ORIGINAL ARTICLE

Self-medication practice and associated factor among adult household members in Gurage Zone, Southern Ethiopia, Ethiopia, 2022: a cross-sectional study

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ABSTRACT

Background: Self-medication refers to the use of medicinal products by the consumers to treat self-recognized disorders or symptoms, or the intermittent or continued use of medication is not prescribed by a physician for chronic or recurring diseases or symptoms. Globally, the prevalence of self-medication is estimated to be around 27 – 99.4% according to different studies.

Methods: A cross-sectional study was conducted to assess self-medication practice and associated factors among adult household members of Gubre town from April 28 to June 27, 2022. Data collection from 399 households was conducted by means of a systematic random sampling technique using a pre-tested questionnaire.

Result: Among 398 respondents, 113 (28.4%) of them were found to practice self-medication. Two hundred and forty-three (61.05%) participants reported to have fallen sick in the 2 weeks before the survey. Being married (adjusted odds ratio [AOR] = 1.599, 95% confidence interval [CI]: 1.09 – 2.621), being literate (AOR = 1.672, 95% CI: 1.032 – 2.01), perceiving self-medication as an acceptable practice (AOR = 1.652, 95% CI: 1.32 – 1.887), peer influence (AOR = 1.54, 95% CI: 1.304 – 2.321), and access to medical information (AOR = 1.452, 95% CI: 1.263 – 1.570) were significantly associated with self-medication practice.

Conclusion: Nearly a quarter of the study participants practice self-medication. Being married, being literate, perceiving self-medication as an acceptable practice, peer influence, and access to medical information were significantly associated with self-medication practice.

Relevance for Patients: Tailored interventions designed by policymakers, program designer, and implementers should aim to reduce or eliminate non-prescribed drug use among the community through the education on the impact of self-medication on individual health.

1. Introduction

Self-medication refers to the use of medicinal products by the consumers to treat self-recognized disorders or symptoms, or the intermittent or continued use of medication that is not prescribed by a physician for chronic or recurring diseases or symptoms [1]. Alternatively, such practice is also defined by many authors as the utilization of medicines by a patient on his initiative or on the recommendation of a non-professional or a layperson instead of seeking advice from a health-care provider [2,3].

Self-medication is a commonly employed practice in an attempt to treat a perceived illness [4]. The type or extent of self-medication and the reasons for it may vary from

country to country. In developing countries, both modern drugs and traditional medicines are commonly used for self-medication [5].

It was also noted that prescription-only medications could easily be obtained without prescriptions for self-medication in developing countries like Ethiopia [6]. Utilizing drugs without prescription from physicians may not produce the maximum beneficial effects or may even jeopardize the consumer's health. The efficacy and safety of most traditional medicines used in Ethiopia are not scientifically proven, and the dosage prescribed by traditional healers is always imprecise [7].

Inappropriate and ineffective self-medication can also delay timely and appropriate treatment, culminating in tragic consequences [8]. Unused medications are often kept well beyond their use-by dates or stored without appropriate identification (such as being mixed in a container without original packaging), leading to potential misuse. Some consumers may attempt to mix drugs that are contraindicated to each other, exposing themselves to the heightened risk of adverse drug interactions and reactions [9]. Furthermore, 21% of drugs stored in family medical kits are often expired, and drug packaging inserts are missing (18%) [9].

Only a small proportion of the many symptoms facing an individual, accounting for 10 – 30% of the symptoms, is reportedly brought to the attention of physicians. A prevailing presumption is that the majority of the symptoms are either tolerated or self-medicated [5]. According to different studies, the prevalence of self-medication is estimated to be 27% in Spain and 99.4% in Nigeria [10,11]. The extent of self-medication practice varies across countries; for instance, in the United States of America, about 71% of men claimed to have self-medicated at least once within 6 months before survey [12]. About 41.5% of respondents in the United Kingdom [13], 27% in Spain, [10], and 50% in Ethiopia [14] reported to have practiced self-medication. Several factors are associated with a likelihood of practicing self-medication. These factors include age, gender, expenditure, self-care orientation, socioeconomic status, satisfaction of efficacy, and seriousness of illnesses [15,16].

