



Self-Medication Practice among Amman's Householders: Prevalence and Factors

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Authors' contributions

This work was carried out in collaboration among all authors. Author SAAS designed the study, performed the statistical analysis and wrote the manuscript. Author RHAZ revised the work critically for important intellectual content. Author ARA managed the analyses of the study. Authors DHA and SH supervised and helped in designing the study. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2020/v32i1130563

Editor(s):

(1) Dr. Jongwha Chang, University of Texas, USA.

Reviewers:

(1) Deesha Kumari, A. B. Shetty Memorial Institute of Dental Sciences, NITTE University, India.

(2) T. Latha, Manipal College of Nursing, Manipal Academy of Higher Education, India.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/59060>

Original Research Article

Received 12 May 2020

Accepted 17 July 2020

Published 20 July 2020

ABSTRACT

Aims: This study is set out to explore the prevalence and the influencing factors of self-medication practice, besides, to assess the knowledge levels of Amman's householders.

Methods: A community-based cross-sectional study was conducted using pre-tested questionnaires. The householders (n=601) were randomly selected from two disparate regions in Amman (West and East), which reflect different segments of the society.

Results: Self-medication was practised by more than half (53.1%) of Amman's Householders. The East of Amman householders shows a relatively lower rate (49.7%) of self-medication than the West of Amman ones (56.5%), which can be attributed to the higher ability to pay for medicines and a higher level of knowledge among West residents that might allow them to go directly to the pharmacies without consulting a physician. The relatively severe illness (e.g. respiratory diseases and eye complaints) showed the lowest influence for self-medication, which indicates a good level

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of awareness about the importance of consulting the health care professionals. Furthermore, the two main reasons for self-medication were experiencing a good result from previous self-medication (87.8%) and saving time (84.6%). The self-medication practice was associated with the education level and the knowledge level; the knowledge level of West of Amman residents was correlated positively with the self-medication practice prevalence; nevertheless, East ones presented a less notable pattern.

Conclusion: There is a knowledge gap regarding the proper SM practice, the health professionals must effectively educate the patients regarding the responsible self-medication practice and thus limit the adverse outcomes.

Keywords: Self-medication; drug self-administration; knowledge assessment; householder; Amman.

1. INTRODUCTION

Self-medication (SM) is one of the health concerns worldwide [1]. It involves using of medicines by the consumer to treat self-recognised disorders, symptoms, or continued use of medicine prescribed by a physician for chronic or recurring diseases or symptoms [2].

There is a variation of the SM prevalence worldwide, for instance, Spain 22.0% [3], Ethiopia 39.0% [4] and Malaysia 80.9% [5]. Similarly, in the Middle East, SM prevalence range from 35.4% to 83% [6], for example, in Jordan 42.5% [7] and Syria 50.7% [8]. This wide diversity of the SM practise prevalence could be due to the variety of the sociocultural characteristics and the used method in each one of the studies [9]. Therefore, SM practice seems to be a health challenge in the worldwide and Middle East.

1.1 Factors Influencing Self-Medication Practice

Previously published papers indicate that there is a relationship between SM practice patterns and demographic elements amongst distinct populations, such as age [3], genders [10], educational level [11], income [12], places of residence [13] and field of study [10]. Also, people with a higher level of education and higher socio-economic reputation had been the greater capability of determining their personal health-related needs [14].

There are numerous reasons for SM practice; the most frequent one is the evaluation of ailments as minor by the patient himself [15]. Further, according to Angamo and Wabe, the previous use of medicine and long waiting time in physicians' clinics were the main reasons for SM [11]. Other factors, such as knowledge and certainty of medicine safety, played a critical role

for proper SM practice [16]; It was has shown that due to the lack of required knowledge and information, many people took and used their medicine incorrectly or inappropriately [17].

Self-medication was observed significantly more often in cities than in rural areas. In Portugal, more than a quarter of the urban respondents self-medicate [18], whereas, the prevalence was lower (21.5%) in the rural area [19]. Also, the small towns self-medicated less frequently than the bigger cities [3]. Also, SM practice has positively been associated with the low cost of medicines and inaccessibility to health facilities [20].

Self-medication has advantages on individuals and the health care systems. It could save time spent in the clinics and reduce the costs of the health care services; also, proper SM could prevent and treat minor illnesses [21]. On the other hand, there were undesired outcomes that might occur due to improper practising of SM, for instance, risks of misdiagnosis, use of overdoses, and increased risk of adverse effects [22]. This study is set out to explore the prevalence and the factors influencing SM practice among East and West of Amman's householders.

