

Original Research

Assessment of health seeking behaviour and self-medication among general public in the state of Penang, Malaysia

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Abstract

Background: Patients' behaviour in making decisions regarding health is currently changing from passive recipients to recipients who play an active role in taking action to control their health and taking self-care initiatives.

Objectives: This study was conducted to evaluate the health seeking behaviour among general public and its associated factors; and to evaluate the medicine taking behaviour in public and the practice of self-medication.

Methods: A cross-sectional study was undertaken among general public in Penang Island, Malaysia. A convenience sampling of 888 participants successfully completed the survey. Self-administered questionnaires were distributed among the residents in the north east of Penang Island.

Results: This study showed that most of the participants chose to consult the physician when they experience any health problems (66.7%), followed by self-medication (20.9%). The first action for consulting the physician was significantly predicted by Malay respondents and retired people (OR 3.05, 95% CI 1.04-8.89). The prevalence of self-medication was 54%. The practice of self-medication was significantly associated with Chinese participants, educated people, people with alone living status and people with more self-care orientation.

Conclusion: Increasing the awareness of the public about the rational choice of getting medical assistance is a very important issue to control their health. A health education program is needed to increase the awareness about the use of medicines among the general public and to enable them to make the right decisions relating to health problems.

Keywords

Self Medication; Attitude to Health; Health Knowledge, Attitudes, Practice; Physicians; Pharmacists; Surveys and Questionnaires; Malaysia

INTRODUCTION

Although pharmaceuticals have made a major contribution to health, a large proportion of the world's population today are facing problems when consuming and accessing medicines.¹ The shortage of medicines is a widespread problem in both developing and developed countries which can affect the accessibility to medicines. Data from 25 European countries reported that 63% of hospital

pharmacists identified medicines shortages to be occurred weekly and sometimes daily.² Healthcare professionals are usually sharing their health decisions with their patients in terms of the availability of medicines and its accessibility. Accordingly, patients are being more involved in taking actions either with or without direct healthcare professional guidance, seeking for other facilities to obtain medicines or tend to self-care.³ Effective self-care is a complex process including diagnostic decision-making of disease and its causes, choosing the right medicine and ensuring the effectiveness of treatment.⁴ Self-medication involves the stopping or continuing of using medicines prescribed by a physician for chronic or recurring diseases or symptoms. Currently, self-medication is a common practice among many people and plays a major role in self-care.⁵ Health seeking behaviour can be affected by self-individual, diseases, and the availability and accessibility of health services.⁶ Access to healthcare professionals and complying with their treatment plan can reduce the morbidity and thereby mortality.⁷ The behavioural model of using health services was defined by Andersen and Davidson as a multilevel model that includes individual and contextual determinants of using health services.⁸ Both determinants have been divided to predisposed factors, enabling factors and need factors for individual use of health services.⁹ To understand the individual determinants, three major factors have been described as predisposing factors which includes the demographic characteristics of age and gender as "biological

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imperatives”, social factors including education, occupation, ethnicity and family status, and mental factors including individual’s attitudes, values and knowledge of health and health services. Secondly, the enabling factors include individual’s economic status which involves the monthly income and wealth to pay for health services and the effectiveness of the healthcare cost which is influenced by the individual’s health insurance status and cost sharing requirements. In addition to the organization factors which are determined by the individual’s regular source of care and nature of that source, the need factors include perceived need for health services such as individual’s view and experience of their own general health status and symptoms of illness. The evaluated need includes professional evaluation, and objective measurements of the individual’s health condition and need for healthcare.⁹ A study by Abdo-Rabbo *et al*, reported that 66% of respondents visited multiple facilities on the same day and for the same health problems, while 51% failed to comply with appointments of follow ups to the same facility.¹⁰ It is advised to consult the healthcare professionals once the patients face any health problems. Another study in Scotland showed that most respondents would choose to see a physician rather than a pharmacist prescriber and some felt that their consultation with the pharmacist could have been better.¹¹ In Malaysia, people mostly obtain their medicines from clinics (85.9%), hospitals (75%) and community pharmacies (72.2%).³ Most people can easily get access to non-prescription medicines for short term usage and for minor illnesses and only consider physicians’ consultation for major health problems.¹² However, physicians and pharmacists are consulted when in doubt or in cases where more information are required.¹²⁻¹⁴ Access to essential medicines is a human right and targeted goal for a sustainable health development.¹⁵ Therefore, understanding people’s decisions in obtaining medicines can be helpful to expect the medicines taking behaviour among them and to determine the lack of healthcare facilities. This study aimed to evaluate the first action for seeking medical assistance among general public and; to evaluate the factors affecting their health seeking behaviour as well as to describe medicine taking behaviour and the prevalence of self-medication.

