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Self-Medication among Adults in Minia, Egypt: A Cross Sectional Community-Based Study

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Abstract

Self-medication may be associated with side effects and increases the chance of drug interactions and also affects the adherence to treatment and quality of life. This study aims at determining the pattern of self-medication, identifying knowledge, attitude and self-reported practices concerning the usage of the drugs and identifying demographic factors that could influence self-medication practices among the general population in El-Minia, Egypt. A community-based cross-sectional study was conducted among 422 randomly selected adults using a multi-stage random sampling technique. Data were collected by using a structured interview questionnaire. Respondents who had practiced some sort of self-medication during the past month were 73% of the sample. The commonest cause of self-medication, illness, was perceived as minor (59.7%). The most common perceived illness for self-medication was common cold (90.6%). Older respondents (>40 years) were about twice more likely to practice self-medication than younger ones. Similarly, professionals in their work were 3.4 times more likely to practice self-medication than unemployed individuals. Self-medication is a relatively frequent problem in Minia and interventions at different levels are required.

Keywords

Self-Medication, El-Minia, Cross-Sectional, Irrational Antibiotics

1. Introduction

World Health Organization defines self-medication as "the use of medicinal products by the individuals to treat self-recognized disorders or symptoms. It might also involve the intermittent or continuous use of a medication prescribed by doctors for chronic or recurring diseases or symptoms" [1]. Globally, nearly half of all medicines are unreasonably used, and self-medication with antibiotics constitutes a major public health problem due to the irrational medicine use [2].

Serious adverse drug reactions, drug resistance, protracted illnesses and even death are a problem; moreover, the financial costs incurred by individuals and governments are often extremely high, particularly in developing countries where patients often pay for medicines out of their own pockets [3].

Self-medication is widely practiced in many developing countries; the prevalence has been reported to range from 12.7% to 95% [4] [5] [6]. The prevalence of self-medication is more in low to middle-income communities and is more common in countries where prescription legislations are not strong enough [7].

Many studies showed that there is a relationship between increased self-medication activities and many demographic factors such as morbidity, income, education, gender, age and absence of periodic consultations [8] [9].

However, the use of non-prescription medicinal products is multi-factorial, and there is a paucity of adequate information about this issue especially in Upper Egypt. Thus the current study aims at determining the pattern of self-medication, and identifying the predictors of self-medication among adults in El-Minia, Egypt.

2. Methods

2.1. Study Design and Setting

This cross-sectional community based study was conducted in Minia city, Minia governorate, one of the Upper Egypt governorates, located 240 km south of Cairo, Egypt, during the period from September to November, 2016.

2.2. Study Population and Sampling

The required sample size was estimated based on the following conditions: assuming that the expected proportion of the population who practiced self-medication in Egypt (P) = 50%; tolerated error/margin of error (d) = 0.05; confidence interval (CI) = 95%. The following formula was used [n = p * (1 − p) * (Zα/d)2]. The value of Z is found in statistical tables which contain the area under the normal curve. Accordingly, the sample size was estimated and additions of 10% of the sample were added to guard against non-respondents rate [10].

Inclusion criteria: Finally, a total 422 adult respondents were included in the study. Persons who were unable to answer the questions or give incomplete response due to some barriers were excluded from the study. Respondents were randomly selected using a multi-stage random sampling technique. Minia governorate was found to be divided into nine districts from which Minia district was chosen randomly (first stage), then Minia city which represent the urban area in the district was chosen (second stage) which was divided into four blocks (North, East, South and West) from which the second and third blocks were chosen randomly (third stage).

The households were selected by systematic random sample by visiting every third apartment building in a randomly-selected direction asking for adults (over 18 years old). Our team met about 460, eligible persons, from whom 422 agreed to be interviewed and participate in the study (response rate 91.7%).

Data were collected using a structured questionnaire, filled by interviewing each individual by researchers, consisted of five sections, the first section contained questions regarding socio-demographic information such as sex, age, educational level and employment status; also they asked whether they had any chronic illness. In addition, participants were asked whether or not they have health insurance, and if they have ever practiced self-medication in general, and in the past month in particular.

The second section of the questionnaire consisted of questions related to their perception about medications, knowledge about the use of the purchased drug; and practices related to the product purchased.

In the third section of the questionnaire the respondents were requested to report on the sources of medication used for self-treatment and sources of information about such medication, also it focused on the health conditions that respondents would self-treat; this section also investigated reasons for self-medication.

