Prevalence and Patterns and of non-prescribed medicines consumption in the community of Yeka sub city, Addis Ababa, Ethiopia

Dr Elizabeth Woldemariam

Teketel, University of South Africa, UNISA

ABSTRACT - Background: Self-medication is a human behaviour of self-care practiced by treating any self -diagnosed disorder or symptom on patient's own initiative without consulting a doctor. Communities' exhibit differences this behavior and this study therefore aims to quantitatively examine the prevalence and patterns of the use of non-prescribed medicines .

Methods: A quantitative, descriptive, cross-sectional, community-based research approach was used in a sample of 600 participants from Yeka district, Addis Ababa, Ethiopia. Data was analysed using SPSS version 25.Descriptive statistics ,cross tabulations and Chi-square test were performed with statistical difference set at $p<0.05$.

Result:A total of 72.2% (n=433) participants had an ever experience of self-medication and 35.7%(n=214) in the last two months. Out of the 35.7%, 71% (n=152) used modern, 7.9% (n=17) consumed traditional medicines and 21.1% (n=45) consumed both. For 30.9% (n=122) previous experience of the illness was the reason to use non-prescribed medicines, 41.5% (n=130) of the respondents have used analgesics with paracetamol comprising 25% (n=65). 20.5% (n=123) of the participants had used non-prescribed antibiotics. Pattern with statistical significance was observed with age (Pvalue=0.001), perceived health status (Pvalue= 0.000), outcome of self-medication (Pvalue=0.000) , attitude (Pvalue=0.002) and perception of safety (Pvalue=0.000) .

Conclusion:The varied patterns observed in the study need to be utilized to create targeted awareness creation programmes that are aimed at bringing behavioural changes. Added to this could be a strict regulation of medicine retail outlets so that they provide medicines based on their prescription category only.

Key words: Self-medication, behaviour, non-prescribed medicines use, community

INTRODUCTION

A comprehensive and well used definition of self-care is that it refers to the activities individuals, families and communities undertake with the intention of enhancing health, preventing disease, limiting illness, and restoring health following minor ailments or when living with chronic diseases. (Webber, Guo& Mann 2013:102). Self-care encompasses a spectrum of health care practices and activities which include healthy lifestyle choices, self-diagnosis, self- treatment and access to tools that enable better self-care (Bayer 2018:6). This is done through consultation with friends, associates and family, the internet searching/digital applications and the purchase of non-prescribed medicines to minor ailments by the advice of community pharmacies, walk in/urgent care centres and support from other healthcare professionals.

Minor ailments or non-serious medical conditions can be effectively managed with self- care and time spent on treating minor ailments can be utilised for managing other serious conditions as indicated in the Australian self-medication industry estimate(IPHA & IPU 2017:3).

Self-medication is a common human behaviour of self-care (Al Flaiti, Al Badi, Hakami& Khan 2014:249) which is practiced in the healthcare system (Aziz et al 2018:1). It involves treating any self -diagnosed disorder or symptom with the use of un-prescribed drug or home remedies on patient's initiative without consulting a doctor (Darshana 2013:19; Mythri 2016:28). In addition, it also involves acquiring medicines without a prescription or resubmitting old prescriptions to purchase medicines. It also entails sharing medicines with relatives or members of one's social circle or using left over medication or failing to comply with the professional prescription, either by prolonging it or interrupting it too early or decreasing or increasing the originally prescribed dose (Subhashini et al 2017:14; Mehmood, Rehman&Zaman 2016:2).

The prevalence of self-medication is higher in developing countries (Al Flaiti et al 2014:249). It varies according to the population studied and the methods used and has been estimated to be between 10.3% and 89.2% worldwide (Albatti et al 2017:20) and this range can even extend to or go as low as 0.1% to as high as 100% (Limaye, Limaye, Krause&Fortwenge 2017:4).

The use of non-prescribed medicines or self-medication across the world varies. It exhibits different patterns on reasons for self-medication, diseases selected for self-medication, type of medicines used during self-medication, source of information that enables an individual to practice self-medication, source of medications, how to ask for this medicines during their purchase, urban/rural pattern, sharing of medicines and frequency of self-medication(Selvaraj, Kumar &Ramalingam 2014:35; Mogali, Al-Ghanim, Al duais& Al-Shabrani 2015:36; (Kulkarni 2018:102; (Kasulkar& Gupta 2015:180; Parakh, Sharma, Kothari, Parakh&Parakh 2013:34; Marak, Borah, Bhattacharyya&Talukdar 2016:1136; Gyawali et al (2015:20), Jain et al 2018:813;(Pentareddy et al 2017:2725). By the same pattern, the practice of self-medication in Ethiopia varied across different studies and settings as reported in Ayalew (2017:405) varieing from 12.8% (Bahir Dar Town residents) to 77.1% (Arsi University health science students), with an average prevalence of 36.8%.But the pattern of the utilization of these medicines in the community has been given minimum attention and hence the objective of the research was to describe the prevalence and patterns of the use of non- prescribed medicines in a community in Ethiopia.

METHODS

A quantitative, descriptive, cross-sectional, community-based research approach was used to explore the patterns and prevalence of the use of non-prescribed medicines in a sample of 600 participants selected through multistage sampling method. The study was able to establish the use of non-prescribed medicines in the district(wereda in local language) in the last two months including their ever use.

The study population is the community of Yeka sub-city Addis Ababa, Ethiopia. Inclusion and exclusion criteria was set and those under 18 years of age, that are incapable of hearing and speaking , that have mentally health problems and those who were unwilling to participate were not included in the study

Sampling size was calculated using the single population proportion formula and the 38.6% average prevalence reported in the systematic review (Ayalew 2017:405).

$$n=\frac{(Z_{\alpha/2})^2 \text{ X P(1-P)}}{d^2} \text{ X de}$$

Where: n is the sample size; $Z\alpha/2$ is the standardised normal distribution value at the 95% confidence interval level, which is 1.96; p is the proportion of self-medication, (38.6%); d is the margin of error taken as 5%; de is the design effect for using multi-stage sampling taken as 1.5. The final sample size used for the research was 600 households with 10% considered contingency.

