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Original Article

SELF-MEDICATION AMONG ADULT POPULATION IN SELANGOR, MALAYSIA

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ABSTRACT

Objective: Self-medication is a common practice and an important health issue worldwide. The aim of this study was to determine the percentage of self-medication practice, patterns of use, self-medication attitudes, and to explore the occurrence of side effects resulting from self-medication practice among the adult population in Selangor, Malaysia.

Methods: This cross-sectional survey used a validated questionnaire administered to adults 18 y and above residing in Selangor.

Results: A total of 401 completed questionnaires were analyzed. The majorities of the participants were Malay (91.5%) and went to college or university (89.3%). One-third self-medicated in the past two weeks prior to the survey. Self-medication was significantly associated with age (p=0.009) and race (p=0.038). Among the respondents, 83.8% would search for information before practicing self-medication. Modern healthcare professionals (58.4%) and the internet (47.1%) were the most common source of information about drugs for self-medication. The main reason for self-medication was the illness perceived as minor (79.1%). Two-thirds of the respondents (66.6%) had a satisfactory attitude towards self-medication practices.

Conclusion: The public needs to be better informed on responsible self-medication to ensure safe, effective, and rational use of medicines.

Keywords: Adult, Attitude, Pattern, Self-Medication, Questionnaire, Malaysia

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INTRODUCTION

Self-care is an approach taken by individuals to establish and maintain health as well as to prevent, and treat illness. Self-medication is a part of self-care and can be defined as the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms [1]. It comprises of intermittent or continued use of prescribed medications for some chronic or recurring illnesses [1], shared use of medications with other family members [2], or the use of leftover medicines stored at home [3].

Many studies have been conducted on self-medication worldwide [2,4–9]. The factors influencing self-medication reported include low perceived the seriousness of the disease, high costs of visiting a doctor, lack of time to visit a doctor, and easy access [4,8]. This practice is linked to many possible benefits [10] and risks [10–12].

Although it helps reduce the load on the medical services, it is not risk-free. Inappropriate use of drugs during self-medication may result in a financial burden to both the government and consumer, due to possible adverse effects and drug-drug or alcohol-drug interactions [10].

Knowledge concerning the patterns of self-medication and factors influencing this practice is essential. It helps identify the magnitude of this issue, prior to any intervention for promoting a safe, effective, and rational use of drugs in self-medication. In Malaysia, self-medication is also a common practice [13].

However, no published study conducted locally found reported on the occurrence of side effects resulted from self-medication.

Given this, the present study was conducted to determine the percentage of self-medication practice, patterns of use, self-medication attitudes and to explore the occurrence of side effects due to self-medication practice, among the adult population in Selangor, Malaysia.

MATERIALS AND METHODS

A cross-sectional study using a validated questionnaire was carried out among the adult population in Selangor, one of the states in Malaysia. Selangor is the largest state in Malaysia by population, with an estimated population of 6.14 million and size of 7,964 km^2[14]. A convenience sampling method was adopted and data were collected from September to October 2014. This study employed two methods of data collection: web-based and paper based. For web-based data collection, a questionnaire was created using Google Docs and a web-link was circulated among researcher's contacts by e-mail, online social networking service, and mobile messaging application. For paper-based data collection, the researcher distributed the questionnaires to students at Universiti Teknologi Majlis Amanah Rakyat (MARA), Puncak Alam Campus and staff at pharmacy headquarters, with prior permission from the respective institution and office. The questionnaire was also circulated to adults who visited a selected private community pharmacy in Selangor. The return of the completed questionnaire was considered to imply informed consent. OpenEpi online sample size calculator was used for sample size calculation [15]. The required sample size calculated based on 33% prevalence, 95% confidence interval, and 5% margin of error. Adults 18 y old and above who were able to read and understand either English or Malay language were included in this study. The exclusion criterion was those residing outside Selangor. At the end of this study, 401 respondents were included in the final analysis.