METHODS

Research design

A cross-sectional study was carried out to evaluate the first action of access to medicines and medicine taking behaviour among the general public. This study was conducted from September to November 2015 in the northeast of Penang Island. Study approval was obtained from the “Joint Ethics Committee of the School of Pharmaceutical Sciences, USM – Hospital Lam Wah Ee on Clinical Studies” (USM-HLWE/IEC/2015 [0001]).

Study population

General population in both genders were eligible for participating in this study. According to Malaysia Demographics Profile 2016, the median age of people is 28.2 years. The distribution of age group is 16.8% for 15-24 years, 41.0% for 25-54 years, and 8.06% for 55-64 years.

Participation was eligible to adults who are able to read and write in Malay language and have given their written informed consent. People below 18 years old, and those who disagree to participate in this study were excluded.

Sampling and sample size

Convenience sampling method was used to recruit the required sample from the household level. The method aims to obtain information from participants who are easily accessible to the researcher. The sample size was considered based on the confidence level of 95% and 5% of margin error. The required sample size was 377. By using the common design effect of 2, the required sample size was 769. Additional 20 % was added to our sample in case of missing and dropping of data, resulting in a total of 923 subjects. For the purpose of the study, 1000 subjects were invited to participate in this survey.

Data collection tool

The questionnaire was used to obtain the data from the participants. The questions were developed based on the previous literature.^{3,16,17} The questionnaire consisted of three parts mainly to evaluate the health seeking behaviour and medicines taking behaviour among the general public. The first part obtained the demographic data of the participants, including age, gender, ethnicity, education level, monthly income and the presence of chronic diseases. The second part evaluated the health seeking behaviour by asking them “If you are experiencing any health problems, what is the FIRST action that you will take?” and the third part evaluated the medicines taking behaviour and the practice of self-medication. The questionnaire was forward-translated into Malay language by a qualified linguistic translator to make it easy for the participants to answer. Thereafter, the questionnaire was piloted to 45 subjects to ensure the clarity of the questions.

Data collection method

A self-administered questionnaire was used to obtain the data from all participants in this survey. The researchers explained the aim of the study prior to data collection and signed consent form was obtained from all participants before involving them in the survey. Household area was targeted in this survey. The majority of the participants responded at the same time of distributing the questionnaires, while some of them responded later and handed the questionnaires back to the researchers in the following days. The questionnaire was completed within approximately 10-15 minutes. The respondents were given sufficient time to complete the questionnaires before they were collected.

Data and statistical analysis

The data were coded and analysed using SPSS (version 18.0) for descriptive statistics. Descriptive statistics including frequencies and percentages were used for data analysis. Chi square test was computed to find the associations between medicine seeking behaviour and the social-demographic data of the respondents. In addition, logistic regression was used to predict the factors which highly contributed to medicine seeking behaviour. The p-value of <0.05 with a confidence level of 95% was considered significant.