Sampling was carried out in three phases. In phase one of the process, six weredas were selected by simple random sampling method from the total 14 weredas available in the Yeka sub city. Those selected were, wereda 1, 2, 3, 6, 8 and 12. In phase two, the sample allocated for each of the six weredas was allocated by distributing the total sample size (N=600) proportionally to the total number of people in each wereda (Table 1). The calculation of the sample allocated to each wereda was obtained by using the following formula as follows (Etikan&Bala 2017:2; Taherdoost 2016:21).

N= $\dfrac{\text{Number of population at each wereda}}{\text{Total number of population at the six weredas}}$ x 600

Hence, the final sample size for each wereda was obtained making the total sample size 600 (Table 1).

Table 1 Number of samples allocated for each wereda

Number of wereda	Total population number	Sample number allocated
Wereda 1	33569	100
Wereda 2	39340	117
Wereda 3	19027	56
Wereda 6	25012	74
Wereda 8	25650	76
Wereda 12	59588	177

In phase three of the sampling process, the subjects to participate in the study were selected using the house number of the households, which was obtained from the administrative offices of each wereda, as a sampling frame. Each household was then selected through a systematic random sampling method to be the candidate for the study.

Data were collected using a structured interview based questionnaire which was originally developed for this study based on the review of literature.The questionnaire was pretested in 30 individuals in the wereda 13 which was not selected for the actual study and modifications were carried out based on the result of the pretest.

Ethical clearance was obtained from University of South Africa Health Studies Research Ethics Committee (Ethical clearance number is HSHDC/876/2018) and from the Addis Ababa Regional Health Bureau Ethics Review Committee for the conduct of the survey. Participants agreement to participate in the study was obtained through a written informed consent and the study was confirmed as low risk by the ethics committee.

For the purpose of the study, self-medication was interchangeably used with the use of non-prescribed medicines. Self-medication was operationally defined as the self-reported treatment of common health problems by the study participants with modern and/or traditional medicines without direct medical or traditional healer supervision or intervention in the past two months prior to the study.

Data were coded and analyzed using the Statistical Package for Social Sciences (SPSS) version 25. Data analysis included descriptive statistics and cross tabulations. The level of statistical difference was set at $p<0.05$.

A three-scale knowledge category of non-prescribed medicine consumption was established for the analysis. In this analysis, respondents were asked to reply (Yes or No) to 11 question items. A score of **1**was allocated for every correct answer provided and a score of **0 was** allocated for any wrong answer provided or any correct statement left un-answered. The summation of the scores in this question item was calculated to a maximum of **11** for each respondent; and plotted on a normal distribution curve to determine the mean (x_k) knowledge score and standard deviation (s_k). The knowledge of non-prescribed medicines among the respondents was then categorised as '**Good**' for those who lie above $(x_k + s_k)$; '**Average**' for those within $(x_k \pm s_k)$; and '**Poor**' for those below $(x_k - s_k)$ on the normal distribution curve (Khotari and Garge 2014:132; Krithikadatta 2014:96).

Respondents' attitude towards self-medication was assessed using seven statements rated on a Likert grading on a three-point scale which was scored as: Agree=1; Neutral=2; Disagree=3. The minimum score obtainable was nine and the maximum 27. The mid-point (18) was used as the cut-off. A score of 0–17 was graded as negative attitude whereas ≥18 was graded positive attitude (Ayanwale et al 2017:67). Similar treatment was used for the perception on safety of self-medication item in that, the minimum score obtainable was three and the maximum nine. The mid-point (6) was used as the cut-off. The findings of the empirical data together with the reviewed literature were used to provide recommendations.

RESULT AND DISCUSSION

2.1 SOCIODEMOGRAPHIC CHARACTERSITICS

A total of 600 respondents from the six woredas participated in this study. Table 2.1 presents the distribution of the respondents by the socio-demographic characteristics.

Respondents aged (30-39) were 28.3% (n=170), 81.2% (n=487) were female, 62.3% (n=374) were married, 79.7% (n=478) of them were Orthodox Christians, and at the time of the survey, the highest educational status attained by the participants was primary school 31.2% (n=187) (Table 2.1). In addition 55% (n=330) were from Amhara ethnic group (Figure 2.1). Regarding family status, 59.2% (n=355) of the respondents have 1-4 inhabitants living in the same house, most of the respondents 72.2% (n=433) were mothers in their household responsibility, the majority of the participants 89.3% (n=536) had no health insurance, 50.7% (n=304) were housewives (Table 2.1) (Figure 2.2), and out of those employed (n=213) 28.6% (n=61) were professionals (Table 2.2).
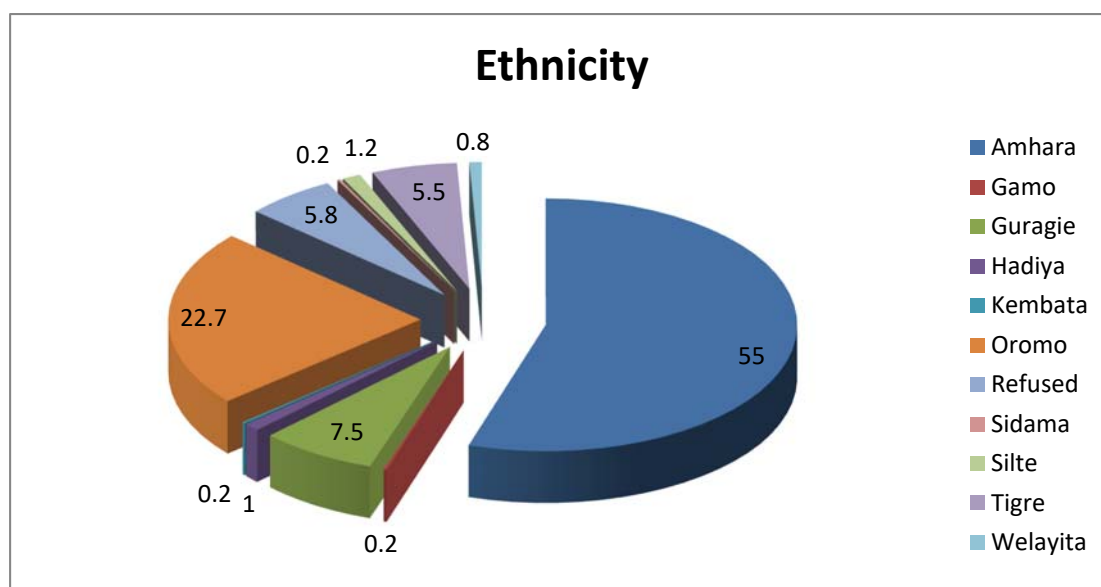