2. METHODS

2.1 Study Area and Population

This study was conducted from June 2019 to July 2019 in Amman, the capital and most populous city of Jordan. Amman is generally categorised into two main areas (West and East). There is a considerable variation between those two areas, particularly in socio-economic terms; the cornerstones of this division would be more deprived areas in the East, wealthier in the West; dense and crowded Eastern areas, less dense and more open Western areas; a higher fertility

rate in the East, a lower one in the West; fewer services in the East, a better serviced West [23].

The study population size was calculated using the single population proportion formula [24]. A prevalence rate of 42.5%, was reported in Jordan [7].

$$n = \frac{(z_{\alpha/2})^2 \times p (1 - p)}{E^2} \times de$$

Whereas, $Z_{\alpha/2}$ is the critical value of the normal distribution at $\alpha/2$ (e.g. for a confidence level of 95%, α is 0.05, and the critical value is 1.96), (E) is the margin of error, (p) is the population proportion, and (de) is the design effect for using multi-stage sampling, was taken as (1.5).

$$n = \frac{(1.96)^2 \times 0.425 (1 - 0.425)}{0.05^2} \times 1.5 \approx 563$$

In case of an incident, about 10% was added; the final population size would be 620 householders.

2.2 Sampling Technique and Collecting Data

Two districts from each main area of Amman (i.e. West and East) was selected using a multi-stage sampling technique. The population number was allocated depending on the number of households in each district. The selection of the population was based on being a resident in Amman, preferably the adult household head. On the other hand, those who were under 18 years old, mentally incompetent, unable to listen or speak, and those unwilling were not included in this study.

The data was collected using a semi-structured questionnaire, which was obtained and developed based on a literature review [24]. The questionnaire was constructed in English and then translated in measurable terms to the local language (Arabic) by following the guidelines of Tsang et al. [25]. Trained investigators collected the data via a face-to-face interview. One household was selected randomly, and every other fifth household was interviewed. If one household was unwilling to participate, the next household was taken. The interview took about 20 minutes and started by obtaining an informed consent form after explaining the aims of the study.

2.3 Statistical Analysis

Data were coded, entered and analysed by the SPSS programme version 24 (IBM, Chicago, IL,

USA). Descriptive statistics were computed to describe the socio-demographic characteristics of the respondents, the point prevalence, and the patterns of SM practice. Odds ratio (OR) and the Pearson Chi-Square test (χ^2) were applied. Also, logistic regression (LR) was used to identify predictors of SM practice. The 95% confidence interval was set for the test, whereby the result was significant if $P \leq 0.05$.

3. RESULTS

The questionnaire was filled by 601 (response rate: 96.9%). The socio-demographic characteristics of the respondents are summarised in Table 1. Almost half of the population were from East Amman (50.2%, $n = 302$), and the rest were from the West (49.8%, $n = 299$). More than half of the respondents held a bachelor's degree (58.2%, $n = 350$), followed by a high school degree (29.8%, $n = 179$), then a diploma degree (8.2%, $n = 49$), and the rest had a master degree or higher (3.8%, $n = 23$).

The prevalence of SM among Amman's householders was 53.1% ($n = 319$). Also, the prevalence of SM practice regarding socio-demographic categories is illustrated in Table 1; East Amman householders (49.7%, $n = 150$) self-medicated less frequently than the West ones (56.5%, 169); however, there was no association between the two groups ($\chi^2 = 2.83$, $P = .09$). In term of education level, the highest prevalence of SM was among postgraduate degree holders (60.9%, $n = 14$), followed by those who held a bachelor degree (57.7%, $n = 202$), then those held diploma and high school degree (55.1%, $n = 27$ and 42.5%, $n = 76$ respectively); The Chi-Square test reveals the presence of significant differences in SM practice according to the education level ($\chi^2 = 11.77$, $P = .008$).

