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Self-Medication Problem in Al Gharbia Governorate: Prevalence, Determinants, Health and Economic Effects

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Abstract: ***Background: Self-medication is defined as obtaining and consuming medication without professional supervision regarding indication, dosage, and duration of treatment to treat self-recognized illnesses or symptoms. Aim of the study: to estimate self medication practice (SMP) among population attending primary health care (PHC) centers and to identify the risk factors for self-medication. The study has also identified types of drugs used in self-medication, and estimated the current knowledge of the studied subjects towards self medication.Also detected the health and direct economic effects of the problem. Methodology: The study was a descriptive study based on cross-sectional approach. The study analysed data from 1100 subjects attending primary health care centers (PHCs) in Mahala city, Gharbia governorate, Egypt. The study was also analysed data from 100 subjects attending Emergency department at Mahala district hospital. Two forms of questionnaires were used in this study; of the first form of questionnaire was for people attending the PHCs and it was included data related to self medication and its associated risk factors. Also, it included data about the level of knowledge and attitude of self medications. The second form of questionnaire was for hospital survey and included data related to self medication and its associated risk factors as well as the charges paid for it (economic impact) by measuring the cost of drugs, cost of laboratory investigation and cost of instruments. Results: Prevalence of self-medication among the studied subjects was 74%. Mean value of distance from the nearest health care facility, waiting time in the health care facility were significantly higher among SMP group than not SMP group. The risk of SMP was increased among female sex, widow and divorced women with a significant positive association was detected. The most important self medication used by studied sample was the analgesics. The results revealed a highly statistically significant difference between the two groups where the poor level of knowledge was higher among SMP group compared with not SMP group. The comparison of the studied subjects by their self medication practice and their attitudes towards self medication has also showed a highly statistically significant difference between the two groups as regarding attitudes towards self medication. Mean cost was significantly higher among SMP admitted subjects than not SMP admitted subjects. Conclusion and recommendations: A considerable high proportion of self medication among the studied population (74%) attending the primary health care centers in Mahla City. The most important self medication used by studied sample was the analgesics. The study findings address the crucial need to carry out the large national study to get national results about this significant public health problem. However, until executing the large study, it is of benefit to notify the health care authorities, this results.***

Keywords: Self-medication, Prevalence, Determinants, Health effects, Economic effects

1. Introduction

Self-medication is the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms. Such ailments may be fever, body pains, indigestion, diarrhea, etc. In any case, several people, friends, relatives may advise the sick person on the type of medicine to take as a cure. The medicine may be an herb or a conventional drug which may be bought over the counter. This practice constitutes what is called self-medication **(Cuzzolin and Benoni, 2010).**

Self medication is widely practiced in both developed and developing countries. Study conducted among the Malaysian population showed that 75% of the participants used self-medications. Previous reports have demonstrated a wide variation in the frequency of over the counter (OTC) drug use, ranging from 25-75%, which may be due to the different socio-demographic background and different methodologies adapted in the studies **(Chua and Sabki, 2011).**

Studies revealed that there is an increase in trends of self medications particularly among the youth. This can be attributed to socio-economic factors, life style, ready access to drugs, high level of education and professional status. Moreover, knowledge of drugs and their use are the main causes of self-medication especially among pharmacists and physicians. **(Alano et al., 2009).**The practice of self-medication is as old as mankind itself, little has been exploited. If used appropriately, self-medication could lighten the demand on doctors and make people more health conscious. However, if abused, it could delay accurate diagnosis and appropriate treatment, and could cause toxicity, side-effects, drug interaction and unnecessary expenditure **(Arzi et al., 2010).**

Inappropriate antibiotic treatment and overuse of antibiotics have been a contributing factor to the emergence of resistant bacteria. The problem is further exacerbated by self-prescribing of antibiotics by individuals without the guidelines of a qualified clinician and the non-therapeutic use of antibiotics as growth promoters in agriculture **(Larson, 2007).**The Egyptian literature concerning this issue is lacking (**El-Nimr et al., 2015**), no study was calculated the risk factors related to this significant health problem. This study aimed to estimate SMP among population attending primary health care (PHC) centers in Al Gharbia Governorate, Egypt and to identify the risk factors for self-medication among them. The study has also identified types of drugs used in self-medication, and estimated the current knowledge and attitude of the studied subjects towards self

medication. Finally, the study has detected the health and direct economic effects of the problem.