The fourth section covered another area which included antibiotic usage patterns, the respondents were asked to indicate how often they practiced self-medication with antibiotics and how to decide which types of antibiotics were suitable for their medical conditions and how they adjust the proper course of antibiotics. The final section contained questions about respondents' beliefs and attitude concerning antibiotics self-use. This questionnaire had been tested on a small number of eligible persons as a pilot study to test the reliability of the questions and the time needed to conduct an interview. Then, proper corrections and adjustment had been fulfilled.

2.3. Ethical Consideration

All the procedures of this study were reviewed and approved by the Institution Review Board of the Faculty of Medicine, Minia University (Approval No.: 17-037). Prior to data collection, informed consents were obtained from all participants after supplying comprehensive information about the nature and the objectives of the study.

2.4. Statistical Analysis

The Statistical Program Statistical package of social science (SPSS) for Windows version 20 was used for data entry and analysis. Quantitative data were presented by mean and standard deviation, while qualitative data were presented by frequency distribution and compared by Chi-Square test. Risk ratios were estimated by calculating odds ratios (OR), and a multivariate logistic regression analysis was performed. The lowest accepted level of significance was ≤0.05.

3. Results

This study included 422 participants; whose ages ranged from 18 to 72 years with a mean (34.5 ± 13.4). There were 45.7% (n = 193) males and 54.3% (n = 229) females. From all the participants, 33.9% (n = 143) currently used medica-

tion at the time of study conduction. Eighty-eight out of those 143 (61.5%) thought that they had enough knowledge about the used medication regarding; effectiveness, dose, and side effects.

Respondents who had practiced some sort of self-medication during the past month were 308 (73%) of the sample. About 65% of respondents thought that over-the-counter medicines are as effective as those prescribed by the doctor. As for personal behavior if experienced adverse reactions, 60.4% and 26.5% of the participants said that they consult treating doctor and pharmacist respectively. About 64% reported that they discontinue medication on improvement. More than half of the participants (56.9%) agreed that some medical complaints could be assessed and solved by a pharmacist and they said that the most common condition the pharmacist could prescribe drugs is common cold and flu which was reported by 38.8% (Table 1).

As regards socio-demographic characteristics, no statistically significant differences were observed between subjects who practiced self-medication and those who were not except for the occupation, where the 40.9% of persons who

Table 1. Perception and practice of self-medication among the study participants in Minia city, September to November, 2016.

Variables	% (N)
Have you ever treated yourself (self-medicated)? (During last month)?	
Yes	73.0 (308)
No	27.0 (114)
Do you believe that over-the-counter medicines are as effective as those prescribed by the doctor?	
Yes	64.9 (274)
No	35.1(148)
What do you do if you have experienced adverse reactions with medicines?	
Consult treating doctor	60.4 (255)
Consult Pharmacist	26.5 (112)
Stop taking medications	8.1 (34)
Consult family members/friends	5.0 (21)
Duration of using prescribed medications?	
Until symptoms subsides	64.2 (271)
Up to given regimen	35.8 (151)
Do you give advice to others as regard medications?	
Yes	38.9 (164)
No	61.1 (258)
In your opinion, is there some medical complaints can be assessed/solved by a pharmacist?	
Agree	56.9 (240)
Don't agree	43.1 (182)
What are the conditions which pharmacist could prescribe drugs? (n = 240)	
Common cold and flu	38.8 (93)
Cough	22.9 (55)
Headache	10.4 (25)
Gastrointestinal (dyspepsia, constipation, diarrhea)	9.2 (22)
Dental pain	6.3 (15)
Muscle and joint pain	5.0 (12)
Fever	4.6 (11)
Allergic dermatitis	2.9 (7)

practice self-medication were professional worker compared to 35% of persons not practicing self-medication (p = 0.0003) (Table 2).

Regarding the sources of medicinal products used by respondents who practiced self-medication it was found that drugs purchased from private pharmacies were the most commonly used sources of self-medication, reported by the majority of self-medicated individuals (86.7%), and followed by the use of left-over medicine (79.9%). Those who obtained medications from their relatives or friends constituted 22.7% of self-medicated respondents (Table 3).

The commonest source of information about the drugs used for self-medication was the pharmacists, reported by about 92% of respondents. This was followed by respondents' experiences or knowledge from previous episodes (84.7%). Internet and advertisements were the least common source of information, reported by only 6.5% of respondents.

The commonest reason for self-medication was that the illness was perceived as minor (59.7%). More than 40% of self-medicated respondents indicated that previous experience with the treatment was a reason for self-medication. About one-third of self-medicated respondents (29.8%) indicated that they did so because they lacked the time to visit formal health care facilities. One-quarter of self-medicated participants indicated that the cost of consultations with the doctor was a reason for self-medication (Table 3).