As shown in Table 2, the headache was the most common health complaints led to SM by Amman's householders (96.6%, $n = 308$), followed by common cold (84.0%, $n = 268$), then fever (61.4%, $n = 196$). The headache had a significant association with place of residence ($\chi^2 = 5.54$, $P = .02$), as the West of Amman householders were about five times more likely to self-medicate when suffering from headache than East ones (OR = 5.3, 95%CI 1.1 : 25.1). Also, fever was statistically significant with the place of residence ($\chi^2 = 9.2$, $P = .002$); the West residents were about two times more likely to self-medicate than East ones (OR =

2.0, 95%CI 1.3: 3.2). On the other hand, inability to sleep, gastrointestinal complaints, skin disorders, and eye complaints were the significant illness that made East of Amman respondents more likely to SM than West ones (($\chi^2 = 18.17, P = .001$), ($\chi^2 = 4.16, P = .04$), ($\chi^2 = 10.62, P = .001$), ($\chi^2 = 7.93, P = .005$), respectively)).

Furthermore, the reasons for which householders' self-medicated was demonstrated

in Table 2. Place of residence of the self-medicated householders have an association with having medicines at home ($\chi^2 = 3.83, P = .05$), the high costs of visits to physicians ($\chi^2 = 3.97, P = .05$), believing in medicine safety ($\chi^2 = 8.42, P = .004$), and lack of access to the medical centres ($\chi^2 = 31.43, P = .001$). The results also indicated that self-medicating West of Amman respondents, who influenced by having the medicines at home, were about two times more likely to self-medicate than East

Table 1. Socio-demographic characteristics and SM prevalence of Amman's householders

| Characteristics | Total n (%) | SM n (%) | χ^2 (df) | P |
|------------------------|-------------|------------|---------------|-------------------|
| Gender | | | | |
| Male | 304 (50.6) | 158 (52.0) | 0.30 (1) | .58 |
| Female | 297 (49.4) | 161 (54.2) | | |
| Age (Years) | | | | |
| 18–24 | 241 (40.1) | 129 (53.5) | 1.03 (4) | .91 |
| 25–34 | 157 (26.1) | 87 (55.4) | | |
| 35–44 | 142 (23.6) | 73 (51.4) | | |
| 45–54 | 42 (7.0) | 20 (47.6) | | |
| 55 and above | 19 (3.2) | 10 (52.6) | | |
| Marital status | | | | |
| Married | 276 (45.9) | 136 (49.3) | 3.91 (3) | .27 |
| Unmarried | 294 (48.9) | 163 (55.4) | | |
| Divorced | 25 (4.2) | 16 (64.0) | | |
| Widowed | 6 (1.0) | 4 (66.7) | | |
| Occupation | | | | |
| Physician | 6 (1.0) | 3 (50.0) | 6.88 (4) | .14 |
| Nurse | 15 (2.5) | 3 (20.0) | | |
| Pharmacist | 9 (1.5) | 5 (55.6) | | |
| Dentist | 5 (0.8) | 3 (60.0) | | |
| Others | 566 (94.2) | 305 (53.9) | | |
| Income | | | | |
| 220 JD or less | 58 (9.7) | 25 (43.1) | 3.27 (3) | .35 |
| 221–500 JD | 224 (37.3) | 125 (55.8) | | |
| 501–1000 JD | 255 (42.4) | 137 (53.7) | | |
| 1001 JD and above | 64 (10.6) | 32 (50.0) | | |
| Residence | | | | |
| East of Amman | 302 (50.2) | 150 (49.7) | 2.83 (1) | .09 |
| West of Amman | 299 (49.8) | 169 (56.5) | | |
| Education level | | | | |
| High school | 179 (29.8) | 76 (42.5) | 11.77 (3) | .008 ^a |
| Diploma | 49 (8.2) | 27 (55.1) | | |
| Bachelor | 350 (58.2) | 202 (57.7) | | |
| Master or higher | 23 (3.8) | 14 (60.9) | | |
| Family members | | | | |
| 3 or less | 115 (19.1) | 62 (53.9) | 0.06 (2) | .97 |
| 4-6 | 400 (66.6) | 211 (52.8) | | |
| 7 and above | 86 (14.3) | 46 (53.5) | | |
| Chronic disease | | | | |
| No | 555 (92.3) | 293 (52.8) | 0.24 (1) | .63 |
| Yes | 46 (7.7) | 26 (56.5) | | |

Percentages were calculated within the same group; total householders = 601; total self-medicating householders = 319; χ^2 = chi-square test; df = degree of freedom; P = probability.