2. Subjects and Methods

a) Research Strategy
The strategy of this research was basically a descriptive study based on cross-sectional approach.

b) Research Setting
- Primary health cares in Al Gharbia Governorate.
- Hospital based survey in emergency department of El mahla El kobra hospital.

c) Research Duration
The study was taken 24 months duration from first November 2016 till the end of October 2018.

d) Sample Design
The Target Population
The target population of the study was people of more than 18 years old attending the PHCs in Al Gharbia governorate and patients attending emergency department in hospital survey.

Sample Size
For people attending the PHCs in Al Gharbia governorate
Accordingly, the following formula was used
$n = p\ (1\text{-}p) * Z\alpha^2/ME^2$
Where
n = minimum sample size
Zα = 1.96 at 97% confidence interval, obtained from standard statistical table of normal distribution,
p = estimated proportion of self medication , it was 56% according to calculated average prevalence in previous studies,
(1-p) proportion of non self medication (0.44),
ME = margin of error (0.03).
n=1018

But, because of the probability of missing data, the sample size is decided to reach 1100.

For hospital survey, the sample was included all patients attending the emergency department for one month. Subjects admitted to hospital from this sample was followed by the researcher till their discharge to collect data about the health and direct economic impacts.

e) Sample technique
Multistage stratified random sample was performed for those attending the PHCs in Al Gharbia governorate. Al Gharbia governorate is divided into 8 centers; we was randomly choose 1 center. From the chosen centre, we randomly choose 3 urban districts and 3 villages. From the chosen districts and villages, people of more than 18 years old attending the PHCs were the subjects of population based sample.

f) Research Tools
Two forms of questionnaires were used in this study; First form of questionnaire was for people attending the PHCs and was included data related to self medication and its associated risk factors as well as the charges paid for it (economic impact). Also included data about the level of knowledge and attitude of self medications.The questionnaires in this study was developed and formulated according the data published in the previous Egyptian and Western studies. Second form of questionnaire was for hospital survey and was included data related to self medication and its associated risk factors as well as the charges paid for it (economic impact) and was measured direct economic effect of self medications by measuring the cost of drugs , cost of laboratory investigation and cost of instruments (like catheter, cannula and syringe).Data collections were done by the researcher himself through interview with the studied sample.

g) Study variables

Dependent variables
self medication, health effects and direct economic effects.

Self medication was assessed in the study questionnaire by the following questions:

"Apart from treatment(s) prescribed by your general practitioner, do you sometimes take any other medication to treat yourself?" followed by, "What is the origin of medications? including:
1) Previously prescribed for "chronic diseases",
2) Pharmacist recommendation,
3) Friends or family member,
4) Purchased by the subject over the counter at pharmacy.

Other included questions to assess this variable are "What are types of medications?", "For what?", and for whom?.

Health effects was assessed in the study questionnaire by the following questions:
Delay in diagnosis, delay in reaching to hospital, side effects, complication, length of stay in hospital and mortality rate.

Direct economic effects was measured by two methods:
1) Cost in terms of out-pockets for population-based sample (house to house data)
2) Measuring the cost of the prescribe drugs, cost of performed laboratory investigation and cost of the used instruments such as; catheter, Cannula and syringe, in the studied hospital-based sample (emergency department data).

The explanatory variables in this study were included the following variables on in the used questionnaire:
1) Socio-demographic characteristics: age, sex, educational level, occupation, monthly family income and residence.
2) Lifestyle factors: smoking, BMI, physical exercise, etc.
3) Self medication related factors: reasons of self medication, cost in terms of out-pockets.
4) Knowledge of the studied subjects towards self medication.