The initial version of the questionnaire was developed in the English language by the research team through extensive literature review [2,5,7,16–18]. A 29-item structured questionnaire, comprising of three sections, was used for data collection. The first part consisted of 10 items related to socio-demographics including age, gender, marital status, ethnic group, highest education level, employment, monthly household income, health insurance, the area of residence, and whether the participant's occupation or participant's family's occupation were related to healthcare. The second part contained 10

questions about self-medication practice, type and amount of medication used, sources of information, sources of medication, and occurrence of undesirable effects after practicing self-medication. The last part consisted of nine statements to evaluate the attitude of the adult population towards self-medication. Within this domain, a five-point Likert scale format (strongly agree/agree/neutral/ disagree/strongly disagree) was used to assess the responses. For positive attitude statements, scores of "5", "4", "3", "2", and "1" for "strongly agree", "agree", "neutral", "disagree", and "strongly disagree", were allocated respectively. The above scoring system was reversed for negative attitude statements. The scores were then transformed into percentage scores by dividing the scores obtained with the maximum possible scores, then multiplied by 100%. Arbitrary cut-off points of 70% were used, where scores above 70% were considered satisfactory, and scores 70% and below were considered unsatisfactory [19].

The questionnaire was translated to Malay language, checked and verified by the National Institute of Translation Malaysia [20]. The bilingual version of the questionnaire was then tested for validity and reliability. A group of local pharmacy experts, consisting one academician and three practitioners, assessed the questionnaire for content validity. Major changes were made by reducing and revising the items according to comments and recommendations from the experts. An overall percentage of agreement between the experts was calculated to get a content validity index (CVI) for the entire questionnaire. The CVI was 0.92 and considered acceptable [21]. The questionnaire was then pre-tested with a cognitive debriefing on 25 adults, to determine the clarity of the terms used. Some words were amended based on comments and recommendations. Finally, the revised questionnaire was fielded among 100 adult population in Selangor, to assess its internal consistency. The resulting Cronbach's alpha coefficient was 0.661 and in the acceptable range [20].

The data were computed and analyzed using STATA version 12.0 (Stata Corp, College Station, Texas, USA). Descriptive statistics were used to describe socio-demographic characteristics of the respondents, the prevalence, and patterns of self-medication practice. Chi-square test was used to test the association between socio-demographic characteristics and practice of self-medication. A p-value of less than 0.05 was considered as statistically significant.

The Research Ethics Committee, Research Management Institute, Universiti Teknologi MARA, reviewed and approved the study protocol. The study was registered in the National Medical Research Registry (NMRR) with registration identification NMRR-14-1094-22727.

RESULTS

A total of 401 of the adult population were included in the final analysis. More than half (53.6%) of the respondents were female and 39.9% of them were between the ages of 25 and 34. The majority of the respondents were Malay (91.5%), while half were single (51.1%). As for the highest education level, 89.3% went to college/university. 29.9% worked in the public sector and 31.9% of the respondents came from families with a monthly household income of more than RM5000.

Of the total number of respondents, 9.5% were suffering from a chronic disease or medical condition such as diabetes, hypertension, or heart disease. We found that 45.9% were taking vitamins, 30.7% were taking minerals or supplements, and 15.0% consumed herbs or traditional medicines. 41.6% were taking at least one to two medications daily, while almost half (45.1%) did not take any daily medication (table 1).

The immediate reactions of respondents experiencing minor illnesses are presented in table 1. Half (54.6%) of the respondents had ever practiced self-medication when experiencing minor illnesses. However, respondents who had practiced self-medication for the past two weeks prior to this survey constituted one-third (33.9%) of the sample (table 1). There was a significant association between self-medication with age group and race (table 2). Respondents aged 35-44 y old were found to practice self-medication more than other age groups (p=0.009). The results also indicated that non-Malays practice a significantly higher percentage of self-medication compared to Malays (50.0% versus 32.4%) (p=0.038).