Inappropriate self-medication results in drug dependencies, wastage of resources, and serious health hazards. Self-medication in southern Ethiopia is quite common but there is little information regarding the extent of practice and associated factors. Therefore, this study aimed to determine the magnitude and factors associated with self-medication practices among the various segments of the community, with the ultimate purpose of formulating appropriate health education programs to halt self-medication-related public health problems. It is crucial to synthesize available evidence for better decision-making and help Gurage zone residents wean off the habit of self-medication.

2. Methods

2.1. Study design and setting

A community-based cross-sectional study was conducted, from April 28 to June 27, 2022, at Gubre town in the Southern Nations Nationalities and Peoples Region, Gurage Zone, located 178 km southwest of Addis Ababa and 20 km east of Wolkite town.

2.2. Inclusion and exclusion criteria

Individuals that match these inclusion criteria were recruited: aged 18 years or above, available during data collection, able to communicate by either speaking or writing, and had lived in the town for at least 6 months.

Exclusion criteria include individuals who are unable to communicate (a problem with hearing) and non-volunteer.

2.3. Sample size calculation and sampling procedure

The sample size was determined using the single population proportion formula in consideration of the following assumptions: 95% CI and 5% margin of error. The maximum sample size was determined from an assumption of the total households of the town by the single population formula:

$$n = ([Z^{\alpha}/2]^2 P [1-P])/d^2$$

Where n = Minimum sample size; p = Estimate of the prevalence of self-medication (to estimate, $p = 0.45$ is used [17]); $Z^{\alpha}_{/2}$ = Standard normal variable at 1.96; α (confidence level) is mostly 5% (*i.e.*, with 95% confidence level); d = Tolerated error 0.05 (5%).

$$n = ([1.96]^2\, 0.45[1-0.45])/(0.05)^2$$

$n = 380$

Topping up with 10% for the non-response rate, the final sample size = $380 + (380 \times 0.1) = 418$.

Systematic random sampling was applied to select households, which were chosen from 1996 households, that is every 5th (every 1996/418th) household. An individual aged 18 and above was randomly selected from a selected household for interview. After clearly explaining the aim of the study, informed consent was obtained from all study participants before data collection. The standardized data collection tool was developed by reviewing related literature.

2.4. Operational definition

(i). Drug retailed outlet: Community pharmacist who sells drugs to prescribers [18].
(ii). Over-the-counter drugs: Drugs that are purchased by users without prescription [18].
(iii). Self-oral medication practice: Use of drug(s) by the study participants without consulting a qualified health practitioner [19].

2.5. Data quality assurance

Before the actual data collection began, a pre-test targeting 5% of the total sample (20 samples) was carried out at Agena town. Training was given to data collectors and supervisors on how to manage the data collection process. The data were collected in face-to-face interviews. First, data cleaning was done in the three steps during template formation to search for ensure consistency of values, by adhering to a good skipping pattern and controlling data entry. Second, cleaning during data entry was conducted

by two data clerks using two computers in a blinded fashion; principal investigator was responsible for counter checking entered data, assessing 5 – 10% of daily-entered data. Third, after data cleaning, we calculated simple frequency, tabulated variables for consistency, and addressed layers and missing values.

2.6. Data processing and analysis procedure

The data was compiled, analyzed, and presented with tables, and analysis was performed using SPSS version 24 software. Logistic regression was performed and all variables with $P < 0.25$ in bivariable logistic regression were fitted into the backward stepwise multivariable logistic regression model. Adjusted odds ratio (AOR) along with a 95% confidence interval (CI) and $P < 0.05$ was used to interpret the findings of research from final models of multivariable regression tables.

3. Results

A very high response rate, measuring 95.2% of the total sample, was noted, while the remaining 4.8% were non-response rates. Among the 398 selected household individuals, 281 (70.6%) were females. Regarding the age of the respondents, 118 (29.6%) were 35 – 44 years. Two hundred and seventy (67.8%) were married. Around half of the respondents' were orthodox believers (198; 49.7%). In terms of educational status, 122 (30.7%) of the respondents had an education background of grade 9 – 12. Most of the respondents were employed (264; 66.3%), and the average monthly income was between 1500 and 5000 Ethiopian birr (Table 1).