The knowledge variables were based on 12 closed questions including questions about concept and health hazards of self medication. The knowledge was assessed individually and

by its categorization into good, fair and poor according to knowledge score given for each of its component ("yes" will given score =1, and "no" and "do not know" will given 0 score). Good knowledge will be defined if the subject's correct answers more than 75%, fair knowledge between (50-75%), and finally poor knowledge if less than 50%.

h) Statistical analysis

The Data will be collected by the researcher himself. Processing of the collected data was done using the Statistical Package for Social Sciences (SPSS). The processing of the collected data was started as early as possible to deal with the collected data with great accuracy. The data was sorted, tabulated and analyzed with using suitable software.The collected research data was statistically managed as follows:

1) Descriptive statistics; the mean and median were used as measures of central tendency and the standard deviation was used as measure of dispersion. Descriptive statistics were used to estimate the prevalence of self medication. The chi square test was used to compare the self medication of the studied subjects by their characteristics. The level of statistical significance was defined as $P \leq 0.05$.
2) Analytic statistics; significance test was used to test the presence or absence of a statistically significant difference among the studied variables. The accepted level of significance was ≤0.05. The logistic regression analysis was used to estimate odds ratios (OR) and their 95% confidence intervals (95% CI) for the association of self medication with the studied risk factors.

i) Ethical consideration

Administrative Approvals: The implementation of this research was require the approval of ministry of health and populations. Ethical approval from research ethics committee at Faculty of Medicine, al-Azhar University, Cairo, Egypt. Informed consents was obtained from the studied subjects after explaining the aim of this study to them. No invasive procedures were performed. All the collected data was secured and confidentially stored and analyzed and to be used only for the research purpose.

3. Results

Figure (1) shows that: The prevalence rate of self-medication among the studied subjects was 74%.

Table 1 shows the comparison of the studied subjects by self medication practice (SMP) and their socio-demographic characteristics. Mean value of age was higher among SMP group than not SMP group (35. 9 and 33.3 years, respectively, with p value was 0.000). Also there's highly statistically significant difference between the two groups, it was higher among females (82.5%), and in widow and divorced (87.5%).Regarding educational level, there's a statistically significant difference between the two groups as self-medication was 100% among Illiterate and Basic. Regarding Occupation, there's a statistically significant difference between the two groups as self-medication was higher among those who were non skilled workers (93.5%).

Table 2 shows the comparison of the studied subjects by self medication practice (SMP) and health care facility related factors. Mean value of distance from the nearest health care facility was significantly higher among SMP group than not SMP group (14.59 vs. 13 minutes, respectively, with p value was 0.013). Also, the mean value of waiting time in the health care facility was significantly higher among SMP group than not SMP group (52.62 vs. 20.42 minutes, respectively with p value was 0.000). A significant high percent of no physician communication was also detected among SMP group compared to SMP group (70.7% vs. 29.3%).

Table 3 shows the association of self medication practice (SMP) and socio-demographic factors among PHCs sample. The risk of SMP was found to increase among female sex with a significant association positive was detected (OR= 3.22; 95% CI= 2.43-4.25). Also, a significant positive association was found among (widow and divorced) (OR = 4.37; 95% CI = 8.98 - 2.13). The risk of SMP, however, was significantly reduced by approximately 95%, 64%, and 35% among professional work, monthly family income ≥ 3000 LE and those living in rural areas.

Table 4 shows the comparison of the studied subjects by self medication practice (SMP) and health care availability and physician communication; The risk of SMP is found to increase with increasing distance from the nearest health care facility and a weak positive association was detected among those with distance from the nearest health care facility ≥ 15 minutes (OR = 1.23; 95% CI = 0.94-1.61). Also the risk of SMP is found to increase with increasing waiting time in the health care facility, with a significant high risk was detected among those reported waiting time in the health care facility ≥ 30 minutes (OR = 4.37; 95% CI = 3.21-5.95).

Table 5 shows distribution of the studied self medication practice (SMP) subjects according to source of non-prescription medication, the majority (78.4%), was previously prescribed, pharmacist recommendation were 62.2%, friends or family member were 37.8%and purchased by the patient over the counter at pharmacy were 29.7%.

Table 6 shows distribution of the studied SMP subjects regarding complaint for which self-medication used, the highest was headache/body ache, flu/cough/cold and fever (70.3%, 64.9% and 54.1%respectively) while the lowest prevalence was insomnia (10.8%).

Table 7 shows distribution of the studied SMP subjects regarding the used medications, it was found that, the highest prevalence was analgesic, antipyretics and antibiotics (83.8%, 64.9%and 54.1% respectively) while the lowest prevalence was sedatives (10.8%).