Variable	N (%)	
Age group	18-24	226 (25.4)
	25-34	261 (29.4)
	35-44	161 (18.1)
	45-54	135 (15.2)
	55-64	69 (7.8)
	>64	36 (4.1)
Gender	Male	360 (40.5)
	Female	528 (59.5)
Race	Malay	472 (53.2)
	Chinese	277 (31.2)
	Indian	116 (13.1)
	Others	23 (2.5)
Educational level	No formal education	28 (3.2)
	Primary school	69 (7.8)
	Secondary school	283 (31.9)
	College/University	508 (57.2)
Occupation	Government	148 (16.7)
	Private/Self employed	410 (46.2)
	Retired	42 (4.7)
	Student	207 (23.3)
	Unemployed	81 (9.1)
Living Status	Alone	235 (26.5)
	With family	629 (70.8)
	With non-family	24 (2.7)
Monthly income ^a	≤ MYR 1000	260 (29.3)
	MYR 1,001-2000	159 (17.9)
	MYR 2,001-3000	186 (20.9)
	MYR 3,001-4000	111 (12.5)
	MYR 4,001-5000	72 (8.1)
	> MYR 5000	100 (11.3)
Chronic disease	Yes	131 (14.8)
	No	757 (85.2)

^a MYR 1 = 0.23USD

respondents (29.3%) have low monthly income of MYR1000 and below, 17.9% have MYR1001-2000 and 20.9% have MYR2001-3000. Other respondents, 12.5% have a monthly income of MYR3001-4000, 8.1% have MYR4001-5000 and 11.3% have above MYR5000. Regarding the presence of chronic diseases, 14.8% of the respondents were suffering from chronic diseases such as hypertension, diabetes and asthma.

From Table 2, the majority of the respondents (66.7%) will consult the physician once they are experiencing any health problems. However, 20.9% of the respondents stated that they practice self-medication as the first action to be taken if they face any health problems. Only 11% of them will consult a pharmacist at pharmacy outlets to treat their health problems.

Table 3 shows that there are no significant differences between the first action for seeking medical assistance and gender, education level, living status and the health condition. However, the first action for consulting a physician when experiencing any health problems were less likely among Chinese and Indian respondents compared to Malay respondents ($p < 0.001$). Meanwhile, retired people were three times more likely to consult a physician compared to other people in different occupations ($OR = 3.05$, 95%CI 1.04 – 8.89, $p = 0.041$). For consulting a pharmacist, Indian respondents were more likely to consult a pharmacist as the first action when facing any health problems ($OR = 2.35$, 95%CI 1.29 – 4.30, $p = 0.005$). However, respondents within the age group of 35-44 years old were more likely to use self-medication when they face any health problems ($OR = 1.93$, 95%CI 1.06 – 3.51, $p = 0.031$). The Chinese respondents were more likely to choose self-medication as their first action ($OR = 1.90$, 95%CI 1.29 – 2.80, $p = 0.001$), as well as people with higher monthly income ($OR = 1.92$, 95%CI 1.00 – 3.66, $p = 0.047$).

From Table 4, the majority of the participants (65.4%) reported that they took medicines based on their physician's advice, while 28.9% of them depended on their past experience with the same illness and 12% of them based on advice from family members, friends and media.

From Table 5, more than half of the participants (54.1%) reported using self-medication to treat their health problems. In addition, around 33% of them were more frequent to practice self-medication while 48.3% of the participants used self-medication at least once in the past three months.

From Table 6, the self-medication practice was associated with ethnicity, education level, living status and self-care orientation. Most of the Chinese respondents (64.4%) were significantly associated with the self-medication practice compared to the Malays and Indians. Educated people and people with alone living status were more likely to practice self-medication ($P \leq 0.05$).