Of the 398 respondents, 113 (28.4%) of them practice self-medication, and 243 (61.1%) reported to have fallen sick within the 2 weeks before the study period. Among the reported symptoms, headache (62, 25.5%) was the most common, followed by cough (39, 16.0%) (Table 2).

Among 113 respondents who practice self-medication, 43 (38%) used analgesic/antipyretics, 27 (23.9%) used anti-helminths, 26 (23%) used antimicrobials, 9 (8%) used antacids, and 8 (7%) used others as self-medication agents. Among households that practice self-medication, 57 (50.4%) reported that the practice worsened their health condition, 41 (36.3%) reported improved health condition, and 15 (13.3%) reported no change after self-medication. Besides, 265 (66.6%) of them reported that the health service they received was costly, and about 217 (54.5%) of them complained of sluggish service.

Among those who practice self-medication, 37 (32.7%) of them were male, 35 (31%) were aged 35 – 44 years, 70 (62%) were married, and 30 (26.5%) had only received elementary education (Table 3).

Based on bivariate analysis, marital status, educational status, occupation, thinking about self-medication, peer influence, and income were found to be significant factors influencing the adoption of self-medication. These factors were entered into multivariable logistic regression for further analysis to control for confounding factors. However, a significant association was observed between self-medication and study variables, such as marital status, educational status, thinking about self-medication, and peer influence (Table 4).

Table 1. Social and demographic factors of self-medication practice and associated factors among adult household members of Gubre town, Gurage Zone, Ethiopia

Variables	Category	Frequency	Percent
Sex	Male	117	29.4
	Female	281	70.6
Age	18 – 24	96	24.1
	25 – 34	106	26.6
	35 – 44	118	29.6
	45 – 54	41	10.3
	≥55	37	9.3
Marital status	Single	91	22.9
	Married	270	67.8
	Widowed	31	7.8
	Divorce	6	1.5
Religion	Orthodox	198	49.7
	Muslim	154	38.7
	Protestant	36	9.0
	Catholic	10	2.5
Educational status	Illiterate	77	19.3
	Read and write	74	18.6
	Elementary (1 – 8)	74	18.6
	Secondary (9 – 12)	122	30.7
	Higher (12+)	51	12.8
Occupation	Employed	264	66.3
	Non-employed	134	33.7
Ethnicity	Gurage	343	86.2
	Oromo	16	4.0
	Amhara	15	3.8
	Others	24	6.0
Income per month (Ethiopian birr)	<1500	162	40.7
	1500 – 5000	226	56.8
	>5000	10	2.2

Table 2. Frequency of symptoms reported by household members of Gubre town, Gurage Zone, Ethiopia

Illness/symptom	Frequency	Percent
Headache	62	25.5
Cough	39	16.0
Fever	35	14.4
Abdominal pain	34	14.0
Diarrhea and vomiting	24	9.9
Heartburn	23	9.5
Difficulty of swallowing	14	5.8
Others	12	4.9

4. Discussion

This study aimed to estimate the prevalence and factors concerning self-medication in Gubre town.

Table 3. Self-medication practice among adult household members of Gubre town, Gurage Zone, Ethiopia