Figure 1.1 Chart of percentage distribution of the respondents by Ethnic group (N=600)

Table 2.1 Socio-demographic characteristics of the respondents (N=600)

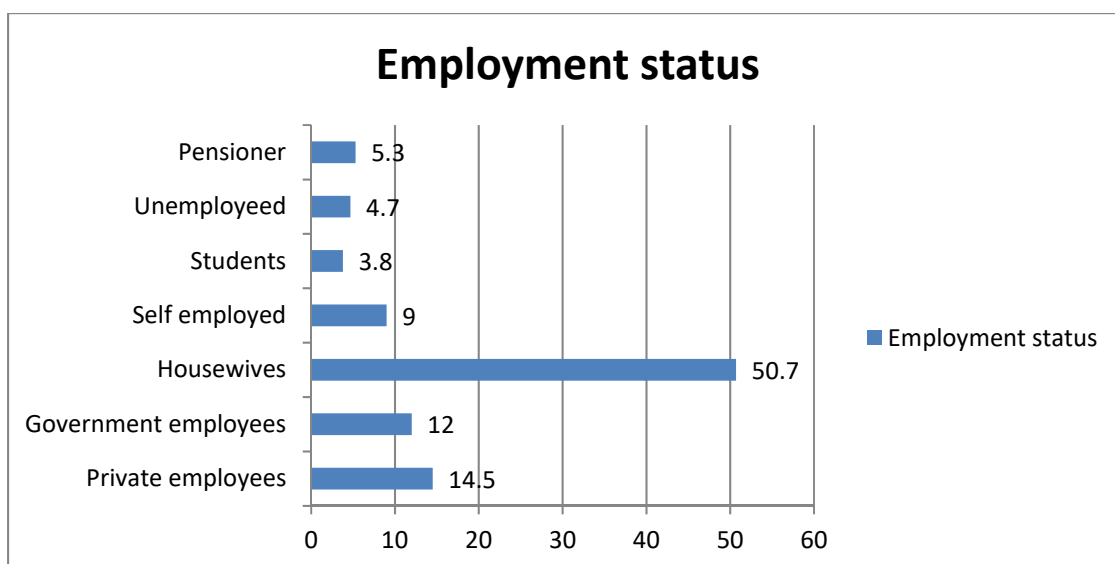| Age	Frequency	Percent
18-29	127	21.2
30-39	170	28.3
40-49	126	21
50-59	80	13.3
>60	97	16.2
Gender		
Male	113	18.8
Female	487	81.2
Marital status		
Unmarried	94	15.7
Married	374	62.3
Divorced	51	8.5
Widowed	81	13.5
Highest educational status		
No formal education	131	21.8
Primary school	187	31.2
High school	141	23.5
Diploma	84	14.0
Degree	53	8.8
Post graduate degree	4	0.7
PhD	0	0
Family status		
1-4 inhabitants	355	59.2
5-8 inhabitants	219	36.5
>9 inhabitants	26	4.3
House hold responsibility		
Mother	433	72.2
Father	71	11.8
Child	80	13.3
Relative	16	2.7
Health insurance		
Community based	26	4.3
Employment based	38	6.3
I have no insurance	536	89.3
Monthly income		
Low income: 100-2000	288	48
Middle income: 2001-4000	147	24.5
High income: 4000-6000	89	14.8
The highest income: >6000 Birr	76	12.7
Total	**600**	**100.0**

Employment status

Figure 2.2 Chart of percentage of employment history of respondents (N=600)

Table 2.2 Occupational status of the respondents (n=213)

Occupation	Frequency	Percentage
Manager	14	6.6
Professional	61	28.6
Clerical job	21	9.9
Sales and services	43	20.2
Skilled laborer	41	19.2
Unskilled laborer	33	15.5
Total	**213**	**100.0**

Table 2.3 Characteristics of the health status of the respondents

Health status	Frequency	Percentage
Very good	267	44.5
good	173	28.8
Average	135	22.5
Poor	25	4.2
Illness in the past two months		
Yes	263	43.8
No	337	56.2

The monthly income of the respondents was divided into four income groups (Table 2.1). Based on the income grouping, 48% (n=288) of the respondents were categorized into the lower income group, 24.5% (n=147) in the middle groups and 14.8% (n=89) in the high income group and 12.7% (n=76) were categorized into the highest income group.

The characteristics of the household income of the respondents ranged from Ethiopian Birr 100 to 23,000 indicating a wide range between the two extremes of household income. According to Kothari and Garg (2014:135), the distribution of the monthly household income of the respondents was asymmetrical and the income distribution were right-skewed (coefficient of skewness=2.045) and has a thin distribution (coefficient of kurtosis=5.810). The median annual household income was Ethiopian Birr 2500.

As indicated in Table 2.3, 44.5% (n=267) of the respondents were in a very good health status at the time of the survey, 28.8% (n=173) in a good health status, 22.5% (n=135) in average health status and 4.2% (25) of the participants said that they have poor health status. As to any illness in the past two months, 43.8% (n=263) responded by saying that they were ill in the past two months before the survey and 56.2% (n=337) said they were not.

2.2 DESCRIPTION OF THE PRACTICE OF NON PRESCRIBED MEDICINES OF THE RESPONDENTS

The result and discussion of the utilization of non-prescribed medicines among the participants included description of the practice of non-prescribed medicines which include; types of medicines used, reasons for the use/not use of non-prescribed medicines, names of medicines used, information source ,source of medicine, ways of requesting, knowledge of the dosage, intention to self-medicate, outcome of the self-medication; knowledge and attitude of self-medication, perception of safety; use of non- prescribed antibiotics and presence of non-prescribed medicines at home.