RESULTS

Out of 1000 questionnaires distributed, 888 questionnaires were completed, giving a response rate of 88.8%. Table 1 presents the socio-demographic data of the participants. Around 25.4% and 29.4% of the participants were from the age groups of 18-24 and 25-34 respectively. Most participants (59.5%) were females, whereas 40.5% of them were males. According to the ethnic group, more than half of them (53.2%) were Malay, whereas 31.2% and 13.1% of them were Chinese and Indian respectively. The education level of the participants was distributed from college or university (57.2%), secondary school (31.9%), primary school (7.8%) and no formal education (3.2%). Pertaining to the monthly income of the respondents, most of the

If you are experiencing any health problems, what is the FIRST action that you will take?	N	%
Consult a physician	592	66.7
Consult a pharmacist at pharmacy outlet	98	11.0
Consult a traditional practitioner	12	1.4
Self-medication	186	20.9

OR (95% CI)	Consult a physician	Consult a pharmacist at pharmacy outlet	Self-medication
Age			
18-24	1.00	1.00	1.00
25-34	0.87 (0.55-1.38)	0.76 (0.38-1.51)	1.46 (0.86-2.48)
35-44	0.72 (0.42-1.21)	0.53 (0.23-1.19)	1.93 (1.06-3.51)*
45-54	0.71 (0.39-1.27)	0.61 (0.26-1.43)	1.84 (0.93-3.62)
55-64	1.17 (0.52-2.61)	0.48 (0.15-1.49)	1.01 (0.36-2.84)
>64	1.46 (0.47-4.50)	0.58 (0.14-2.38)	0.66 (0.12-3.64)
Gender			
Male	1.00	1.00	1.00
Female	1.27 (0.93-1.73)	0.67 (0.42-1.07)	0.89 (0.62-1.28)
Ethnicity			
Malay	1.00	1.00	1.00
Chinese	0.47 (0.34-0.67)*	1.46 (0.88-2.44)	1.90 (1.29-2.80)*
Indian	0.42 (0.27-0.67)*	2.35 (1.29-4.30)*	1.51 (0.88-2.58)
Others	1.63 (0.57-4.68)	0.38 (0.04-3.12)	0.84 (0.26-2.65)
Education level			
No formal education	1.00	1.00	1.00
Primary School	0.68 (0.24-1.89)	1.98 (0.56-6.95)	0.73 (0.19-2.82)
Secondary School	1.11 (0.43-2.84)	0.76 (0.23-2.54)	0.86 (0.26-2.80)
College/ University	0.96 (0.37-2.47)	0.53 (0.15-1.80)	1.28 (0.39-4.14)
Occupation			
Government	1.00	1.00	1.00
Private/Self Employed	1.34 (0.87-2.05)	0.80 (0.43-1.49)	0.75 (0.46-1.22)
Retired	3.05 (1.04-8.89)*	0.41 (0.09-1.79)	0.29 (0.05-1.50)
Student	0.96 (0.54-1.72)	0.72 (0.30-1.71)	1.24 (0.65-2.36)
Unemployed	1.24 (0.63-2.44)	1.14 (0.45-2.90)	0.68 (0.29-1.59)
Living status			
Alone	1.00	1.00	1.00
With Family	1.24 (0.88-1.75)	1.00 (0.59-1.70)	0.75 (0.51-1.11)
With Non-Family	0.41 (0.16-1.02)	2.73 (0.87-8.57)	1.32 (0.50-3.45)
Monthly income^a			
≤ MYR 1000	1.00	1.00	1.00
MYR 1001-2000	1.08 (0.65-1.78)	0.69 (0.32-1.47)	1.09 (0.60-1.98)
MYR 2001-3000	0.96 (0.59-1.56)	1.14 (0.56-2.30)	1.10 (0.62-1.96)
MYR 3001-4000	0.76 (0.43-1.33)	1.67 (0.76-3.67)	1.15 (0.60-2.23)
MYR 4001-5000	0.61 (0.33-1.11)	1.22 (0.49-3.04)	1.65 (0.84-3.24)
> MYR 5000	0.55 (0.31-1.00)	1.47 (0.61-3.55)	1.92 (1.00-3.66)*
Chronic diseases			
Yes	1.00	1.00	1.00
No	0.83 (0.51-1.36)	1.05 (0.53-2.09)	1.27 (0.70-2.31)

* Statically significant $P < 0.05$, 95% CI ^a1MYR = 0.23USD

DISCUSSION

In the present study, most people prefer to consult a physician when facing any health problems and smaller number of them will consult a pharmacist. At the same time, the self-medication as the first action was also significant. According to the national survey of medicines used in Malaysia, around 84% of people will consult the government physicians and private physicians for any health problems while only 11% will practice self-medication.