Table 8 shows distribution of the studied SMP subjects by reasons, minor illness was (64.9%), saving time &money was (64.9%), avoid crowding at OPD was (35.1%), high cost of consultations was (24.3%), sufficient pharmacological knowledge was (21.6%), privacy was (10.8%) and previous good experience with the drug was (8.1%).

Table 9 shows that, the mean frequency of SMP per month was 1.92±1.12 and mean price spent per month (LE) was 29.11±30.68.

Table 10 clarifies the comparison of the studied subjects by SMP and their level of knowledge about self medication. The results revealed a statistically significant difference between the two groups where the poor level of knowledge was higher among SMP group compared with not SMP) group (p value= 0.000).

Table 11 clarifies the comparison of admitted subjects by their self medication practice according to direct economic effects. Mean value of cost of prescribed drugs was significantly higher among SMP admitted subjects than not SMP admitted subjects. Mean value of cost of instruments was significantly higher among SMP admitted subjects than not SMP admitted subjects, while there was no statistically significant difference between SMP admitted subjects and not SMP admitted subjects regarding cost of laboratory investigation.

Table 12 clarifies the comparison of admitted subjects by their self medication practice according to outcome. Mean value of hospital stay was significantly higher among SMP admitted subjects than not SMP admitted subjects (9.89 ± 4.52 vs. 6.50 ± 1.16 days). The complications were also significantly higher among SMP admitted subjects compared with not SMP admitted subjects (83.3% vs. 9.1%). Among the admitted SMP group, two subjects were died (11.1%) while there were no deaths among the admitted not SMP group, but with no statistically significant difference (p value= 0.232).

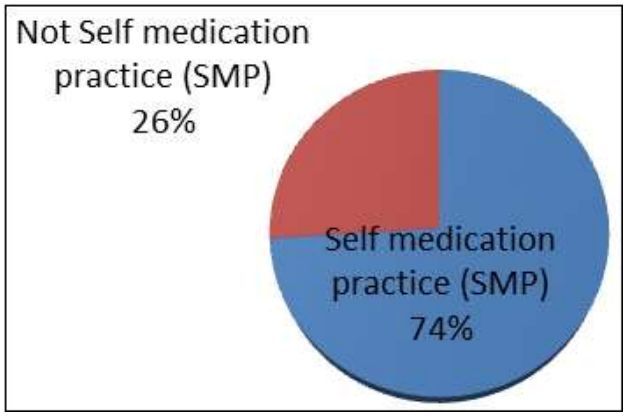

Figure 1: Prevalence of self-medication among the studied subjects

Table 1: Comparison of the studied subjects by self medication practice (SMP) and their sociodemographic characteristics

Characteristics	Self medication practice (n= 814) n(%)	Not Self medication practice (n= 286) n(%)	P value
Age in years mean ± SD	35.9±11.3	33.3±5.04	0.000*
Age in years			
< 35	484(75.9)	154(24.1)	0.04*
≥ 35	330(71.4)	132(28.6)	
Sex			
Male	242 (59.5)	165 (40.5)	
Female	572 (82.5)	121 (17.5)	0.000*
Marital status			
Single	88 (61.5)	55 (38.5)	
Married	649 (74.7)	220 (25.3)	0.000*
Widow and divorced	77 (87.5)	11 (12.5)	
Educational level			
Illiterate	242 (100)	0 (0.0)	
Basic	253 (100)	0 (0.0)	0.000*
University and higher	319 (52.7)	286 (47.3)	
Family income per month (LE)			
< 2000	528 (87.3)	77 (12.7)	
2000-3000	66 (35.3)	121 (64.7)	0.000*
≥ 3000	220 (71.4)	88 (28.6)	
Occupation			
Non skilled work	473 (93.5)	33 (6.5)	
Skilled work	176 (84.2)	33 (15.8)	0.000*
Professional work	165 (42.9)	220 (57.1)	
Residence			
Urban	429 (78.0)	121 (22.0)	
Rural	385 (70.0)	165 (30.0)	0.002*

Table 2: Comparison of the studied subjects by self medication practice (SMP) and health care facility related factors

