed at a hospital, is especially a problem among elderly people with multiple diseases. Elderly with polypharmacy situation may have increased risk of negative health outcomes. This situation can lead to a "prescribing cascade" in which additional medications are prescribed in order to treat the adverse effects from current medication use. Therefore, our study focused on polypharmacy originating from both self-medication due to Ya Chud use and medications prescribed from the hospital. In contrast, previous studies examining polypharmacy normally focused only on prescribed medications.[32, 33] Our inclusion of Ya Chud use was a strength of this study. However, our study limitations were: 1) We did not explore knowledge and attitude, or health literacy about the use of multiple drugs among our participants, and 2) We did not collect information about the type of medications from the hospital that participants received. Therefore, we lack of this information.

Conclusion

In Thailand, inappropriate drug use contributes to polypharmacy. This issue is difficult and must be dealt with over a long period of time. Patients often lack knowledge and awareness about the harm of multiple drug use. There is easy access to Ya Chud and other medications even through online shopping and low prices. In addition, the Thai health system and law enforcement are not strong, fully effective, nor intense enough to manage and reduce drug use in the community. Therefore, people have many both legal or illegal sources to access the medicines as they need or want. Many people with a high number of prescribed medications have chronic diseases. Also, if the patients use both prescribed medicines and drugs from self-medication such as Ya Chud concurrently, they face higher risk of getting adverse effects from multiple drug use. Therefore, the problem of Ya Chud and polypharmacy is currently still an unsolved problem. In conclusion, as health professionals, we should construct some intensive and continuous programs to educate people about rational drug use (RDU), and the negative health outcomes or the adverse events from the use of many medications at the same time. Eventually, patients will have more awareness of drug utilization, resulting in reduced polypharmacy, adverse events, and negative health outcomes in the future.

Acknowledgements

This research has grant support from Sirindhorn College of Public Health Suphanburi.

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