Table 1: Distribution of respondents based on data related to self-medication (N: 401)

Data related to self-medication	Frequency	%
1. Are you currently taking any medication for chronic disease/any medical conditions *(i.e. diabetes, hypertension or heart disease)*?		
Yes	38	9.5
No	363	90.5
2. Are you currently taking the following preparations/medications:		
(a) Vitamins	184	45.9
(b) Minerals or supplements	123	30.7
(c) Herbs or traditional medicines	60	15.0
3. How many types of medication do you take in a day?		
(a) None	181	45.1
(b) 1-2	167	41.6
(c) 3-5	51	12.7
(d) 6-10	1	0.2
(e)>10	1	0.2
4. If you are experiencing minor illnesses *(i.e. cough/cold/allergy/fever/pain, etc.)*, what is the first action that you will take?		
(a) No action taken	49	12.2
(b) Self-medication	219	54.6
(c) Consult doctor	115	28.7
(d) Consult pharmacist	18	4.5
5. Have you taken any medication in the past TWO weeks by your own decision *(without getting advice from healthcare professionals)*?		
Yes	136	33.9
No	265	66.1

N= total number of respondents

Among the respondents, 83.8% would look for information about medications before practicing self-medication. The most common source of information for self-medication was modern healthcare professionals (58.4%). Other sources of information reported by the respondents included medical related references such as Micromedex and Lexicomp, and published article/journal (1.0%) (table 3).

Table 2: Distribution of respondents according to patterns of self-medication practice (N=401)

Patterns of self-medication	Frequency	%[a]
6. If you have any concern about medication, do you look for Information about that medication before practicing self-medication?		
Yes	336	83.8
No	40	10.0
6. (a) If yes, where do you get the information?		
Modern healthcare professional	234	58.4
Traditional and complementary practitioners	13	3.2
Common information and entertainment channel *(TV, radio etc.)*	36	9.0
Printed materials *(magazines, newspaper)*	53	13.2
Patient Information Leaflets	95	23.7
Internet	189	47.1
Friends, family or neighbors	104	25.9
Others	4	1.0
7. Where do you usually obtain the medication to practice self-medication?		
Hospital	91	22.7
Clinic	215	53.6
Pharmacy Outlet	286	71.3
Grocery shop	65	16.2
Leftover medication	95	23.7
Direct sales	14	3.5
Traditional medicine outlet	13	3.2
Friends, family or neighbors	67	16.7
8. Why do you choose to practice self-medication?		
Medication given by the doctor was not effective	19	4.7
Mildness of illness	317	79.1
Prior experience or knowledge about disease and treatment	187	46.6
Personal convenience	104	25.9
Suggestion of family, friend or neighbor	61	15.2
In emergency use	74	18.5
Embarrass of discussing own condition	5	1.2
Less costly	52	13.0
Avoiding long waiting time to get medical treatment	90	22.4
Others	3	0.7
9. Which type of medication you normally used when practicing Self-medication?		
Pill for headache ***(i.e.** Paracetamol/Panadol)*	310	77.3
Cough or flu medicines	265	66.1
Vitamins or minerals or supplements	152	37.9
Painkiller ***(i.e.** Aspirin, ibuprofen)*	316	78.8
Medication for gastric or heartburn or antacids ***(i.e.** Actal)*	80	20.0
Herbs or traditional medicines	58	14.5
Medicated skin products ***(i.e.** Agnesia®)*	66	16.5
Antibiotics	36	9.0
Others	1	0.2
10. Have you ever experienced any undesirable effect after practicing self-medication?		
Yes	22	5.5
No	365	91.0

N= total number of respondents; [a]=numbers do not add to 100% as participants might have more than one answer.

Table 3 also shows the distribution of respondents based on sources of drugs used, reasons for practicing self-medication and type of drugs commonly used during self-medication. More than half of the respondents reported pharmacy outlet (71.3%) or clinic (53.6%) as their sources of drugs, while 23.7% of the respondents used leftover medication when self-medicating.

The most common reasons for practicing self-medication reported by the respondents were that they perceived their illness as a minor one (79.1%) and previous experience or knowledge about the disease and treatment (46.6%). Painkillers (78.8%) and pills for headache (77.3%) were the most common drugs self-medicated by the participants. It was also observed that 9.0% of the participants reported having self-medicated themselves with Antibiotics.