	Self medication practice (n= 814)	Not Self Medication practice (n= 286)	P value
Distance from the nearest health care facility; mean minutes of walking	14.59 ± 10.03	13±7.11	0.013*
Mean waiting time in the health care facility (minutes)	52.65±45.74	20.42±30.17	0.000*
Physician communication with the patients			
Yes	363 (78.6)	99 (21.4)	0.003*
No	451 (70.7)	187 (29.3)	

Table 3: Association of self medication practice (SMP) and sociodemographic factors among PHCs sample

Characteristics	Self medication practice (n= 814)	Not Self medication practice (n= 286)	OR	95% CI
Age in years				
< 35	484	154	1.00	(Ref.)
≥ 35	330	132	0.79	0.60-1.04
Sex				
Male	242	165	1.00	(Ref.)
Female	572	121	3.22	2.43-4.25*
Marital status				
Single	88	55	1.00	(Ref.)
Married	649	220	1.84	1.27-2.66*
Widow and divorced	77	11	4.37	2.13-8.98*
Educational level				
Illiterate	242	0	-	-
Basic	253	0	-	-
University and higher	319	286	1.00	Ref.
Family income per month (LE)	528	77	1.00	(Ref.)
< 2000	66	121	0.08	0.05-0.11*
2000-3000	220	88	0.36	0.25- 0.51*
≥ 3000				
Occupation				
Do not work	473	33	1.00	(Ref.)
Skilled work	176	33	0.37	0.22- 0.62*
Professional work	165	220	0.05	0.03 -0.08*
Residence				

Urban	429	121	1.00	(Ref.)
Rural	385	165	0.65	0.50-0.86*

Table 4: Comparison of the studied subjects by self medication practice (SMP) and health care availability and physician communication

	Self medication practice (n= 814)	Not Self medication practice (n= 286)	OR	95% CI
Distance from the nearest health care facility				
< 15 minutes	396	154	1.00	(Ref.)
≥ 15 minutes	418	132	1.23	0.94-1.61
Waiting time in the health care facility				
< 30 minutes	352	220	1.00	(Ref.)
≥ 30 minutes	462	66	4.37	3.21-5.95*
Physician communication with the patients				
Yes	363	99	1.00	(Ref.)
No	451	187	0.66	0.49-0.87

Table 5: Distribution of the studied self medication practice (SMP) subjects according to source of non-prescription medication (n= 814)

Source of non-prescription medication	No (%)
Previously prescribed	638 (78.4)
Pharmacist recommendation	506 (62.2)
Friends or family member	308 (37.8)
Purchased by the patient over the counter at pharmacy	242 (29.7)

Table 6: Distribution of the studied self medication practice (SMP) subjects regarding complaint for which self-medication used (n= 814)

Complaint	No (%)
Headache/Body ache	572 (70.3)
Flu/Cough/Cold	528 (64.9)
Fever	440 (54.1)
Diarrhea	352 (43.2)
Vomiting	352 (43.2)
Allergies/Rash	286 (35.1)
Sore throat	286 (35.1)
Ulcer in mouth	220 (27.0)
Insomnia	88 (10.8)

Table 7: Distribution of the studied self medication practice (SMP) subjects regarding the used medications (n= 814)

Medication in use	No (%)
Analgesic	682 (83.8)
Antipyretics	528 (64.9)
Antibiotics	440 (54.1)
Antitussives	396 (48.6)
Antidiarrheal	352 (43.2)
Antiemetic	308 (37.8)
Antihistaminic	286 (35.1)
Antispasmodics	286 (35.1)
Tonics/Vitamins	154 (18.9)
Sedatives	88 (10.8)

Table 8: Distribution of the studied self medication practice (SMP) subjects by reasons (n= 814)

Reasons	No (%)
Minor Illness	528 (64.9)
Saving time &money	528 (64.9)
Avoid crowding at OPD	286 (35.1)
High cost of consultations	198 (24.3)
Sufficient pharmacological knowledge	176 (21.6)
Privacy	88 (10.8)
Previous good experience with the drug	66 (8.1)

Table 9: Mean frequency of self medication practice (SMP) among the studied PHC sample and mean cost expenditure per month (n= 814)