^a There is statistically significant at $P \leq 0.05$

ones (OR = 1.8, 95%CI 1.0: 3.2). Regarding the medicine's information sources (Table 2), the most frequent one was the pharmacists (85.0%, $n = 271$), followed by the householders' parents or relatives (61.4%, $n = 196$). Furthermore, almost half of Amman's householders got cured (48.0%, $n = 153$). However, SM outcomes status were not associated with the place of residence. Also, suffering from specific side effects after SM was not very common (5.6%, $n = 18$).

Table 2. Factors influencing self-medication practice among Amman's householders

| The factor | Total <i>n</i> (%) | East of Amman <i>n</i> (%) | West of Amman <i>n</i> (%) | χ^2 (df) | <i>P</i> | OR (95%CI) |
|----------------------------------------------|-----------------------|----------------------------------|----------------------------------|---------------|-------------------|------------------|
| Health complains | | | | | | |
| Headache | 308 (96.6) | 141 (94.0) | 167 (98.8) | 5.54 (1) | .02 ^a | 5.3 (1.1 : 25.1) |
| Common cold | 268 (84.0) | 128 (85.3) | 140 (82.8) | 0.37 (1) | .54 | 0.8 (0.5 : 1.5) |
| Fever | 196 (61.4) | 79 (52.7) | 117 (69.2) | 9.20 (1) | .002 ^a | 2.0 (1.3 : 3.2) |
| Allergy | 188 (58.9) | 96 (64.0) | 92 (54.4) | 3.00 (1) | .08 | 0.7 (0.4 : 1.1) |
| Oral and dental problems | 159 (49.8) | 77 (51.3) | 82 (48.5) | 0.25 (1) | .62 | 0.9 (0.6 : 1.4) |
| Muscle ache | 120 (37.6) | 53 (35.3) | 67 (39.6) | 0.63 (1) | .43 | 1.2 (0.7 : 1.9) |
| Inability to sleep | 93 (29.2) | 61 (40.7) | 32 (18.9) | 18.17 (1) | .001 ^a | 0.3 (0.2 : 0.6) |
| Gastrointestinal complaints | 91 (28.5) | 51 (34.0) | 40 (23.7) | 4.16 (1) | .04 ^a | 0.6 (0.4 : 0.1) |
| Respiratory diseases | 43 (13.5) | 25 (16.7) | 18 (10.7) | 2.47 (1) | .12 | 0.6 (0.3 : 1.1) |
| Skin disorders | 41 (12.9) | 29 (19.3) | 12 (7.1) | 10.62 (1) | .001 ^a | 0.3 (0.2 : 0.7) |
| Eye complaints | 38 (11.9) | 26 (17.3) | 12 (7.1) | 7.93 (1) | .005 ^a | 0.4 (0.2 : 0.8) |
| Reasons | | | | | | |
| Experience of a good result from SM | 280 (87.8) | 132 (88.0) | 148 (87.6) | 0.01 (1) | .91 | 1 (0.5 : 1.9) |
| To saving time | 270 (84.6) | 123 (82.0) | 147 (87.0) | 1.52 (1) | .22 | 1.5 (0.8 : 2.7) |
| Easily purchasable medicines from pharmacies | 267 (83.7) | 131 (87.3) | 136 (80.5) | 2.74 (1) | .10 | 0.6 (0.3 : 1.1) |
| Having medicines at home | 261 (81.8) | 116 (77.3) | 145 (85.8) | 3.83 (1) | .05 ^a | 1.8 (1.0 : 3.2) |
| Previous prescription from physician | 259 (81.2) | 119 (79.3) | 140 (82.8) | 0.64 (1) | .42 | 1.3 (0.7 : 2.2) |
| None seriousness of the disease | 231 (72.4) | 111 (74.0) | 120 (71.0) | 0.36 (1) | .55 | 0.9 (0.5 : 1.4) |
| Long waiting time to visit physicians | 219 (68.7) | 98 (65.3) | 121 (71.6) | 1.45 (1) | .229 | 1.3 (0.8 : 2.2) |
| High costs of visits to physicians | 203 (63.6) | 104 (69.3) | 99 (58.6) | 3.97 (1) | .05 ^a | 0.6 (0.4 : 0.1) |
| Belief in medicine safety | 201 (63.0) | 107(71.3) | 94 (55.6) | 8.42 (1) | .004 ^a | 0.5 (0.3 : 0.8) |
| Awareness about the effect of medicines | 160 (50.2) | 81 (54.0) | 79 (46.7) | 1.67 (1) | .20 | 0.8 (0.5 : 1.2) |
| Low trust on medical services | 125 (39.2) | 52 (34.7) | 73 (43.2) | 2.43 (1) | .12 | 1.4 (0.9 : 2.3) |
| Lack of access to health care centres | 111 (34.8) | 76 (50.7) | 35 (20.7) | 31.43 (1) | .00 ^a | 0.3 (0.2 : 0.4) |
| Information sources | | | | | | |
| Pharmacists | 271 (85.0) | 127 (84.7) | 144 (85.2) | 0.02 (1) | 0.90 | 1.0 (0.6 : 1.9) |
| Parents or relatives | 196 (61.4) | 94 (62.7) | 102 (60.4) | 0.18 (1) | 0.67 | 0.9 (0.6 : 1.4) |
| Internet or Media | 115 (36.1) | 61 (40.7) | 54 (32.0) | 2.62 (1) | 0.11 | 0.7 (0.4 : 1.1) |
| School or coach | 108 (34.0) | 53 (35.3) | 55 (32.7) | 0.24 (1) | 0.63 | 0.9 (0.6 : 1.4) |
| Friends or neighbours | 100 (31.3) | 44 (29.3) | 56 (33.1) | 0.53 (1) | 0.47 | 1.2 (0.7 : 1.9) |