Interestingly, 72.2% (n=433) have ever experience of self-medication in their lifetime which is a similar finding with the study carried out recently in the Ethiopia (Shafie et al 2018:7) that identified a 75.5% self-medication prevalence and Colombia (Machado-Alba et al 2014:582) where 77.5% of the sample had self-medicated at least once in their life. In this study, 214 respondents were identified to have used non-prescribed medicines in the last two months making the prevalence of the use of non-prescribed medicines to be **35.7%.**

Out of the total number of respondents (n=214) who have used non-prescribed medicines in the past two months, 71% (n=152) use modern medicines, 21.1% (n=45) consumed both traditional and modern medicines whereas 7.9% (n=17) consumed traditional medicines. This observation is comparable to the findings in the study carried out in selected households in Ethiopian communities (Shafie et al 2018:7) where the majority (66.9%) of the participants had used modern medicine followed by both modern and traditional medicine (17.1%) and traditional medicine (16.0%).

Table 2.4 Reasons of the respondents for the use of non-prescribed medicines in the past two months (N=395)

Reason for self-medication in the past two months	Frequency	Percentage
Doctor or clinic is far from home	10	2.5
Saves time	26	6.6
It is less costly	38	9.6
I have the old prescription	27	6.8
There is a long waiting time at the healthcare facilities	7	1.8
No health insurance	2	0.5
No trust in the healthcare service	11	2.8
Pharmacist advised me	23	5.8
Medicine is a known brand	21	5.3
Previous experience of the illness	122	30.9
Suggestion from family/friends	25	6.4
I have the medicine at my home	21	5.3
Pharmacy/drug shop is near	5	1.3
Ailment is minor	51	12.9
It was emergency	6	1.5
Total	**395**	**100**

Several reasons were made for the use of non-prescribed medicines in the past two months among the various answers provided by the participants (Table 2.4). About 30.9% (n=122) responded by saying that previous experience of the illness was the reason for them to use non-prescribed medicines. Furthermore, 12.9% (n=51) said that the ailment they encountered was minor which is a higher percentage than the findings of a study conducted in Colombia where the participants who had said their reason was that the illness was minor were only 2.8% (Machado-Alba et al 2014:582). In addition, 9.6% (n=38) replied that it is less costly and 6.8% (n=27) showed that they have the old prescription for use during the self-medication.

Among the respondents who have not used any type of non-prescribed medicines in the past two months (n=563), 35.5% (n=200) reported that they had no ailment in the past two months. On the contrary, 22% (n=124) were afraid of wrong diagnosis of their illness, 17.6% (n=99) were afraid of drug dependence and 13.9% (n=78) were afraid of using wrong drug (Table 2.5). Fear of wrong diagnosis of their illness (18.2%) was the common reason obtained in a similar study in Ethiopia in (Shafie et al 2018:7).

Table 2.5 Reasons of the respondents for not using non-prescribed medicines in the past two months (n=563)

Reason for not using	Frequency	Percentage
Fear of using wrong drug	78	13.9
Fear of wrong diagnosis of their illness	124	22
Fear of drug dependence	99	17.6
Fear of side effect of drugs	56	9.9
Fear of wrong dose of drugs	6	1.1
Absence of any ailment in the past two months	200	35.5
Total*	**563**	**100.0**

Total*: The total number of non-users of non-prescribed medicines was greater than 386 because participants were allowed to provide more than one answers.

Table 2.6 Pharmacological classes of non-prescribed medicines taken by the participants in the past two months (n=313)

Pharmacological class of non-prescribed medicines taken by the respondents	Frequency	Percentage
Analgesics ,antipyretics and anti-inflammatories	130	41.5
Antacids	33	10.5
Antibiotics	31	10
Antihypertensives	20	6.4
Respiratory medicines	11	3.5
Anthelminthics	10	3.2
Vitamin and minerals	10	3.2
Medicines for diabetes	4	1.3
Other modern medicines*	11	3.5
Traditional medicines	53	16.9
Total*	**313**	**100.0**

Total*: The total number of non-users of non-prescribed medicines was greater than 386 because participants were allowed to provide more than one answers.Other modern medicines*: Chondroitin tab, Dexamethasone eye drop (2), Digoxin tab, Ear drop, Flucionolone cream, Glucosamine tab, Spironolactone tab, Skin ointment, Timolol eye drop, Zinc oxide ointment.

Several scientific names of the traditional medicines were used by the participants in the study. They include *TrigonelloFoenumGraceum* (Local name Abish), *Nigella sativa*/Black cumin (Local name Tikurazmud), *Ocimumlamiifolium* (Local name Damakase), *LepidiumSativum* (Local name Feto), *Allium Sativum*/Garlic (local name NechShinkurt). Others include *ZingiberOfficinale*/Ginger (Local name Zingibil), *Rumexabyssinicus* (Local name Mekmeko), *MoringaOlefera* (Local name Moringa),*RutaChalepensis* (Local name Tenadam), and *Thymus Vulgaris* (Local name Tosign).

Those participants who have used non-prescribed medicines (35.7%) were requested for the name/s of the medicines (both traditional and modern medicine) they have used during the two months for self-medication and they provided their responses. As aggregated based on the pharmacological properties of the utilised medicines in the above table (Table 2.6); 41.5% (n=130) of the respondents have used analgesics, antipyretics and anti-inflammatories,16.9% (n=53) have used local traditional medicines,10.5% (n=33) have used non-prescribed antacid/antiulcer medicines, and 10% (n=31) have consumed antibiotics for self-medication.

As to specific medicines utilised by the participants, paracetamol comprises 25% (n=65), Diclofenac 11.5% (n=30), Omeprazole 7.7% (n=20), Ibuprofen and Amoxicillin each 6.5% (n=17), Advil 5% (n=13) and Albendazole 2.3% (n=6) among all the modern medicines.

Regarding the prescription category of the total modern non-prescribed medicines consumed (n=260) during the study period, 76.2% (n=198) were non-prescribed or Over the counter drugs whereas the rest 23.8% (n=62) were prescription only drugs but were consumed without prescription by the participants.