	Mean ± SD
Mean frequency of SMP per month	1.92±1.12
Mean price spent per month (LE)	29.11±30.68

Table 10: Comparison of the studied subjects by their self medication practice (SMP) and their level of knowledge about self medication

Level of knowledge	Self medication practice (n= 814) n(%)	Not Self medication practice (n= 286) n(%)	P value
Good	66 (50.0)	66 (50.0)	
Fair	264 (80.0)	66 (20.0)	
Poor	484 (75.9)	154 (24.1)	0.000*

Table 11: Comparison of admitted subjects by their self medication practice according to direct economic effects

Economic effects	SMP admitted subjects (n= 18) Mean ± SD	Not SMP admitted subjects (n= 12) Mean ± SD	P value
Cost of prescribed drugs in LE	439.44± 125.86	342.50 ± 55.90	0.019*
Cost of laboratory investigations in LE	300 ± 159.04	308.33 ± 70.17	0.866
Cost of instruments in LE	138.89 ± 40.42	55.0 ± 7.97	0.000*

Table 12: Comparison of admitted subjects by their self medication practice according to outcome

Outcome	SMP admitted Subjects (n= 18) n(%)	Not SMP admitted subjects (n= 12) n(%)	P value
Hospital stay (days) (mean ± SD)	9.89 ± 4.52	6.50 ± 1.16	0.017*
Complications			
Yes	15 (83.3)	1 (9.1)	0.000*
No	3 (16.7)	11 (90.9)	
Death			
Yes	2 (11.1)	0 (0.0)	0.232
No	16 (88.9)	12 (100)	

4. Discussion

Among the studied 1100 subjects, the prevalence of SMP among these studied subjects was 74% (814/1100; 95% CI= 71.3-76.6%).

The reported high prevalence in this study was also found in Karachi, Packistan, where the prevalence of SMP in that

study was as high 76% of the studied population **(Yousef et al., 2008)**.

The present estimate, however, has appeared lower than the rate of SMP reported from a previous Egyptian study conducted in Alexandria in 2009, where the prevalence of SMP in that study was 81.1% **(Sallam et al., 2009)**. Similar to the reported rate in Alexandria study **Ullah et al.(2013)** found a higher prevalence of self-medication 95.5% in Abbottabad city in Pakistan.

In contrast to these reported figures, another study among Jordanian population showed lower prevalence of 42.5% **(Zafar et al., 2008)**. Moreover, **Bennadi (2014),** in his global study has presented the prevalence of self medication in different countries all over the world. The prevalence was 14% in Saudi Arabia, followed by USA (13%), Germany and Australia (11%), and the lowest prevalence was found in Sweden, Italy, Switzerland and Mexico where the prevalence was 8% in these countries.

In Al Sadat city, Menoufia governorate, Egypt**, Farahat et al. (2016)** has conducted a cross sectional study on attendance of family health center in the city from April 2014 to March 2015 to determine the prevalence of self-medication among them and to identify the determinants of their self-medication practice. Of the studied 368 participants, 66.8% of the participants were found to consume over the counter (OTC) medications.

In El-Minia governorate, Egypt, a recent community-based cross-sectional study was conducted on 422 randomly selected adults. Respondents who had practiced self-medication were 73% of the sample. **(Ghazawy et al., 2017).**

The mean age of the studied population in the present study was higher among Self medication practice (SMP) group than not SMP group (35. 9 vs. 33.3 years, respectively, with p value was less than 0.05.This finding coincides with a study in china (**Pan et al., 2012)** reported that older persons are more in practicing self medication.

This disagrees, however, with **Afolabi (2008)** who found no association between age and self medication in his study.

In the current study there's highly statistically significant difference between the two studied groups (SMP and not SMP) regarding their sex, where SMP was higher among females (82.5%).This agrees with study which was conducted in India **(Gupta et al., 2011)** showed that females indulged more in self medication than males.

Farahat et al.(2016) explained the high practice of self medication by the fact that many families prefer male than females, so they seek medical advice for male early without trial of self-medicated drugs without prescriptions. Moreover, by the most probable reason behind this fact is the restricted role of female mostly as housewives in their homes which further create hindrances in their visits to hospitals/clinics and abolish all the opportunities to learn about any possible harmful consequences of such practices. Presence of economic problems and lack of education particularly for the females in the developing countries like Egypt further support the probability of increased indulgence of females in the practices of self medication.