Percentages were calculated within the same group; total self-medicating householders = 319; East of Amman number = 150; West of Amman number = 169; χ^2 = chi-square test; df = degree of freedom; *P* = probability; OR = odds ratio for residency (West/East); 95%CI = confidence interval (lower : upper).

^a There is statistically significant at $P \leq 0.05$

3.1 Householders' Knowledge Assessment

Twenty questions were asked to assess the knowledge of the respondents about appropriate SM practice (Table 3). If the respondents answered more than 75% (15 out of 20) of questions correctly then they would be considered having an excellent knowledge; if they answered 50% to 74% (10 out of 20) of questions correctly, would be considered as having a good knowledge; if less than the half of the questions were answered correctly, they would be considered as having a poor knowledge level.

As shown in Fig. 1, the percentage of self-medicating householders, who had excellent knowledge, was 58.2% ($n = 239$), which was markedly higher than who did not SM (41.8%, $n = 172$); a similar pattern was shown with West of Amman residents; less notably pattern was

recorded for East ones. There was a statistically significant difference between the level of knowledge and SM practice ($\chi^2 = 20.31, P = .001$), as the level of knowledge increased, the SM practice prevalence had increased.

The logistic regression model was constructed to investigate the impact of study variables (predictors) on SM practice. The full model containing all predictors was statistically significant ($\chi^2 (n = 601) = 54.48, P = .001$). As illustrated in Table 4, four of the predictors were statistically significant (being a nurse, holding a bachelor's degree, and having good or excellent knowledge). The strongest predictor contributing to SM practice was having excellent knowledge, recording an adjusted odds ratio (AOR) of 3.59 (95%CI 2.09 : 6.15). Therefore, the respondents who had an excellent knowledge level were about three and a half times more likely to SM than those who had a poor knowledge level.

Table 3. Knowledge of Amman's householders about appropriate self-medication practice (n = 601)

| The question | Correct answer | Total n (%) |
|---------------------------------------------------------------------------------------------------|----------------|-------------|
| Are sick children given the same medicine as adults? | No | 525 (88.1) |
| NSAID (ibuprofen) may cause harm to your kidneys if they are misused | Yes | 520 (87.2) |
| Does a pregnant woman need to ask a physician's advice before taking any medicine? | Yes | 512 (85.9) |
| Can drinking alcohol affect how a medicine works in the body? | Yes | 505 (84.7) |
| Is the bathroom a good place for the storage of medicines? | No | 494 (82.9) |
| NSAID (ibuprofen) may cause stomach ulcer | Yes | 494 (82.9) |
| Can a particular medicine exist in more than one form (e.g., in tablet and syrup)? | Yes | 491 (82.4) |
| Does the shape of a tablet affect the action of medicine in the body? | No | 484 (81.2) |
| Should some of the medicines not be simultaneously taken with other medicines? | Yes | 474 (79.5) |
| Can a form containing a particular medicine have more than one name? | Yes | 473 (79.4) |
| Are sick children given the same dosage of medicine as adults? | No | 473 (79.4) |
| Does the colour of a tablet affect the action of medicine in the body? | No | 468 (78.5) |
| Do you have the habit of checking the expiry date of medicines during the purchase or before use? | Yes | 462 (77.5) |
| Do heat and direct sunlight damage medicines? | Yes | 453 (76.0) |
| Should some of the medicines not be taken with certain types of food items? | Yes | 447 (75.0) |
| Does a nursing mother need to ask a physician's advice before taking any medicine? | Yes | 443 (74.3) |
| Overusing Panadol (Paracetamol) will cause liver toxicity | Yes | 437 (73.3) |
| Does the intake of cough medicines cause any harm if too much of it is taken? | Yes | 411 (69.0) |
| Does the intake of vitamins cause any harm if too much of it is taken? | Yes | 389 (65.3) |
| Do all medicines have to be kept in the refrigerator? | No | 306 (51.3) |