The most common perceived illnesses for self-medication were common cold (90.6%), headache (71.1%), cough (69.5%), sore throat (68.5%), toothache (38.9%) and 50.3% represent other reasons mainly GIT problems.

Table 2. Socio-demographic characteristics of the study participants in Minia city, September to November, 2016.

Socio demographic characteristics	practicing self-medication (n = 308) % (n)	Not practicing self-medication (n = 114) % (n)	P-value*
Age			
<20 years	13.0 (40)	14.0 (16)	0.1
20 - 30 years	33.4 (103)	38.6 (44)	
30 - 40 years	24.7 (76)	14.9 (17)	
>40 years	28.9 (89)	32.5 (37)	
Sex			
Males	46.8 (144)	43.0 (49)	0.4
Females	53.2 (164)	57.0 (65)	
Educational level			
<High school	14.3 (44)	14.0 (16)	0.9
≥High school	85.7 (264)	86.0 (98)	
Occupation			
Unemployed	27.3 (84)	44.7 (51)	0.003
Manual work	18.5 (57)	14.0 (16)	
Clerical work	13.3 (41)	6.1 (7)	
Professional	40.9 (126)	35.2 (40)	
Family members			
<4 members	24.4 (75)	25.4 (29)	0.8
≥4 members	75.6 (233)	74.6 (85)	

*Chi-square test was use.

Table 3. Sources of medications and information on self-medication and reasons for using self-medication during the last month, among adults, Minia city, September to November, 2016 (n = 308).

Variables	% (n)*
Sources of medications	
Private pharmacy	267 (86.7)
Leftover prescription medication	246 (79.9)
Family/friends	70 (22.7)
Sources of information on self-medication	
Pharmacists	284 (92.2)
Previous prescription	261 (84.7)
Relatives/ friends	112 (36.4)
Mass media	35 (11.4)
Other (internet, advertisements)	20 (6.5)
Reasons for using self-medication	
The perceived problem as minor not requiring medical attention	184 (59.7)
Know the treatment from previous prescription	126 (40.9)
Lack of time to attend health care facilities	92 (29.8)
Confidence in the pharmacist	82 (26.6)
Cost of consultations with the doctor	77 (25.0)
Others (advice from family member, have my own stock at home)	42 (13.6)
Most common perceived illnesses for self-medication	
Common cold	279 (90.6)
Headache	219 (71.1)
Cough	214 (69.5)
Sore throat	211 (68.5)
Toothache	120 (38.9)
Others (mainly GIT)	155 (50.3)

[a]Numbers do not add to 100% as respondents might have more than 1 reason.

About 62% of the respondents used un-prescribed antibiotics for any illness, 47.3% used antibiotics more than once during the past month prior. About 44% of them decide the type of antibiotic which needed for his illness from previous prescription. About 42% of the participants know the proper dose of antibiotic by asking the pharmacist (Table 4).

Thirty-six percent of the respondents were aware that inappropriate use of antibiotics leads to antibiotic resistance and 63.5% knew that antibiotics could cause adverse drug reactions. Furthermore, 59.7% used the antibiotics only till disappearance of symptoms and 73% of participants thought that antibiotics are being effective in treating both bacterial and viral infections (Table 5).

Table 6 shows the multivariable-adjusted ORs (95% CIs) for factors associated with practicing of self-medication. The practice of self-medication among older respondents (>40 years) was 2.28 times that of under 20 years old, and 3.4 times among professional workers than unemployed individuals, (OR = 2.28, 95% CI: 1.12 - 4.67), and (3.44, 95% CI: 1.40 - 9.09) respectively. Additionally, we found that large family size was a significant predictor of self-medication (OR = 2.04, 95% CI: 1.84 - 2.33).

Table 4. Past experiences of participants with antibiotic self-medication, Minia city, September to November, 2016 (n = 260).

Variables	% (n)
Participants used un-prescribed antibiotics for any illness	260 (61.6)
How often did you do that in the last month?	
Once	137 (52.7)
More than once	123 (47.3)
How do you decide that antibiotic is needed for your illness?	
Know the treatment from previous prescription	115 (44.2)
Ask pharmacist	78 (30.0)
Others (advice from others)	67 (25.8)
How you know the proper dose of the antibiotic?	
Ask the pharmacist	110 (42.3)
My previous experience	107 (41.2)
Read instructions	31 (11.9)
Ask the person who advised me	7 (2.7)
By guessing the dosage by myself	5 (1.9)

Table 5. Knowledge concerning antibiotic self-medication among adults, Minia city, September to November, 2016 (n = 422).