Table 2.7 Source of information, source of medicine, way of requesting and dosage of medicines for self -medication as practiced by the respondents

Source of Information for self-medication(n=250)	Frequency	Percentage
Family and friends	75	30
Previous prescription	26	10.4
Advice from health professional but without a prescription	38	15.2
Experience of previous treatment	110	44
Information from books or internet	1	0.4
Total	**250**	**100.0**
Source of medicine for self-medication(n=228)		
Pharmacy/drug shop	174	76.3
Remainder from previous treatment	10	4.4
Friends/Family	44	19.3
Total	**228**	**100.0**
How to request for medicine for self-medication(n=220)		
Mentioning the name of the drug	79	35.9
Telling the symptom of the disease	79	35.9
Giving a piece of paper with the name written on it	11	5
Taking the medicine container/package	46	21
Telling the shape/color of the medicine	5	2.2
Total	**220**	**100.0**
How to know the dosage of the medicine(n=241)		
Using the information given at Pharmacy/drug shop	98	40.7
Consulting friends/family	28	11.6
Consulting another healthcare professional	16	6.7
Internet	2	0.8
Advertisement	3	1.2
Previous experience	82	34
Guessing the dosage by myself	12	5
Total	**241**	**100.0**

Source of information for self-medication was found out to be experience of previous treatment 44% (n=110), family and friends 30% (n=75), which is a slightly lower than the one identified in the self-medication study in Colombia (40.1%) (Machado-Alba et al 2014:582) and advice from healthcare professional but without prescription 15.2% (n=38) (Table 2.7). Experience of previous treatment (21.4%) as a source of information was observed to be higher than other studies performed in Ethiopia (Shafie et al 2018:7). Participants also indicated their source of non-prescribed medicines for self-medication to be pharmacy/drug shop 76.3% (n=174), friends and family 19.3% (n=44) and remainder from previous treatment 4.4% (n=10). Comparable findings from Shafie et al (2018:7) indicated that the source of non-prescribed medicines was drug retail outlets (pharmacy and drug store) in the majority (83.3%) of the cases.

The respondents replied that they requested for the non-prescribed medicines for their consumption by mentioning the name of the medicine 35.9% (n=79), telling their symptoms 35.9% (n=79), taking the medicine container/package 21% (46) (Table 2.7). This is a very similar pattern observed in another Ethiopian study (Shafie et al 2018:7). The latter study sought to discover the administration of the dosage during their self-medication. The participants' responses were that they used the information obtained from pharmacy/drug shop 40.7% (n=98), previous experience 34% (n=82) and consulting friends and family 11.6% (n=28) (Table 2.7).

Participants response (n=600) of intention to self-medication on different ailments presented to them showed that they would intent or prefer self-medication if they were faced with common cold 84.2% (n=505). In addition, most of them indicated their intention for self-medication on headache 75.2% (n=451), wounds 58.2% (n=349), gastric acidity 47% (n=282), cough 40.5% (n=243), tonsillitis 40.3% (n=242) ,fever 33.3% (n=202),diarrhea 25.8%(n=155) and dental pain 22.7%(n=136). These intentions were against going to healthcare facility or waiting for the ailment to subside by itself which were presented as choices during the survey.

2.2.1 KNOWLEDGE OF SELF MEDICATION

In line with the category of knowledge described in the methodologypart of this report, only 16.3% (N=600) of the respondents had good knowledge of self-medication, 70.3% (N=600) had average knowledge and 13.3% (N=600) had poor knowledge of self-medication.

Specific questions on knowledge indicated that 61.2% (n=367) of the participants were not knowledgeable about the type of information that should be available during taking self-medication. In contrast, 47.8% (n=287) were not knowledgeable about the presence of drugs that should not be simultaneously taken with other drugs which is slightly higher than the observations in (Shafie et al 2018:7) (37.3%). In addition, 49.8% (n=299) did not know that all types of drugs cannot be taken by patients having chronic disease. Moreover, 26.3% (n=158) did not know that some drugs cannot be taken with all types of food items, 26.2% (n=157) did not have the knowledge on how to store medicines at home, and 18.8% (n=113) of the respondents did not know that all types of drugs cannot be taken by nursing mothers.

2.2.2 ATTITUDE ON SELF MEDICATION

Most of the respondents in the study have a general positive attitude against self-medication 89.3% (n=536) and those with negative attitude against self-medication amounted to 10.7% (n=64). Considering specific attitude questions, 22.5% (n=135) respondents agreed that self-medication should be encouraged, 21.8% (n=131) believed that if medication helped in the past it will help again and 19% (n=114) believed that they would rather treat themselves than go to the nearest health facility.

2.2.3 PERCEPTION OF SAFETY OF SELF MEDICATION

The perception of safety of self-medication was requested based on a three-scale Likert scale. It was found out that 73.7% (n=442) of the respondents had positive perception against the safety of self-medication and 26.3% (n=158) had negative perception. In addition, 26.8% (n=161) of the respondents agreed that self-medicating is completely safe and 26.3% (n=158) agreed that self-medication is safe when used with information from family/friends. Regarding encountering of side effect during the self-medication in the past two months, 14.9% (n=32) of the respondents encountered medicine side effects during the self-medication. The side effects encountered by these respondents were skin rash with a frequency of 57.8%(n=26), gastritis 13.3% (n=6) and itching, skin swelling and vomiting each with a frequency of 4.5% (n=2) respectively.

The participants' responses as to the safety of medicines for self-medication indicated that 60.5% (n=363) of the participants understood that analgesics are safe. In addition, 52.3% (n=314) drugs for intestinal worms, 45.8% (n=275) vitamins and minerals, 36.8% (n=221) antacids, 31.7% (n=175) contraceptives and 29.8% (n=179) of the participants believed that drugs for diarrhea are safe.

2.2.4 USE OF NON PRESCRIBED ANTIBIOTICS

Participants' responses as to their use of non-prescribed antibiotics ever in their life showed that 20.5% (n=123) of the participants had used an antibiotics in their life without it being prescribed by a health care professional.

2.2.5 PRESENCE OF NON PRSCRIBED MEDICINES AT HOME

In request for the presence of any non-prescribed medicines in the participants' homes, it was found out that 49.5% (N=297) of the participants had medicines at their homes during the survey. The pharmacological category of the medicines available at the homes of the respondents was described as follows (Table 2.8). More than one type of non-prescribed medicines were found making the total number of medicines to be 415 medicines. The majority of the obtained non-prescribed medicines were analgesics, antipyretics and anti-inflammatories 68.4% (n=284) which is slightly lower than the findings of a study conducted in Colombia (80%) (Machado-Alba et al 2014:582) and this frequency was followed by antacids 8.7% (n=36) and antibiotics 8.2% (n=34).