The present study demonstrates that regarding educational level, there's a statistically significant difference between the two studied groups as self-medication practice was 100% among illiterate and basic educational level.

Education of the participants was found to be a major factor influencing the practice of self-medication in various studies **(Hanna and Hughes, 2011; Gutema et al., 2011).**

In the present study regarding occupation, there's a statistically significant difference between the two studied groups as self-medication was higher among those who were non skilled workers (93.5%).Similar to this finding **Mossa et al. (2012)** revealed that people least likely to follow this practice are from having higher status occupations**.**

The present study has revealed that mean value of distance from the nearest health care facility was significantly higher among SMP group than not SMP group (14.59 vs. 13 minutes, respectively, with p value was 0.01. This is in agreement with **(Farahat et al., 2016)**, who reported that distance of nearest health care facility may play a role in practicing self medication.

This study showed that the mean value of waiting time in the health care facility was significantly higher among SMP group than not SMP group (52.62 vs. 20.42 minutes, respectively with p value was less than 0.05 and this was found with the results reported by **Helal and Abou-ElWafa (2017)** in their study in Mansura University.

In contradiction with the present study finding, however, the issue of long waiting queues at clinics or hospitals was raised by 59% of University students in Southwestern Nigeria, as one of the reasons for seeking self-care in order to meet up with their tight lecture schedule **(Osemene and Lamikanra, 2012)**.

Estimating the risk of SMP among the studied subjects in the present study has revealed that the risk of SMP was increased among female sex with a significant positive association was detected (OR= 3.22; 95% CI= 2.43-4.25). Also, a significant positive association was found among widow and divorced women with the estimated OR of 4.37(95% CI = 8.98 - 2.13).). The risk of SMP, however, was significantly reduced by approximately 95%, 64%, and 35% among professional work, monthly family income ≥ 3000 LE and those living in rural areas with the estimated OR of 0.5, 0.36 and 65, respectively.

Ghazawy et al., (2017) in El-Minia governorate, Egypt revealed highlights of 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 disagrees with **(Shafie et al., 2018)** who aimed to assess the prevalence and determinants of SMP in Addis

Ababa In a community based cross-sectional study included 604 household participants. They indicated that there is a statistically significant association between monthly income and SMP. The study participants whose monthly income was lower (1001–1500 birr) were less likely to practice SM than those whose monthly income was higher (>1500 birr) with an OR of 0.34 (95% CI= (0.16–0.74). The reason might be that the low-income group in that study could not afford the cost of medication, that the city administration would provide free medical service for those who could not afford the cost of health care.

Concerning the distribution of the studied self medication practice (SMP) subjects according to source of non-prescription medication in the present study, the majority of medications (78.4%), was previously prescribed. The pharmacist recommendation was 62.2%, friends or family member recommendation was 37.8% and purchased by the patient over the counter at pharmacy was 29.7%.

Ghazawy et al., (2017) revealed that, the commonest source of information was the pharmacists, reported by about 92% of study respondents. This was followed by respondents' experiences or knowledge from previous episodes (84.7%).

In contrast to this finding, **Sharma et al. (2005)** in their study among the urban population of Jammu, India, in 2005, doctors were found to be the most common source of drug information followed by chemists and advertisements.

The present study findings concerning distribution of the studied SMP subjects regarding for whom self-medication was used revealed that the majority of the studied subjects (91.9%) reported that the use medication was for the subject himself/herself, 48.6% was for subject's children, and 13.5% was for subjects' spouse

Consistent with these findings, **Farahat et al., (2016)** revealed that, self-medication was commonly used for a person's self (72.4%) and for their children (27.6%).

This study showed that concerning distribution of the studied SMP subjects regarding complaint for which self-medication used, the highest was headache/body ache, flu/cough/cold and fever (70.3%, 64.9% and 54.1% respectively).

Similarly, the overall reasons for self-medication from the city of Rio Grande, Brazil, were headache, cold, sore throat, fever, **(Corrêa et al., 2012)**.