This could be due to the growth of healthcare profession in Malaysia.^{3,18} The easy access to medicines and time saving are the most common reasons for increasing the practice of self-medication among many people.⁵ In addition, the lack of access to healthcare services and common medication stock-outs in developing countries can affect people's decisions towards health seeking behaviour.¹⁹ Moreover, this study showed that the first action for consulting a physician or a pharmacist was not affected by age group. In

Based on physician's advice		
Yes	581	(65.4)
No	307	(34.6)
Based on past experience with similar illnesses		
Yes	257	(28.9)
No	631	(71.1)
Based on advice from relatives, friends and media		
Yes	107	(12.0)
No	781	(88.0)

Did you practice self-medication to treat your health problems?		
Yes	480	(54.1)
No	408	(45.9)
How many times have you self-medicated in the past 3 months?		
Once	429	(48.3)
Twice	161	(18.1)
Thrice	61	(6.9)
More than 3 times	71	(8.0)
None	166	(18.7)

Table 6. The association between self-medication practice and demographic information				
		Practiced self-medication		
		Yes (%)	No (%)	P-value
Age group	18-24	130 (57.5)	96 (42.5)	0.507
	25-34	139 (53.3)	122 (46.7)	
	35-44	85 (52.8)	76 (47.2)	
	45-54	77 (57.0)	58 (43.0)	
	55-64	31 (44.9)	38 (55.1)	
	>64	18 (50.0)	18 (50.0)	
Gender	Male	196 (54.4)	164 (45.6)	0.874
	Female	284 (53.8)	244 (46.2)	
Ethnicity	Malay	235 (49.8)	237 (50.2)	<0.001*
	Chinese	179 (64.6)	98 (35.4)	
	Indian	55 (47.4)	61 (52.6)	
	Others	11 (47.4)	12 (52.2)	
Educational level	No formal education	15 (53.6)	13 (46.4)	0.050*
	Primary School	36 (52.2)	33 (47.8)	
	Secondary School	135 (47.7)	148 (52.3)	
	College/ University	294 (57.9)	214 (42.1)	
Occupation	Government	74 (50.0)	74 (50.0)	0.083
	Private/Self Employed	221 (53.9)	189 (46.1)	
	Retired	18 (42.9)	24 (57.1)	
	Student	127 (61.4)	80 (38.6)	
	Unemployed	40 (49.4)	41 (50.6)	
Living status	Alone	144 (61.3)	91 (38.7)	0.034*
	With Family	323 (51.4)	306 (48.6)	
	With Non-Family	13 (54.2)	11 (45.8)	
Monthly income ^a	≤ MYR 1000	150 (57.7)	110 (42.3)	0.236
	MYR 1001-2000	79 (49.7)	80 (50.3)	
	MYR 2001-3000	108 (58.1)	78 (41.9)	
	MYR 3001-4000	51 (45.9)	60 (54.1)	
	MYR 4001-5000	39 (54.2)	33 (45.8)	
	>MYR 5000	53 (53.0)	47 (47.0)	
Chronic disease	Yes	66 (50.4)	65 (49.6)	0.361
	No	414 (54.7)	343 (45.3)	
Self-care orientation	Once	240 (56.1)	188 (43.9)	<0.001*
	Twice	133 (82.6)	28 (17.4)	
	Thrice	44 (72.1)	17 (27.9)	
	More than 3 times	57 (79.2)	15 (20.8)	
	None	-	166 (100)	

*Statistically significant P<0.05.