Table 2.8 Family name of non-prescribed medicines available at Home (n=415)

Names of the non-prescribed medicines Obtained at the respondents house	Frequency	Percentage
Analgesics, antipyretics and anti-inflammatories	284	68.4
Antacids	36	8.7
Antibiotics	34	8.2
Antihypertensives	17	4.1
Vitamin and minerals	14	3.4
Respiratory medicines	12	2.9
Medicines for diabetes	6	1.4
Anthelminthics	4	1
Others	8	1.9
Total	**415**	**100**

2.3 DETERMINANTS OF NON-PRESCRIBED MEDICINE CONSUMPTION AMONG RESPONDENTS

This section examined the pattern of non-prescribed medicine consumption in the different socio-economic characteristics of the respondents. The results discussed in this section were informed by the bivariate analysis as identified in the cross-tabulation.

The prevalence of the use of non-prescribed medicine consumption obtained in the findings in this study (35.7%) is similar to the one obtained (36.8%) in the systematic review of self-medication in Ethiopia that was performed using 21 articles in Ayalew et al (2017:405)and hence can be a representative rate for the investigated healthcare utilization behaviour (self-medication) in the country.

The pattern of the utilization of the non-prescribed medicines was observed in the findings of the study (Table 2.9) with a statistical relationship between the socio-economic factors (age, employment status, occupation, educational status, marital status, perceived health status, illness in the previous two months, outcome of the utilised self-medication, attitude, and perception of safety) and the use of non -prescribed medicine consumption. Other socio-economic factors that include gender, religion, ethnicity, family status, household responsibility, health insurance, knowledge and quality of life did not imply a statistically significant relationship with the use of non-prescribed medicine consumption in the study.

The findings are similar to evidence from other study conducted in Ethiopia, (Shafie et al 2018:11). The latter revealed thatsignificant statistical relationships were found between age groups and the consumption of non-prescribed medicines among the respondents (p=0.001). Compared to other age groups, respondents aged (50-59) and those >60 were the major consumers of the non-prescribed medicines in this study as identified in the analysis to be (48.8%) and (47.4%) respectively. On the contrary, 73.8% of the respondents in the age group (40-49) did not prefer the use of non-prescribed medicines in the given period.

As to the relationship between gender and the use of the non-prescribed medicines, an equivalent amount of distribution was observed though slightly higher for males than females (39.8% and 34.7%) respectively and it was not statistically significant.

In the employment status category, pensioners were the major consumers (62.5%, p-value=0.039) of non-prescribed medicines followed by students (47.8%). In addition, out of those respondents who were employed and have a described occupation, professionals were the major consumers of the non-prescribed medicines in the past two months of the study period (44.3%, p-value=0.006) exhibiting a similar pattern of a previous study (Ayalew et al 2017:405), to be followed by unskilled labourers which amounted to (42.4%).

Divorced (49%) participants, protestant and other Christians (40%) and participants from the Tigre ethnic group were the major groups of consumers of non-prescribed medication though the results were not statistically significant.

The category of educational status of the respondents, which ranged from no formal education to PhD resulted in the majority having postgraduate degree (75%), diploma (44%) and no formal education (42.7%) exhibiting the higher value of a prevalence of non-prescribed medicine use with statistical significance (p-value=0.037). These significant findings were also consistent with the findings of a study conducted in Koladiba, Ethiopia (Abraha et al 2014:674;Ayalew et al 2017:405).

The presence of 5-8 inhabitants in a family, being a father in the family and having an employment-based insurance indicated a finding of 41.6%, 42.3% and 47.4% in the consumption of non-prescribed medicines without no statistical significance in the study.

As to the perceived health status of the respondents during the survey, those respondents who believed that they had a poor health status (64%) were the major non users of non-prescribed medicines (p-value=0.000) among the group with very good, good, average health status. In line with this finding, the participants who have been ill during the past two months (60.5%) were found to use non-prescribed medicines (p-value=0.000) more than those who were not ill during the time.

Participants' response to the questions, if they would self-medicate when the medication is available at home (p-value=0.000), self-medication if they know someone who has taken it before(p-value=0.000), self-medication if they have taken the medication previously (p-value=0.000), recommended any medicine they have used previously to someone who have similar symptoms (p-value=0.000), prefer self-medication in all types of illnesses (p-value=0.000) were found to be strongly associated with the use of non-prescribed medicines. The factor of recommending drugs to others was consistently observed from the study conducted in Colombia with a significance level of OR=2.09; 95% CI: 1.088–3.643, p-value=0.027 (Machado-Alba et al 2014:584).

The respondents' treatment outcome was also found to be a significant factor towards the consumption of non-prescribed medicines during the two months period resulting in a response of 96.7% (p-value=0.000) showing a strong relationship between participants self-medicating themselves because of the outcome they obtained from the use.

The participants who were not knowledgeable exhibited a major share (39.8%) of the consumption of the non-prescribed medicines though not with statistical significance. The response with statistical significance (X^2=7.66, p-value=0.006) regarding the knowledge of the respondents was the sentence that asks for the knowledge of the respondents if all types of drugs cannot be given to nursing mothers. It was found out that 18.3% (n=113) were not knowledgeable about this fact and 46.9% (n=53) showed a consumption of non-prescribed medicines.

The attitude of respondents categorised as positive and negative attitude against self-medication showed that they would utilise non-prescribed medicines as they have negative attitude against self-medication to the amount of (53.1% p-value=0.002) (Table 2.9). Greater amounts of participants (66.4%) with positive attitude against self-medication have indicated that they would not utilise non-prescribed medications. These findings are consistent with the study conducted in Colombia (Machado-Alba et al 2014:583) where (68.5%) said they were against it and the remainders (31.5%) were in favour of it though the relationship was not statistically significant. This indicates that attitude about self-medication is a major factor (Ayalew et al 2017:405) that need to be understood very clearly in a population. The findings of the cross-tabulations on the detail questions of the attitude of the respondents on self-medication have been presented in table 2.10and they were observed to be statistically significant. Alarmingly, 58.8% (X^2=15.031, p-value=0.001) of the respondents believed that it is ok to share medicine, 55.3% (X^2=34.172; p-value=0.000) assumed that they would rather treat themselves than go to the nearest healthcare facility and 48% (X^2=9.316 p-value=0.009) understood that any medicine can be used without seeing a healthcare professional.