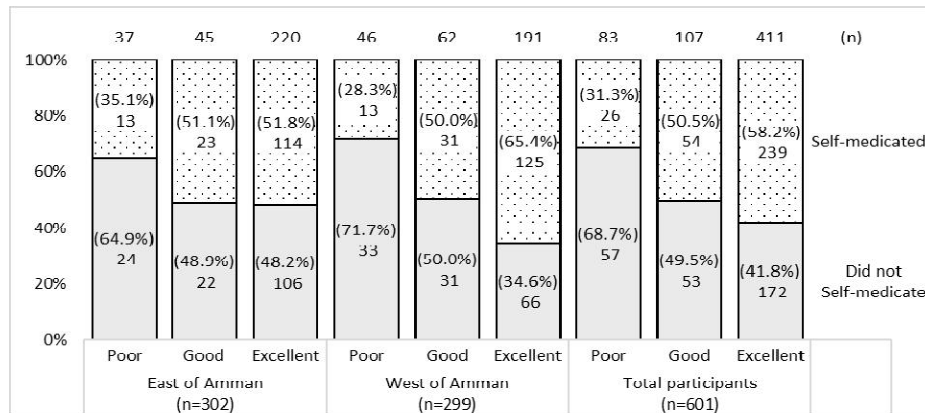


Fig. 1. The knowledge levels of the respondents about appropriate self-medication practice

Table 4. Logistic regression predicting the likelihood of self-medication

| | β (S.E.) | Wald (df) | P | AOR | 95%CI |
|-----------------------------------------------------|----------------|-----------|-------------------|-----|------------|
| Gender (reference: male) | | | | | |
| Female | 0.11 (0.18) | 0.41 (1) | .52 | 1.1 | 0.8 : 1.6 |
| Age (reference: 18–24 years) | | | | | |
| 25–34 years | -0.03 (0.24) | 0.02 (1) | .89 | 1.0 | 0.6 : 1.6 |
| 35–44 years | -0.15 (0.28) | 0.27 (1) | .60 | 0.9 | 0.5 : 1.49 |
| 45–54 years | -0.23 (0.38) | 0.37 (1) | .55 | 0.8 | 0.4 : 0.7 |
| 55 years and above | -0.31 (0.56) | 0.31 (1) | .58 | 0.7 | 0.3 : 2.2 |
| Marital status (reference: married) | | | | | |
| Unmarried | 0.28 (0.22) | 1.56 (1) | .21 | 1.3 | 0.9 : 2.1 |
| Divorced | 0.81 (0.46) | 3.02 (1) | .08 | 2.2 | 0.9 : 5.6 |
| Widowed | 0.98 (1.01) | 0.95 (1) | .33 | 2.7 | 0.4 : 19.3 |
| Occupation (reference: others) | | | | | |
| Physician | -0.12 (0.89) | 0.02 (1) | .89 | 0.9 | 0.2 : 5.1 |
| Nurse | -1.95 (0.69) | 8.07 (1) | .005 ^a | 0.1 | 0.1 : 0.6 |
| Pharmacist | 0.05 (0.74) | 0.00 (1) | .95 | 1.1 | 0.3 : 4.5 |
| Dentist | 0.15 (0.95) | 0.02 (1) | .88 | 1.2 | 0.2 : 7.5 |
| Income (reference: 220 JD or less) | | | | | |
| 221–500 JD | 0.27 (0.33) | 0.68 (1) | .41 | 1.3 | 0.7 : 2.5 |
| 501–1000 JD | 0.06 (0.33) | 0.03 (1) | .86 | 1.1 | 0.6 : 2.1 |
| 1001 JD and above | -0.11 (0.42) | 0.07 (1) | .79 | 0.9 | 0.4 : 2.1 |
| Residence (reference: East of Amman) | | | | | |
| West of Amman | 0.32 (0.19) | 2.81 (1) | .09 | 1.4 | 1.0 : 2.1 |
| Education level (reference: high school) | | | | | |
| Diploma | 0.28 (0.34) | 0.65 (1) | .42 | 1.3 | 0.7 : 2.6 |
| Bachelor | 0.61 (0.21) | 8.26 (1) | .004 ^a | 1.8 | 1.2 : 2.8 |
| Master or higher | 0.83 (0.50) | 2.76 (1) | .10 | 2.3 | 0.9 : 6.1 |
| Family members (reference: 3 or less) | | | | | |
| 4-6 | 0.00 (0.24) | 0.00 (1) | .99 | 1.0 | 0.6 : 1.6 |
| 7 and above | 0.14 (0.32) | 0.20 (1) | .66 | 1.2 | 0.6 : 2.1 |
| Chronic disease (reference: no) | | | | | |
| Yes | 0.44 (0.36) | 1.52 (1) | .22 | 1.2 | 0.8 : 3.1 |
| Knowledge status (reference: poor knowledge) | | | | | |
| Good knowledge | 0.88 (0.32) | 7.49 (1) | .006 ^a | 2.4 | 1.3 : 4.5 |
| Excellent knowledge | 1.28 (0.28) | 21.56 (1) | .001 ^a | 3.6 | 2.1 : 6.2 |
| Constant | -1.76 (0.48) | 13.68 (1) | .001 | 0.2 | |