When asked about attitudes toward self-medication practice, the majority (92.2%) agreed that it was important to inform the doctor/pharmacist about other medications/supplements that they are taking, upon consultation with them. A few (9.5%) respondents were scared to consult a doctor if their illness persisted after practicing self-medication. Most of the respondents (91.3%) agreed that reading the medication label is not a waste of time and the majority (94.5%) felt it was important to check the expiry date of the medications during the purchase or before consumption. Almost all of the respondents (94.5%) agreed that they would take medications, according to the instructions on the label or as directed by a healthcare practitioner.

Only 7.4% agreed that they would practice self-medication irrespective of the seriousness of the illness. Most of the respondents (70.8%) agreed that they would keep leftover medications at home for future use and 66.6% agreed that they would recommend the medicine they took to family, friends, or neighbors. Half of the respondents (53.1%) agreed that they would share their medications, with a family member or a friend who was sick (table 4). More than half of the respondents (66.6%) had a satisfactory level of attitude towards self-medication practices with total scores of over 70%, while the remaining respondents (33.4%) had an unsatisfactory level of attitude with total scores of 70% and below.

Table 3: Socio-demographic characteristics of respondents according to practice of self-medication for the past two weeks (N: 401)

Socio-demographic characteristics	Use of self-medication				x^2	p-value*
	Yes (n: 136) frequency	%	No (n: 265) frequency	%		
1. Age group						
45 and above	12	27.9	31	72.1	11.511	0.009
35-44	26	52.0	24	48.0		
25-34	58	36.3	102	63.7		
18-24	40	27.0	108	73.0		
2. Gender						
Female	69	32.1	146	67.9	0.687	0.407
Male	67	36.0	119	64.0		
3. Marital status						
Single	63	30.7	142	69.3	1.897	0.168
Married	73	37.2	123	62.8		
4. Number of children (if any)						
None	11	32.4	23	67.6	1.518	0.824
1	19	39.6	29	60.4		
2	21	35.6	38	64.4		
3	8	33.3	16	66.7		
More than 3	14	45.2	17	54.8		
5. Ethnic group						
Malay	119	32.4	248	67.6	4.288	0.038
Non-Malay	17	50.0	17	50.0		
6. Highest education level						
College/University	123	34.4	235	65.6	0.291	0.589
Lower than College/University	13	30.2	30	69.8		
7. Occupation						
Public sector	41	34.2	79	65.8	10.568	0.061
Private sector	42	38.5	67	61.5		
Self-employed	11	57.9	8	42.1		
Housewife	0	0.0	3	100.0		
Retired/Unemployed	10	22.7	34	77.3		
Student	32	30.2	74	69.8		
8. Monthly household income						
More than RM 5000	49	38.3	79	61.7	9.799	0.081
RM 4001–RM 5000	17	37.8	28	62.2		
RM 3001–RM 4000	15	34.1	29	65.9		
RM 2001–RM 3000	19	47.5	21	52.5		
RM 1001–RM 2000	9	25.7	26	75.3		
RM 1000 and below	27	24.8	82	75.2		
9. Do you have any health insurance?						
Yes	82	35.7	148	64.3	0.726	0.394
No	54	31.6	117	68.4		
10. Is your occupation or your family's occupation related to healthcare?						
Yes	52	35.6	94	64.4	0.296	0.586
No	84	32.9	171	67.1		

N=total number of respondents; n= number of responses received; *p-value<0.05= statistically significant.