Among the respondents of those who have negative perception against the safety of non-prescribed medicine consumption (48.7%, p-value=0.000) consumed non-prescribed medicines. On the contrary, 69% of the respondents who have positive perception against the perception of safety of non-prescribed medicines did not consume the medicines indicating their strong consideration for safety of using non- prescribed medicines. Upon cross-tabulation of individual questions (Table 2.11), 47.2% of the respondents(X^2 12,777, p-value 0.002) agreed that the use of non-prescribed medicines to treat oneself is completely safe.

The presence of non-prescribed medicines currently at home was also found to be statistically significant (p-value=0.000) as 53.2% of the respondents utilised non-prescribed medicines at the time of the study. This observation was also identified in the study conducted in Colombia where having self-medicated in the previous 30 days was associated with storing drugs at home (OR=1.6; 95% CI: 1.023–2.515, p-value=0.039) (Machado-Alba et al 2014:583).

As to the participants who have different satisfaction level of their quality of life, (41.3%) of those who were not satisfied consumed non-prescribed medicines but 65.8% of those who were satisfied did not consume non-prescribed medicines and this finding was not supported by statistical significance.

The respondents with a monthly income of 2001-4000 Ethiopian Birr were observed to have a higher percentage (41.5%) of utilization of non-prescribed medicines as compared to others to be followed by those earning less than 2001(36.8%).Though it is not statistically significant, those respondents with lower monthly income have been found to be utilizing self-medication than the other groups.

Table 2.9 Cross tabulation of consumption of non-prescribed medicines in the past two months against socioeconomic factors

Socioeconomic factors	Consumption of non-prescribed medicines (Percentage)				
		Yes	No	Chi square(X^2)	p-Value
Age *Yes n=214* *No n=386)*	18-29	33.8	66.2	18.416	0.001
	30-39	31.2	68.8		
	40-49	26.2	73.8		
	50-59	48.8	51.2		
	>60	47.4	52.6		
Gender *Yes n=214* *No n=386)*	Male	39.8	60.2	1.048	0.306
	Female	34.7	65.3		
Employment status *Yes n=214* *No n=386*	Private employee	33.3	66.7	13.260	0.039
	Government employee	30.6	69.4		
	Housewife	33.9	66.1		
	Self employed	33.3	66.7		
	Student	47.8	52.2		
	Unemployed	39.3	60.7		
	Pensioner	62.5	37.5		
Occupation *Yes n=70* *No n=143*	Manager	14.3	85.7	16	0.006
	Professional	44.3	55.7		
	Clerical job	4.8	95.2		
	Sales and services	37.2	62.8		
	Skilled laborer	24.4	75.6		
	Unskilled laborer	42.4	57.6		
Marital status *Yes n=214* *No n=386*	Unmarried	30.9	69.1	10.891	0.012
	Married	32.6	67.4		
	Divorced	49	51		
	Widowed	46.9	53.1		
Religion *Yes n=214* *No n=386*	Orthodox Christian	36.8	63.2	5.395	0.067
	Muslim	22.6	77.4		
	Protestant and other Christians	40	60		
Ethnic group *Yes n=214* *No n=386*	Oromo	33.8	66.2	9.334	0.501
	Amhara	37.3	62.3		
	Tigre	45.4	54.6		
	Refused	34.3	65.7		
	Guragie	24.4	75.6		
	Others*	33.3	66.7		
Educational status *Yes n=214* *No n=386*	No formal education	42.7	75.3	11.848	0.037
	Primary school	31.6	68.4		

Socioeconomic factors	Consumption of non-prescribed medicines (Percentage)				
		Yes	No	Chi square(X^2)	p-Value
	High School	30.5	69.5		
	Diploma	44	56		
	Degree	30.2	69.8		
	Post graduate degree	75	25		
Monthly income *Yes n=214* *No n=386*	<2000 2001-4000 4001-6000 >6000	36.8 41.5 29.2 27.6	63.2 58.5 70.8 72.4	6.094	0.107
Family status *Yes n=214* *No n=386*	1-4 inhabitants	32.4	67.6	5.235	0.073
	5-8 inhabitants	41.6	58.4		
	>9 inhabitants	30.8	69.2		
Household responsibility *Yes n=214* *No n=386*	Mother	34.8	65.2	3.574	0.311
	Father	42.3	57.7		
	Child	37.5	62.5		
	Relative	18.8	81.2		
Health insurance *Yes n=214* *No n=386*	Community based	46.1	53.9	3.932	0.140
	Employment based	47.4	52.6		
	I have no insurance	34.3	65.7		
Perceived health status *Yes n=214* *No n=386*	Very good	28	72	32.747	0.000
	good	30.6	69.4		
	Average	51.9	48.1		
	Poor	64	36		
Illness in the past two months *Yes n=214* *No n=386*	Yes	60.5	39.5	125.406	0.000
	No	16.3	83.7		
Self-medication if the medication is available at home	Yes No	50.4 13	49.6 87	87.095	0.000
Self-medication if you know someone who has taken it before	Yes No	54.7 20.4	45.3 79.6	75.807	0.000
Self-medication if you have taken the medication previously	Yes No	50.6 18.6	49.4 81.4	66.867	0.000
Recommended to someone who have similar symptom	Yes No	61.1 28	38.9 72	51.205	0.000
In all types of illness prefer self-medication	Yes No	51.2 21.8	48.8 78.2	56.593	0.000
Perceived outcome *(n=214)*	No improvement	59.3	40.7	65.770	0.000

Socioeconomic factors	Consumption of non-prescribed medicines (Percentage)				
		Yes	No	Chi square(X^2)	p-Value
	I got relief/cured	96.7	3.3		
	Got worse	20	80		
	Prevent disease	100	0.0		
Summary of Knowledge *Yes n=214* *No n=386*	Knowledgeable	35	65	0.703	0.402
	Not knowledgeable	39.8	60.2		
Summary of attitude *Yes n=214* *No n=386)*	Positive attitude	33.6	66.4	9.516	0.002
	Negative attitude	53.1	46.9		
Summary of perception of safety *Yes n=214* *No n=386)*	Positive perception	31	69	15.961	0.000
	Negative perception	48.7	51.3		
Presence of non-prescribed medicines at home	Yes No	53.2 18.5	46.8 81.5	78.782	0.000
Summary of Quality of life *Yes n=214* *No n=386)*	Satisfied	34.2	65.8	2.113	0.146
	Not satisfied	41.3	58.7		