β = regression coefficient; S.E. = standard error; P = probability; AOR = adjusted odds ratio; 95%CI: confidence interval (lower : upper).

^a There is statistically significant at $P \leq 0.05$

4. DISCUSSION

Self-medication is the practice where individuals treat their ailments without consulting the physician by medicines, which are safe and effective when used as per direction [26]. The improper SM practice was becoming one of the public health problems. This study aimed to assess the prevalence of SM practice among Amman's householders and further identify the factors that influence the practice, also, to evaluate the SM related knowledge levels of the householders.

The prevalence of SM practice among Amman's householders was recorded to be 53.1%. Also, the prevalence of SM in West of Amman residents was 56.5%, which is relatively higher than the prevalence of East ones 49.7%. On the other hand, there was a significant difference in SM practice according to the education level of the householders. Headache, common cold, and fever were the three most frequently founded health complaints. The most frequent reasons for SM were an experience of a good result from SM, saving time, and easily purchasable medicines from pharmacies. The pharmacists and the parents or relatives were the two most frequent information sources.

The results of this study demonstrated that more than half of Amman's householders (53.1%) had practised SM, which is higher than global reports such as Sri Lanka (urban 33.9%, rural 35.3%) [27], Vietnam 29.8% [28], and Malaysia 16.2% [29]. However, SM practice is also less prevalent in this study in comparison to findings from other countries; for example, Karachi 84.8% [30] and Shanxi 79.4% [31]. The reason for this vast difference could be because of variances in the socio-demographic properties of the studies population from one country to another, including age, lifestyle, education level, gender, economic status, knowledge, and availability of health care centres, availability of medicines, sampling technique, population size, SM definition among studies, and the types of medicines that the study aimed to identify.

There was a statistically significant difference between the SM practice and education level of the respondents. This result was in line with a study conducted in Malaysia, SM practice was significantly associated with educated people, and people with more self-care orientation [32]. Moreover, the logistic regression analysis showed that as the holders of a bachelor's

degree were about two times more likely to self-medicate than those who held a high school certificate (AOR = 1.8, 95%CI 1.2 : 2.8), which consisted with our finding, the level of knowledge increased in relation with the increasing of the SM practice prevalence. Moreover, the respondents, who had an excellent knowledge level, were about three and a half times more likely to SM than those who had a poor knowledge level (AOR = 3.6, 95%CI 2.1 : 6.2), this could be justified by having a higher level of knowledge make the respondent unfavourable to consult a physician before taking medicine, which consists with a previous finding [33].

This study found that the most common types of ailments that led to SM were headache followed by the common cold, fever, and allergy, which could be because about three-quarters of respondents self-medicated due to low perceived seriousness of the disease. These results are in line with a study conducted in Addis Ababa; the three most commonly reported illnesses were headache, gastrointestinal disorders, and respiratory problems [34].