Similarly, **Shafie et al. (2018)** found that the most common types of ailments that led to SMP in their study were headache followed by abdominal pain, cough, diarrhea, and toothache.

In the present study concerning distribution of the studied SMP subjects regarding the used medications, it was found that, the highest prevalence was analgesic, antipyretics and antibiotics (83.8%, 64.9% and 54.1% respectively) while the lowest prevalence was sedatives (10.8%).

These finding appeared consistent with the results of a recent community-based cross sectional study on 722 adult household members in Meket District, Northeast Ethiopia, from April to May, 2017. They found that the category of medications mostly used by the study participants were analgesics/antipyretics, antibiotics, GI medications, and eye medication **(Kassie et al., 2018)**.

This study raveled that concerning distribution of the studied self medication practice (SMP) subjects by side effects of self medication, 91% of studied sample reported no side effects. Among 66 subjects reported side effects occurred, the majority (66.7%) reported allergies/rash and 33.3% s reported vomiting.

A recent study by **Zareef et al. (2018)** found 51.4% of the studied sample to report adverse effects of taking self-medication. Aamong them, 26.4% complaint of nausea, 10.8% compliant diarrhoea, 8.1% compliant vomiting.
This study showed that concerning the mean frequency of SMP per month was 1.92 ± 1.12 and mean price (LE) spent per month was 29.11 ± 30.68.

The Egyptian literature showed no available studies about this issue. Only one study calculated the mean cost of drugs per encounter which was LE 7.29 **(Sallam et al., 2009).**

The present study has also clarified the comparison of the studied subjects by SMP and their level of knowledge about self medication. The results revealed a highly statistically significant difference between the two groups where the poor level of knowledge was higher among SMP group compared with not SMP group with p value <.0001.

This agrees with **Elhoseeny et al. (2013)** revealed that knowledge of self-medication is an important factor for drug misuse. In Egypt, 82.4% of the pharmacists considered the most common contributing factor for inappropriate self-medication use was lack of knowledge of patients/customers about the active ingredients in a branded product. Also, **Al-Tawfiq et al. (2010)** reported that more than 60% of the respondents did not have good knowledge.

The reason behind this might lie in the fact that individuals who had good knowledge about appropriate SMP prefer to consult a physician before practicing self medication **(Shafie et al., 2018)**

The present study analyzed 100 subjects attending emergency department of Mahala district hospital. Of these subjects, 83 were used self medication before their attendance. Comparing the mean value of cost of prescribed drugs during hospital admission, the mean cost was significantly higher among SMP admitted subjects than not SMP admitted subjects (439.44 ± 125.86 vs 342.50 ± 55.90 LE respectively). Also, the mean cost of instruments used for the admitted subjects was significantly higher among SMP admitted subjects than not SMP admitted subjects (138.89 ± 40.42 vs 55.0 ± 7.97 LE respectively).

In addition, the mean hospital stay in days was also significantly higher among SMP admitted subjects than not SMP admitted subjects (9.89 ± 4.52 vs. 6.50 ± 1.16 days).

The complications among the admitted subjects were also significantly higher among SMP admitted subjects compared with not SMP admitted subjects (83.3% vs. 9.1%). Among the admitted SMP group, two subjects were died (11.1%) while there were no deaths among the admitted not SMP group, but with no statistically significant difference (p value= 0.23).

These findings were in agreement with the findings of **Ali (2015)** reported self-medication are increasingly growing threats to the health care system. The inappropriate medications not only add to mortality and morbidity, but also cause increased cost of treatments. Such habits must be shunned through legislation and community awareness (Ali, 2015). Coincide with these suggestions, the current study found that the complications and deaths were more among the admitted SMP group. In addition to its associated morbidity and mortality, and according to the present study findings and Ali's suggestion, calculation of mean price spent in self medications among PHC centers attendance in mahla city could be calculated.

5. Conclusion and Recommendations

A considerable high proportion of self medication among the studied population (74%) attending the primary health care centers in Mahla City. The most important self medication used by studied sample was the analgesics. The study findings address the crucial need to carry out the large national study to get national results about this significant public health problem. However, until executing the large study, it is of benefit to notify the health care authorities, this results.

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