	% (n)
Do you know that inappropriate use of antibiotics leads to antibiotic resistance?	
Yes	152 (36.0)
No	270 (64.0)
How do you know the appropriate period of antibiotic use?	
Period indicated by physician or pharmacist	127 (30.1)
Period indicated in drug leaflet	43 (10.2)
Antibiotics used until relief of symptoms	252 (59.7)
Do you think that antibiotics are effective in the treatment of both bacterial and viral infection?	
Agree	308 (73.0)
Don't agree	114 (27.0)
Do you know if self-medication with antibiotics may result in adverse effects?	
Yes	268 (63.5)
No	100 (23.7)
I don't know	54 (12.8)

4. Discussion

The prevalence of self-medication found in this study was 73%. Our estimates are lower than the figures reported from the previous study conducted in Alexandria in 2009; it was found that 81.1% of participant practiced self-medication [11]. Similarly, in Karachi, a study was conducted and it was found that self-medication was prevalent among 76% of the population [12]. On the contrary, another study among Jordanian population showed lower prevalence (42.5%) [13].

Table 6. Logistic regression analysis of factors independently associated with self-medication among participants (n = 422).

Characteristic	OR (95% CI)	P value
Age		
<20 years	(reference)	
20 - 30 years	0.49 (0.21 - 1.16)	0.1
30 - 40 years	1.30 (0.67 - 2.51)	0.4
>40 years	2.28 (1.12 - 4.67)	0.02
Sex		
Males	(reference)	
Females	1.03 (0.63 - 1.71)	0.8
Marital status		
Unmarried	(reference)	
Married	1.51 (0.79 - 2.85)	0.2
Educational level		
<High school	(reference)	
≥High school	0.74 (0.34 - 1.56)	0.4
Occupation		
Unemployed	(reference)	
Manual work	1.18 (0.60 - 2.34)	0.6
Clerical work	1.42 (0.63 - 3.21)	0.3
Professional	3.44 (1.40 - 9.09)	0.01
Family members		
<4 members	(reference)	
≥4 members	2.04 (1.84 - 2.33)	0.008
Having chronic illness		
No	(reference)	
Yes	1.35 (0.39 - 1.44)	0.3
Perceived access to health care (having insurance)		
No	(reference)	
Yes	1.47 (0.88 - 2.50)	0.3

About 65% of respondents thought that over-the-counter medicines are as effective as those prescribed by the doctor. The finding was approximate to that reported by Hassali *et al.* [14] in Malaysia (62.7%). As for personal behavior if experienced adverse reactions with medicines, 60.4% and 26.5% of the participants said that they consult treating doctor and pharmacist respectively, this is in accordance with a study conducted in Danish population which revealed that 73% and 35.2% consulting doctor and pharmacist respectively if experienced adverse reactions [15].

In the current study discontinuation of medicine on improvement was reported by 64.2% of respondents. Sallam *et al.* (2009) reported that 69.3% of participants in his study used medicine until complaint disappears [11].

More than half of the participants (56.9%) agreed that some medical complaints could be assessed and solved by a pharmacist and they said that the common condition the pharmacist could prescribe drugs is common cold and flu which was reported by 38.8%. A study among Indian population reported

that 69% of respondent agree to consult the pharmacist when complaining common condition as common cold, headache and flu [16].

4.1. Sources of Medications and Information on Self-Medication

Likewise findings from several studies [13] [17] [18], our study revealed that drugs purchased from private pharmacies were the most commonly used sources of self-medication, reported by the majority of self-medicated individuals (86.7%), and the use of leftover medicine was also prevalent and reported by about 80% of respondents. Easy accessibility of medicines from the pharmacy without prescription could explain the high percentage of purchasing from private pharmacies as a major source of the practice of self-medication. Also, keeping medicine at home is an important concern lead to increase the possibility of self-medication and mistakes in proper consumption.

Regarding the source of information about the drugs used for self-medication, the commonest source of information was the pharmacists, reported by about 92% of respondents. This was followed by respondents' experiences or knowledge from previous episodes (84.7%). The overall sources of information show that self-medication practices among adults in this study are not influenced by advertisements or the Internet; they were the least common source of information, reported by only 6.5% of respondents. which was similar to a study conducted in Saudi Arabia [18], and revealed that 74% of participant had the source of information from pharmacist followed by respondents' experiences (50.8%) and 16.4% from Internet and advertisements. This, however, is in contrast to a study conducted by Chui *et al.* [19] that showed that more than half of the participants never consulted a pharmacist on how to manage minor disorders.