Regarding the reasons for SM, most of the respondents in this study influenced by experiencing a good result from previous SM, saving time, easily purchasable medicines from pharmacies, and having medicines at home. These results were contradictory with the study of Angamo and Wabe, which found that the previous use of medicine and long waiting time in physicians' clinics were the main reasons for SM [11]. Also, Haseeb and Bilal reported that the most popular reasons behind SM were the cost of consulting a medical physician, lack of facility of transport, and advice from a friend/relative [35]. The variation of reasons might be because of lifestyle changes and the difference in managing individual health complaints through self-care. Besides, the easy and uncontrolled access to medicines in Jordan with poor awareness about the effect of medicines (50.2%) leaves the patient at potentially harmful effects of some of these medicines. The easy access to the medicines had become an essential determinant of SM practices [36].

The most common medicine's information sources in this study were pharmacists, followed by the householders' parents or relatives. This because the community pharmacies are available and providing health care services almost all the day time, also, one of the primary roles of the pharmacist is to ensure that the

medicines prescribed to patients are suitable, advising patients about medicines, including how to take them, what reactions may occur and answering patients' questions. Almost half of the self-medicating householders got cured (48.0%). This study reported that nearly half of respondents got cured, while a previous study reported that the majority (60.5%) of respondents felt relief from their health complaints [24]. Another study pointed out that most self-medicating respondents had an improvement in their condition [37]. In this study, the SM outcome status is not an actual indicator of SM benefits because it was measured and evaluated by the respondents himself, which consider a type of biased, in addition to variation in the type and severity of the disease in the first place.

One of the main aims of this study was to compare the SM practice between the East and West of Amman householders, as they reflected the social class of Amman. Since the East area is known to have a lower income and living level than the West ones, it was expected to find a higher tendency to SM by the East Amman householders than the West ones. However, the opposite has been found; the West of Amman householders self-medicated more frequently than the East ones, suggesting that going directly to pharmacies without consulting a physician is encouraged by higher financial ability and knowledge level. In contrast, the East of Amman householders often visited the free local medical centre or public hospitals to get the needed health care.

Also, the West of Amman householders were more likely to self-medicate due to headache and fever than the East ones. On the flip side, the West Amman residents were less likely to SM, due to inability to sleep, gastrointestinal complaints, skin disorders, and eye complaints, than East ones, which could be because those health complaints need a specialist physician, and the East Amman residents could not offer their cost, unlike the West ones who had the financial ability to visit physicians. Additionally, the West of Amman respondents, who influenced by having the medicines at home, were more likely to SM than East ones. However, the East Amman residents were more likely to SM than West ones due to the lack of access or distance to medical centres. However, there were some limitations; the analysis could be affected by the recall and social desirability bias. Some respondents underestimated the situation. We believe that the population is representative of

Amman, but we acknowledge that a larger scale study across different regions in Jordan is recommended to generalise the results.

5. CONCLUSION

Self-medication commonly prevailed among the Amman's householders, and these results provided a better understanding of SM behaviour of Amman's householders. West Amman householders self-medicated more frequently than the East ones. The higher-level of knowledge had a positive impact on SM practice. The SM phenomenon should not be looked at negatively. The positive aspects of SM should be recognised. Our result empowers the fact that SM practice based on incomplete knowledge should be avoided. Health professionals must spend some extra time in educating patients regarding responsible SM and thus limit the adverse outcomes. Strict measures must be implemented to stop selling prescription-only medicine without a prescription. It is recommended to reconduct it on a bigger scale and compare the SM practice among north and south of Jordan, and rural and urban regions. In addition to conducting follow up studies to ensure that our goal of reducing improper SM practice has been fulfilled.

ETHICAL APPROVAL AND CONSENT

The research proposal and questionnaire were reviewed for any ethical issues and approved by the University of Petra Independent Review Board (No. 5H-12-2018). The respondent's information, like name and address, was not recorded. The data were stored confidentially and only used for the current research. Respondents' written consent has been collected and preserved by the author(s).

ACKNOWLEDGEMENTS

Special thanks go to Prof. Ibrahim Al-Adham (Dean of The Faculty of Pharmacy & Medical Sciences at the University of Petra), and Dr. Walid Aburayyan for their great assistance. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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