SELFPOMEDICATION AMONG ADULT POPULATION IN SELANGOR, 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 km2[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/neural/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 (StataCorp, 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 NMR-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 significantly 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)? | 38 | 9.5 |
| Yes                             | 363       | 90.5 |
| No                              |           |    |
| 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)? | 136       | 33.9 |
| Yes                             | 265       | 66.1 |
| No                              |           |    |

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 articles/journals (1.0%) (table 3).
Table 2: Distribution of respondents according to patterns of self-medication practice (N=401)

| Patterns of self-medication                                                                 | Frequency | %* |
|-------------------------------------------------------------------------------------------|-----------|----|
| 6. If you have any concern about medication, do you look for information about that medication before practicing self-medication? | 336       | 83.8 |
| 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?           |           |     |
| PIl 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 |

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 |
| 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 |
| Male                              | 67                      | 36.0   | 119                 | 64.0 |
| 3. Marital status                 |                         |        |                     |    |
| Single                            | 63                      | 30.7   | 142                 | 69.3 |
| Married                           | 73                      | 37.2   | 123                 | 62.8 |
| 4. Number of children (if any)    |                         |        |                     |    |
| None                              | 11                      | 32.4   | 23                  | 67.6 |
| 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 |
| Non-Malay                         | 17                      | 50.0   | 17                  | 50.0 |
| 6. Highest education level        |                         |        |                     |    |
| College/University                | 123                     | 34.4   | 235                 | 65.6 |
| Lower than College/University     | 13                      | 30.2   | 30                  | 69.8 |
| 7. Occupation                     |                         |        |                     |    |
| Public sector                     | 41                      | 34.2   | 79                  | 65.8 |
| 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 |
| 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 |
| 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 |
| 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/SD               |
|      |                                                                          | A                   |
|      |                                                                          | N                   |
|      |                                                                          | D                   |
| 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           |
|      |                                                                          | 7.0/4.8             |
|      |                                                                          | 0.2/0.5             |
| 2    | I am afraid to consult a doctor if my illness persists after I self-medicate.* | 1.5/8.0             |
|      |                                                                          | 12.0/49.1           |
|      |                                                                          | 29.4/2.9            |
| 3    | Reading the medication label is a waste of time.*                        | 1.0/2.7             |
|      |                                                                          | 5.0/37.4            |
|      |                                                                          | 53.9/18.4           |
| 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             |
|      |                                                                          | 2.5/2.5             |
| 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             |
|      |                                                                          | 0.2/0.2             |
| 6    | I will practice self-medication irrespective of the seriousness of the illness.* | 2.2/5.2             |
|      |                                                                          | 15.0/49.1           |
|      |                                                                          | 28.4/2.9            |
| 7    | I normally will keep leftover medications at home for future use.         | 20.9/49.9           |
|      |                                                                          | 19.5/6.7            |
|      |                                                                          | 3.0/3.0             |
| 8    | If someone in my family/friends is sick, I will share my medications with them. | 11.5/41.6           |
|      |                                                                          | 23.9/16.5           |
|      |                                                                          | 6.5/6.5             |
| 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            |
|      |                                                                          | 1.5/1.5             |

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% [223–25]. 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 headaches, fever, and cough/cold/sore throat were among the most common illnesses leading to self-medication [18, 31, 32]. However, self-medication without proper diagnosis and treatment may 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].

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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 items carry 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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