^a1MYR = 0.23USD

contrast to previous studies, access to the healthcare service to obtain prescribed medicines is common in elderly people (65 years and above) due to the high morbidity rate among them.²⁰ Whereas, young people tend to take care of themselves without any medical visits by obtaining non-prescriptive medicines.^{21,22} However, obtaining prescribed medicines was not related to age but it was influenced by people's perception of health status.²³ In addition, seeking for a physician was found to be influenced by perceived the severity of illness among people.²⁴

On the other hand, this study showed that consulting the physician and the pharmacist were not influenced by the education level and the monthly income of the respondents. However, indicating self-medication as a first action was significantly predicted in people with higher monthly income. Previous researches demonstrated that people with low education level and low monthly income

were more likely to use general healthcare services whereas consulting private healthcare services was associated with those from higher income groups.^{3,25} These findings could be due to the robust healthcare system which provides healthcare services for the public, including physician's consultation, medications and necessary investigation with a minimum charge for anyone. According to ethnic groups, Chinese participants were more likely to use self-medication as a first action. Whereas Malay participants were more likely to consult a physician when facing any health problem compared to Chinese and Indian people. This may explain what have been found in a previous study which found that the Chinese spend more money in obtaining medicines from private pharmacies as compared to other ethnic groups.³ However, different cultural beliefs about illnesses may lead the Chinese to be more involved in self-care initiatives. Nevertheless, the

difference in choices for medicines taking behaviour can be affected by patients' attitude towards prescription medicines. The availability of non-prescription medicines may encourage consultation with pharmacists and even self-medication. In addition, retired people have more tendencies to consult a physician for any health problems. This is probably due to the incidence of chronic diseases among retired people that are always looking for healthcare services to manage their diseases.²⁶

Moreover, this study showed that most participants have taken medicines depending on their physician's advice, while some of them depended on their past experiences with the same illness and others have taken medicines based on advice from family members, friends and the media. Previous studies also reported that some people used medicines based on their individual knowledge and whether they had past experience with such illnesses.²⁴ Sometimes people administering medicines depend on advice from family and friends.²⁷ The past experience with such illnesses and its effective treatment may influence people's decisions in obtaining healthcare services. Previous physicians' advice was a common reason for self-medication and some people seek for the advice of a physician or pharmacist for different ways to be a part of their practicing of self-treatment.²⁸

This study showed that the prevalence of self-medication seems to be lesser compared to previous researches conducted in Malaysia.^{5,17,29} It was significantly associated with Chinese people, educated people, people with alone living status and people with higher self-care orientation. This result is consistent with other studies that obtaining medicines was higher among the educated people with a high prevalence of self-medication among them.³⁰ Another study showed that self-medication is significantly associated with those who have high medication knowledge and self-care orientation.¹⁶ This could be due to the increased health awareness in educated individuals and the needs of taking care of their own health. Meanwhile, living status was found to be associated with the practice of self-medication. People who are living alone might be more independent compared to those who are living with family or other people.

Limitations

This study was limited to the first action that will be taken when the respondents face any health problems. This may or may not reflect the actual action of health seeking behaviour in different health conditions. In addition, the reasons for seeking medicines and the types of medicines

were not assessed in this study. Consequently, the severity of illness may influence people's decision towards obtaining medical assistance. Medicine taking behaviour was limited to three months prior to the study. This may not explain the current behaviour of taking medicines among the public. Lastly, this study was also limited to convenience sampling method in Penang Island; therefore the data cannot be generalized to all Malaysians in the country.

CONCLUSIONS

Most participants tend to consult a physician as a first action to treat any health problems, whereas there are some minority of the population who would choose to consult the pharmacists as a first action if they face any health problems. Even though people have the right to seek treatment from anyone they choose, they are advised to go for physician's consultation. However, age group, ethnicity, occupation and monthly income were significant predictors of the first action of health seeking behaviour. The practice of self-medication is quite significant in the public, especially the Chinese respondents. The healthcare professionals and others healthcare authorities should work together to increase the awareness of the public about the negative effects of self-medication if used inappropriately and help them to make the right decision related to health problems. In addition, educational intervention programs are needed to educate people on the proper use of non-prescription medicines that are usually taken for treating their minor illnesses.