Table 4: Distribution of respondents according to attitude towards self-medication practice (N: 401)

Item	Statement	Responses (%)				
		SA	A	N	D	SD
1	It is important to inform the doctor/pharmacist about the other medication/supplement that I took upon consultation with them.	50.6	41.6	7.0	0.2	0.5
2	I am afraid to consult a doctor if my illnesses persist after I self-medicate.*	1.5	8.0	12.0	49.1	29.4
3	Reading the medication label is a waste of time.*	1.0	2.7	5.0	37.4	53.9
4	It is important to check the expiry date on the medication during purchasing or before taking it.	67.8	26.7	2.0	1.0	2.5
5	I will take medications, according to the instructions on the label, or as directed by a healthcare practitioner.	59.6	34.9	5.0	0.2	0.2
6	I will practice self-medication irrespective of the seriousness of the illness.*	2.2	5.2	15.0	49.1	28.4
7	I normally will keep leftover medications at home for future use.	20.9	49.9	19.5	6.7	3.0
8	If someone in my family/friend is sick, I will share my medications with them.	11.5	41.6	23.9	16.5	6.5
9	I will recommend to my family/friends/neighbors the medicine I took if they experience the same illness as me.*	13.7	52.9	22.2	9.7	1.5

N= total number of respondents, SA=Strongly Agree; A=Agree; N=Neutral; D=Disagree; SD=Strongly Disagree; *=negative statement.

DISCUSSION

The current finding that almost one-third of the study population had self-medicated is close to a national study conducted in Malaysia [13]. In other studies conducted previously within Malaysia, the percentage of self-medication was shown to be ranging between 62.7% and 80.9% [2,23–25]. In studies conducted in other developing countries, the percentage of self-medication was shown to be 32.0% in China [4], 39.0% in Ethiopia [18], 39.5% in Jordan [6], and 55.0% in Egypt [26].

Possible reasons for the differences in the percentage may be due to differences in socio-demographic and socio-economic status, apart from different methodologies used by the researchers.

The data from the present study showed that there was a significant association between self-medication with age group and race. Our findings are similar to a study conducted in Saudi Arabia [5], where young individuals were more likely to practice self-medication compared to older ones. In contrast, a previous study conducted in Malaysia reported no significant association between self-medication practices with age and gender [13]. The current finding that those who were young were more likely to self-medicate suggests that healthcare professionals should be actively involved in public education campaigns and focused more on the youngsters during the campaigns. However, the findings may not be appropriate to generalize to the whole population due to sampling bias, as the majority of the respondents (91.5%) were Malay.

Out of 401 respondents, 5.5% of them reported that they had experienced undesirable effects after practicing self-medication. This finding was comparable with another study conducted in India [27]. This issue warrants the role of pharmacists in providing adequate information on drugs for self-medication, including information regarding possible side effects that they might experience by consuming the drugs.

The two major reasons for self-medication reported by other studies were the simplicity of the illness [16, 27, 28] and adequate knowledge or previous experience [16, 29]. Similar observations were reported in our study in which respondents reported that the reasons for practicing self-medication were their perception that the illness is minor (79.1%) and previous experience or knowledge about the disease and treatment (46.6%). These situations might expose the respondents to potential danger, as they are exposed to the risk of misdiagnosis and thus not getting the right treatment [17]. Conversely, an implication of this practice is possible prevention and treatment of symptoms that do not need medical attention and thus reducing the burden on medical services [10].

The results of many studies have pointed out that the two most commonly used drugs in self-medication were analgesics and cough or flu medicines [2, 7, 16–18, 23, 24, 28, 30]. Our study showed similar findings and correlated well with the fact that a headache, fever, and cough/cold/sore throat were among the most common illnesses leading to self-medication [18, 31, 32]. However, self-medication with analgesics can cause serious health problems if they are not used appropriately. High doses of paracetamol can cause liver damage, while overuse of analgesics such as non-steroidal anti-inflammatory drugs (NSAIDs) may lead to drug-induced gastrointestinal toxicity [33].

The present findings revealed that the main source of obtaining medications used when self-medicated was pharmacy outlets. This may due to the large numbers of retail pharmacies in Selangor, and thus easily accessible over-the-counter medications for the public [34]. These findings were in accordance with other studies conducted in Malaysia [2, 7, 23], India [29], Pakistan [31], and United Arab Emirates [35].