4.2. Reasons for Using Self-Medication

The current study revealed that the commonest reason for self-medication was that the illness was perceived as minor (59.7%) followed by previous experience with the treatment (40%). About one-third of self-medicated respondents (29.8%) indicated that they did so because they lacked the time to visit formal health care facilities. One-quarter of self-medicated participants indicated that the cost of consultations with the doctor was a reason for self-medication. Above findings comparable to the results of a study performed by Sallam *et al.*, 2009 (11) in Alexandria who found that the commonest cause was the illness perceived as minor (44.5%), followed by previous experience with the treatment (31%) and 24% indicated for other reasons. Another study conducted by Swetha R and Usha R revealed that long wait at clinics (31.6%), mild nature of the illness (27.56%) and financial problems (17.35%) were most common reasons for adopting self-medication among Indian population [20].

The most common perceived illnesses for self-medication were common cold (90.6%), followed by headache (71.1%) then cough by (69.5%). This is similar to a finding by Noori [21] which showed that common cold has a high percent of the symptoms that led to self-medication. However, a study conducted in Sri

Siddhartha, India showed that cough, headache and fever were common symptoms for which participants practiced self-medication [20].

4.3. Antibiotic Self-Medication

Self-medication with antibiotics was reported by 260 of 422 respondents (61.6%). This is in agreement with Khan *et al.*, 2011 who found that 69% of the studied participant used antibiotics without a prescription [22]. Some other studies on self-medication with antibiotics have reported prevalence rates of 74% in Sudan [23], 46% in Jordan [24] and 78% in Greece [25].

Among the 260 respondents who used to take unprescribed antibiotics, 47.3% had used antibiotics more than once during the past month. About 44.2% had previous experience in using such antibiotics, 42.3% of the participants know the proper dose of antibiotic by asking the pharmacist. These findings were comparable to the results of a study performed by Widayati *et al.*, 2011 [26] who found that 54% decide the type of antibiotic based on previous prescription and 52% know their information from the pharmacist.

Unfortunately, only 36% of the respondents were aware that inappropriate use of antibiotics leads to antibiotic resistance. Contradictory, Noori [21] reported 59.6% in Kufa, Iraq was aware of the antibiotic resistance due to irrational use of antibiotics. More than half (59.7%) believed that antibiotics should be used until relief of symptoms. This was high compared with a study carried out in Lithuania [27], where 10% said that antibiotics should be used until relief of symptoms.

The current study revealed that (73%) of the sample thought that antibiotics are effective in the treatment of both bacterial and viral infection. Pavydė *et al.* [27] showed that Almost half of the respondents incorrectly identified antibiotics as being effective either in treating viral (26.0%) or mixed (bacterial and viral) infections (21.7%).

About two-thirds of the respondents (63.5%) knew that antibiotics could cause adverse drug reactions. This was low compared with a study carried out in Lithuania [27], where the majority of the respondents (92.9%) knew that fact.

4.4. Factors Associated with Self-Medication

This result highlights the associated risk between self-medication practice and increasing age (>40 years, (OR = 2.28; 95% CI 1.12 - 4.67) and professionally employed participant (OR = 3.44; 95% CI 1.40 - 9.09). This is similar to a finding by Moraes *et al.* [28] which showed that increasing age (OR = 1.24), professional employment (OR = 1.21) were significant predictors of self-medication. Also, we revealed that the bigger the family size the more use of self-medication (OR = 2.04; 95% CI 1.84 - 2.33). This is in accordance with Widayati *et al.*, 2011 (26) who found that increasing the family size (>4 members) is an important risk factor for self-use of medicine (OR = 1.2).

However we found no significant association between being covered by health insurance and practicing self-medication, this was in line with study conducted by Sarahroodi *et al.* (2012) who reported no statistically significant difference

between self-medication and having or not having medical insurance [29]. On contrary, Widayati *et al.* (2011) [26] found that Indonesian who had perceived access to health care (having insurance) were 1.47 times more likely to self-medicate than those who reported no access to health care (OR = 1.47).

5. Limitations

The most important limitation is that the answers reported by the respondents cannot be validated. Economic conditions not investigated in the current study. Perception and practices among rural residents and the impact of socioeconomic status on self-medication need to be investigated in further studies.

6. Conclusion

The results of this study confirm that self-medication is a relatively frequent problem in our community which could result in an increase in drug induced disease and in wasteful public expenditure. This indicates the need for change in the perception and practices towards the safe use of medicines. Interventions at different levels are required in order to reduce the frequency of medication misuse. The community should be educated regarding appropriate use of drugs and the adverse effect of drugs; this would require massive health education aimed at behavioral changes and strict precautions about the irrational use of antibiotics.

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