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CONFLICT OF INTEREST

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References

1. Lu Y, Hernandez P, Abegunde D, Edejer T. The world medicines situation. Geneva: WHO; 2011.
2. European Association of Hospital Pharmacists. Medicine shortages in European hospitals. Brussels: EAHP; 2013.
3. Azmi M, Akmal S, Chua G. A national survey on the use of medicines (NSUM) by Malaysian consumers. Selangor: Quality Use of Medicines, Pharmaceutical Services Division, Ministry of Health Malaysia. 2013.
4. Coulter A, Parsons S, Askham J. Where are the patients in decision-making about their own care. Geneva: WHO; 2008.
5. Azhar MIM, Gunasekaran K, Kadirvelu A, Gurtu S, Sadasivan S, Kshatriya BM. Self-medication: Awareness and Attitude among Malaysian Urban Population. *Int J Collab Res Intern Med Public Health*. 2013;5:436-443.
6. Kroeger A. Anthropological and socio-medical health care research in developing countries. *Soc Sci Med*. 1983;17(3):147-161.

7. Hausmann-Muela S, Ribera JM, Nyamongo I. Health-seeking behaviour and the health system response. Available at: <https://pdfs.semanticscholar.org/3511/6a3c0a88898a531ce214e4448861ae00e320.pdf> (accessed 5 April 2018).
8. Andersen RM. National health surveys and the behavioral model of health services use. *Med Care*. 2008;46(7):647-653. doi: [10.1097/MLR.0b013e31817a835d](https://doi.org/10.1097/MLR.0b013e31817a835d)
9. Andersen R, Davidson P. Improving Access to Care in America: Individual and Contextual indicators. In: Kominski GF, ed. *Changing the US Health Care System: Key Issues in Health Services Policy and Management* (3rd ed) San Francisco: Jossey-Bass; 2007.
10. Abdo-Rabbo A, Al-Ansari M, Gunn BC, Suleiman BJ. The use of medicines in Oman: public knowledge, attitudes and practices. *Sultan Qaboos University Medical Journal*. 2009;9:124.
11. Stewart DC, George J, Bond CM, Cunningham IT, Diack HL, McCaig DJ. Exploring patients' perspectives of pharmacist supplementary prescribing in Scotland. *Pharm World Sci*. 2008;30(6):892-897. doi: [10.1007/s11096-008-9248-x](https://doi.org/10.1007/s11096-008-9248-x)
12. Chua S, Sabki N. Use of nonprescription medications by the general public in the Klang Valley. *J Appl Pharm Sci*. 2011;1:93.
13. Major C, Vincze Z. Consumer habits and interests regarding non-prescription medications in Hungary. *Fam Pract*. 2010;27(3):333-338. doi: [10.1093/fampra/cmp105](https://doi.org/10.1093/fampra/cmp105)
14. Calamusa A, Di Marzio A, Cristofani R, Arrighetti P, Santaniello V, Alfani S, Carducci A. Factors that influence Italian consumers' understanding of over-the-counter medicines and risk perception. *Patient Educ Couns*. 2012;87(3):395-401. doi: [10.1016/j.pec.2011.10.003](https://doi.org/10.1016/j.pec.2011.10.003)
15. MDG Gap Task Force. *Delivering on the Global Partnership for Achieving the Millennium Development Goals*: New York: UN; 2008.
16. Sawalha AF. A descriptive study of self-medication practices among Palestinian medical and nonmedical university students. *Res Social Adm Pharm*. 2008;4(2):164-172. doi: [10.1016/j.sapharm.2007.04.004](https://doi.org/10.1016/j.sapharm.2007.04.004)