Others* in ethnic group: Kembata, welayita, Hadiya, Silte, Sidama, Gamo

Table 2.10 Cross tabulation of attitudes on the use of non-prescribed medicines

Attitude with level of agreement		Use of non-prescribed medicines			
		Yes	No	Chi square(X^2)	P value
Any medication can be used without seeing a healthcare professional	Agree	48.0	52.0		
	Neutral	39.5	60.5	9.316	0.009
	Disagree	31.7	68.0		
It is ok to share medicine	Agree	58.8	41.2		
	Neutral	44.4	55.6	15.031	0.001
	Disagree	32.7	67.3		
Self-medication should be encouraged	Agree	48.1	51.9		
	Neutral	43.2	56.8	20.436	0.000
	Disagree	28.2	71.8		
Medication that helped in the past will help again	Agree	45.0	55.0		
	Neutral	43.0	57.0	12.386	0.002
	Disagree	30.1	69.9		
Medication should be used at the site of first symptom	Agree	44.2	55.8		
	Neutral	42.7	57.3	7.703	0.021
	Disagree	31.9	68.1		
	Agree	55.3	44.7		
	Neutral	43.9	56.1	34.172	0.000

I would rather treat myself than go to the nearest health facility	Disagree	27.1	72.9		
Many medical problems can easily be treated with self-medication	Agree	48.0	52.0		
	Neutral	44.4	55.6	10.247	0.006
	Disagree	31.8	68.2		

Table 2.11 Cross tabulation of perception of safety of non-prescribed medicines (N=600)

Safety perception		Non-prescribed medicine use		Chi square(X^2)	P-value
		Yes	No		
SM on your own to treat yourself is completely safe	Agree	47.2	52.8		
	Neutral	31.8	68.2	12.777	0.002
	Disagree	31.3	68.7		
SM for family/friends is not dangerous	Agree	45.6	54.4		
	Neutral	44.9	55.1	11.693	0.003
	Disagree	30.9	69.1		
SM is safe when used with information from family or friends	Agree	43.7	56.3		
	Neutral	45.8	54.2	15.060	0.001
	Disagree	29.2	70.8		

CONCLUSIONS

It is evidenced that rational use of medication saves life and economy of health care costs and maximises on the benefits that can be derived from optimal use of medications whereas irrational medicine use like inappropriate self-medication is often harmful (Mensa, Tadesse&Ayele 2017:1). In order to enable the public to carry out appropriate self-medication, it is necessary to understand the various contributing factors to the use of non-prescribed medicines. This study, indicated practices and patterns in the consumption of non-prescribed medicines among individuals with different socio-economic factors, and that the pattern of utilisation was inequitable across household income categories of the respondents.

The practice of non-prescribed medicines consumption identified indicated a 2 month consumption (35.7%) and an ever experience (72.2%) use of the non-prescribed and in addition which shows respondents' utilisation of non-prescribed medicines is high and need to be exercised with caution.

The main consumed medicines by the respondents were modern medicine analgesics, antipyretics and anti-inflammatories (41.5%) and the contribution of traditional medicines (16.9%) and antibiotics (10%) was also not negligible. This finding was also supplemented by the presence of drugs at home (49.5%) where the majority of the obtained non-prescribed medicines were analgesics, antipyretics and anti-inflammatories (68.4%). This shows that individuals store medicines at home for any possible future use. Prescription categorization showed that (23.8%) were prescription only drugs but was consumed without prescription which needs further action.

Participants' ever use of non-prescribed antibiotics was found to be (20.5%), implying the need to provide appropriate use of antibiotics in order to combat unnecessary harm, resulting from antimicrobial resistance. The source of information for self-medication was found out to be experience of previous treatment (44%) and family and friends (30%), indicating the influence of previous experience and family or friends towards the use of non-prescribed medicines.

However, the majority of the respondents (61.2%) were not knowledgeable about what type of information should be available during self-medication and about the presence of drugs (47.8%) that should not be simultaneously taken with other drugs, which implies that the non-prescribed medicines are being consumed without the necessary proper knowledge that is needed. Alarmingly, 60.5% of the participants understood that analgesics are safe and this goes the same for drugs of intestinal worms (52.3%).

Regarding attitudes on the use of non-prescribed medicines, (22.5%) of the respondents agreed that self-medication should be encouraged, (21.8%)believed that if medication helped in the past, it will help again. In addition, 26.8% of the respondents agreed that self-medicating is completely safe and 26.3% (n=158) agreed that self-medication is safe when used with information from family/friends.

Though the positive aspect of self-medication in reducing the health service burden need to be encouraged, it is necessary to strategise for appropriate self-medication and contain the high amount of self-medication which is observed in the study. Therefore, this calls for an action in order to minimise the unnecessary medicine related harm that may be caused owing to inappropriate use and wastage of limited resources.

For this purpose, the Ministry of Health, the regulatory authority, professional associations and development partners need to design and implement integrated interventions. The latter need to utilize the patterns observed in the study and need to be executed in the form of continuous, targeted awareness creation programmes that are aimed at bringing behavioural changes on individuals, the community as well as the general public. Added to this could be the strict regulation of medicine retail outlets so that they provide medicines based on their prescription category only.

Specific regulatory recommendations that can be implemented as intervention are

Recommendations for regulatory interventions

- Enforce regulations and guidelines regarding good dispensing and good counseling practices

- Revise the Over the counter/non-prescribed medicines list that is available in the country

- Establish a continuing education mechanism for the effective utilisation of pharmacy professionals towards providing proper diagnosis, treatment and referral of patients from community drug outlets.

- Establish a drug consultation service that would be provided by pharmacy professionals and provide consumers with professional drug consulting services so that health risks of self-medication are reduced through the use of proper information.

- Establish and implement a behind the counter/BTC medication system where certain selected groups of over the counter medications are dispensed to the public through a trained and qualified pharmacy professional. The selected non-prescribed medicines will be provided with the appropriate initial assessment and screening, medication reviews, counseling and medication monitoring to ensure the safety appropriateness and effectiveness of the use of non-prescribed medicines by the public

- Establish a pharmacy take back programmes where left over medicines available at home are submitted to pharmacies by the public so that they could be disposed appropriately.

Acknowledgement

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