This study found that more than half of the respondents took at least one type of medications daily, which include other medications for chronic conditions, vitamins, minerals, supplements, herbs or traditional medicines. It is very important to consult a doctor or pharmacist before consuming any new medications to avoid the occurrence of any drug interactions. When two drugs are taken together, the overall effect of one or both of the drugs may be bigger or smaller than desired, which may cause an overdose or underdose, respectively. An overdose may increase the risk of side effects to occur. On the other hand, underdose may reduce the therapeutic effect of a drug or even worse, impotent to provide any healing effects at all [36].

The majority of the respondents disagreed that they felt scared to consult a doctor if their illness persisted after practicing self-medication. A similar result was also reported previously [37]. It is essential to consult a doctor when the patient has suffered minor illness for a long time without treatment or the illness is not relieved with treatment. Although it is uncommon, minor illnesses such as headache may be a sign of a serious medical condition.

In our study, the majority (94.5%) of the respondents agreed that they will take medications, according to the instructions on the label or as directed by a healthcare practitioner. However, other study reported otherwise, where 43.3% respondents reported that they adjusted the dosage of the drug prescribed to them based on the course of their symptoms [25, 31]. This is a dangerous act as it could cause severe or fatal adverse effects as an effect of overdosing or under dosing [38].

The negative behaviour of keeping leftover medications at home for future use was reported by 70.8% of the respondents. Our findings on this aspect were similar to other studies where 4.0% [38] and 22.5% [25] respondents reported that they kept their unused or leftover medications. The possible reasons may be that it takes the effort to dispose of the medications properly and they may think it is important to keep something that may be useful later on. In return, they do not have to go through the hassle of buying it in the future. However, any unused or leftover medications should not be kept at home for future use, as they should be returned to the pharmacy for proper disposal [39].

The strengths of the present study include the fact that it reported the percentage of respondents who ever experienced adverse effects resulting from self-medication practice. About one-tenth of respondents had experienced it. In addition, two-thirds of the study population had a satisfactory attitude towards self-medication practices, similar to findings elsewhere, with positive attitudes towards self-medication [26,40]. However, no summation of scoring was mentioned in the other published literature measuring self-medication attitude. The present study reported summation of the total score for items under attitude domain and further categorized into satisfactory, and unsatisfactory. The arbitrary cut-off points were used to categorise the level of the attitude to satisfactory and unsatisfactory.

We acknowledge that the present study had a few limitations. As this was a self-administered survey, the accuracy of the results was heavily dependent upon information given by respondents and open to recall bias. Apart from this, selection bias may occur due to convenience sampling as we only distributed the paper-based questionnaire to three facilities; university, office, and community pharmacy. The findings may not be appropriate to generalize to the whole population. Studies cover more facilities need to be carried out among the adult population at large to understand the percentage and patterns of self-medication practice in Selangor. However, we distributed the web-based questionnaire to get a more comprehensive picture of self-medication among the adult population in Selangor. A further limitation is that only those who were internet-savvy and in the circle of contacts of respondents' contacts were likely to participate in this study. Another limitation was that informed consent from participants was not explicitly taken during data collection. Lastly, this study assumed all items carry the same weight for all the items which measure the level of attitude. However, certain item carries more weight compared to others. The type of side effects resulted from self-medication can also be explored in future studies.

CONCLUSION

The percentage of self-medication practices among the adult of the study population is comparable to studies conducted in other developing countries such as China, Ethiopia, and Jordan. Young

individuals and non-Malays were found to be associated with self-medication significantly. Although the rates of adverse effects experienced with self-medication are considered low, this is of great concern.

The young should be educated and made aware of the implications of self-medication. As retail pharmacies are the main source of medications, the community pharmacist plays a key role in educating the patients by providing necessary information on the medications and its rational use. Therefore, patients will be well equipped with knowledge before making an informed choice to practice self-medication. Efforts to increase awareness of the implications of self-medication could hopefully reduce the occurrence of irrational drug use and support the maintenance of health of individuals in society.

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AUTHOR CONTRIBUTION

SJ and NAA planned the study, were involved in study design, developed the study method and protocol, and critically revised the manuscript. SJ collected the data and conducted the analysis. All authors read and approved the final manuscript.

CONFLICTS OF INTERESTS

All authors have none to declare

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