17. Hassali MA, Shafie AA, Al-Qazaz H, Tambyappa J, Palaian S, Hariraj V. Self-medication practices among adult population attending community pharmacies in Malaysia: an exploratory study. *Int J Clin Pharm*. 2011;33(5):794-799. doi: [10.1007/s11096-011-9539-5](https://doi.org/10.1007/s11096-011-9539-5)
18. Pharmaceutical Services Division. *A National Survey on the Use of Medicines (NSUM) by Malaysian Consumers 2015*.: Ministry of Health Malaysia. Available at: <http://www.pharmacy.gov.my/v2/sites/default/files/document-upload/national-survey-use-medicine-iii-nsum-iii.pdf> (acesed 19 October 2016).
19. Yousif M. In-home drug storage and utilization habits: a Sudanese study. *East Mediterr Health J*. 2002;8(2-3):422-431.
20. Abidin SIZ, Latif Y, Razak BT, Latif JY. Prevalence and determinants of appropriate health seeking behaviour among known diabetics: results from a community-based survey. *Advances in Epidemiology*. 2014;2014:1-7. doi: [10.1155/2014/793286](https://doi.org/10.1155/2014/793286)
21. Daban F, Pasarín MI, Rodríguez-Sanz M, García-Altés A, Villalbí JR, Zara C, Borrell C. Social determinants of prescribed and non-prescribed medicine use. *Int J Equity Health*. 2010;9:12. doi: [10.1186/1475-9276-9-12](https://doi.org/10.1186/1475-9276-9-12)
22. Morgan TK, Williamson M, Pirotta M, Stewart K, Myers SP, Barnes J. A national census of medicines use: a 24-hour snapshot of Australians aged 50 years and older. *Med J Aust*. 2012;196(1):50-53.
23. Antonov K, Isacson D. Prescription and nonprescription analgesic use in Sweden. *Ann Pharmacother*. 1998;32(4):485-494. doi: [10.1345/aph.16409](https://doi.org/10.1345/aph.16409)
24. Dawood OT, Hassali MA, Saleem F. A qualitative study exploring medicines use pattern and practice among general public in Malaysia. *Pharm Pract (Granada)*. 2016;14(2):740. doi: [10.18549/PharmPract.2016.02.740](https://doi.org/10.18549/PharmPract.2016.02.740)
25. Kesselheim AS, Stedman MR, Bublick EJ, Gagne JJ, Misono AS, Lee JL, Brookhart MA, Avorn J, Shrank WH. Seizure outcomes following the use of generic versus brand-name antiepileptic drugs. *Drugs*. 2010;70(5):605-621. doi: [10.2165/10898530-000000000-00000](https://doi.org/10.2165/10898530-000000000-00000)
26. Klemenc-Ketiš Z, Kersnik J. The effect of demographic characteristics on self-medication patterns: a cross-sectional nationwide study from Slovenia. *Coll Antropol*. 2011;35(4):1237-1242.
27. Loyola Filho AL, Lima-Costa MF, Uchôa E. Bambuí Project: a qualitative approach to self-medication. *Cad Saude Publica*. 2004;20(6):1661-1669. doi: [10.1590/s0102-311x2004000600025](https://doi.org/10.1590/s0102-311x2004000600025)
28. Klemenc-Ketiš Z, Hladnik Z, Kersnik J. Self-medication among healthcare and non-healthcare students at University of Ljubljana, Slovenia. *Med Princ Pract*. 2010;19(5):395-401. doi: [10.1159/000316380](https://doi.org/10.1159/000316380)
29. Ali SE, Ibrahim MI, Palaian S. Medication storage and self-medication behaviour amongst female students in Malaysia. *Pharm Pract (Granada)*. 2010 Oct;8(4):226-232. doi: [10.4321/s1886-36552010000400004](https://doi.org/10.4321/s1886-36552010000400004)
30. Machado-Alba JE, Echeverri-Cataño LF, Londoño-Builes MJ, Moreno-Gutiérrez PA, Ochoa-Orozco SA, Ruiz-Villa JO. Social, cultural and economic factors associated with self-medication. *Biomedica*. 2014;34(4):580-588. doi: [10.1590/S0120-41572014000400011](https://doi.org/10.1590/S0120-41572014000400011)