Variables	Self-medication		Total frequency
	Yes	No	
	Number (%)	Number (%)	Number (%)
Sex			
Male	37 (31.6%)	80 (68.4%)	117 (29.4%)
Female	76 (27.0%)	205 (73.0%)	281 (70.6%)
Age			
18 – 24	20 (20.8%)	76 (79.2%)	96 (24.1%)
25 – 34	28 (25.9%)	80 (74.1%)	108 (27.1%)
35 – 44	35 (31.0%)	78 (69.0%)	113 (28.4%)
45 – 54	14 (34.1%)	27 (65.9%)	41 (10.3%)
>55	16 (45.7%)	24 (54.3%)	40 (10.1%)
Religion			
Orthodox	63 (31.8%)	135 (68.2%)	198 (49.7%)
Muslim	35 (22.7%)	119 (77.3%)	154 (38.7%)
Protestants	14 (38.9%)	22 (61.1%)	36 (9.0%)
Catholic	1 (10.0%)	9 (90.0%)	10 (2.5%)
Marital status			
Single	27 (29.7%)	64 (70.3%)	91 (22.9%)
Married	70 (26.0%)	199 (74.0%)	269 (67.6%)
Divorced	2 (28.6%)	5 (71.4%)	7 (1.8%)
Widowed	14 (45.2%)	17 (54.8%)	31 (7.8%)
Ethnicity			
Gurage	98 (28.6%)	245 (71.4%)	343 (86.2%)
Oromo	3 (18.8%)	13 (81.3%)	16 (4.0%)
Amhara	6 (40.0%)	9 (60.0%)	15 (3.8%)
Other	6 (25.0%)	18 (75.0%)	24 (5.0%)
Education status			
Illiterate	20 (25.6%)	58 (74.4%)	78 (19.6%)
Read and write	26 (35.1%)	48 (64.9%)	74 (18.6%)
Elementary (1 – 8)	30 (39.5%)	46 (60.5%)	76 (19.1%)
Secondary (9 – 12)	26 (21.8%)	93 (78.2%)	119 (29.9%)
Higher (12+)	11 (21.6%)	40 (78.4%)	51 (12.8%)
Occupation			
Employed	59 (22.4%)	205 (77.6%)	264 (65.4%)
Non-employed	54 (40.3%)	80 (59.7%)	134 (33.6%)
Monthly income			
<1500	46 (28.4%)	116 (71.6%)	162 (40.7%)
1500 – 5000	66 (29.2%)	160 (70.8%)	226 (56.8%)
>5000	1 (10.0%)	9 (90.0%)	10 (2.5%)
Thinking about self-medication			
A good practice	93 (41.7%)	227 (58.3%)	320 (80.4%)
Not an acceptable practice	20 (3.9%)	58 (96.1%)	78 (19.6%)
Peer influence on self-medication			
Yes	70 (26.9%)	190 (73.1%)	260 (65.3%)
No	43 (31.2%)	95 (68.8%)	138 (34.7%)

Our study showed that the prevalence of self-medication was 28.4%. However, this rate was lower than those reported in previous studies: 48% in Khartoum state, Sudan and 43.24% in Ayder campus of Mekele University. The prevalence of self-medication practice in our study was greater than that of a study

in Jimma town (27.6%); this discrepancy was probably attributed to the higher accessibility of medical information in towns like Jimma than in rural areas [20-22].

The most common illnesses that led to self-medication in this study, such as headache, common cold, and fever, were also reported in northwestern Ethiopia, Ayder campus of Mekele University. Half of the ill people who had headaches and abdominal pain sought medical help, suggesting that headaches and abdominal pain are important signals that make patients visit health facilities. Thus, the type of illness is a contributing factor to the patient's response toward their illness [5,21,22].

In this study, some of the most common reasons for the practice of self-medication were the previous experience with similar ailments, emergency care, and milder illnesses. The rationale is almost similar to a previous study conducted in the Ayder campus of Mekele University, but another study conducted in Jima regarded the low cost of practicing self-medication as the main reason [17,21,22].

Analgesics (paracetamol), anti-helminths, and anti-microbial were the most commonly used class of drug, because common cold and headache are the most common symptoms reported by respondents, and they obtained over-the-counter paracetamol for self-medication purposes. This rate was almost similar to a previous study in six Latin America countries and the Mekele University study [21,23]. Most of the drugs mentioned in this study were over-the-counter drugs and leftover drugs in the house, a finding almost similar to that reported in northwest Ethiopia, Amhara, and Jimma [5,21,22,24].

Marital status was found to be significantly associated with self-medication practice. Married respondents were about 1.6 times more likely to adopt self-medication as compared to single respondents (AOR = 1.099, 95% CI: 1.09 – 2.621). Respondents who were widowed were about 1.06 times more likely to adopt self-medication as compared to respondents who were single (AOR = 1.055, 95% CI: 1.001 – 1.922). In addition, educational status was found in significant association with self-medication practice. Literate respondents were 1.67 times more likely to self-medicate than those who were illiterate (AOR = 1.672, 95% CI: 1.032 – 2.01), a result similar to a study conducted in Somaliland in Borama district, which also showed that self-medication is significantly associated with educational status. This phenomenon can be explained by the ability of literate people, who are also of good socioeconomic standing, to access information on drug use and to purchase drugs from pharmacies. Similarly, a study conducted in Nigeria also showed that there was an association between self-medication practices and educational status [20].

Thinking about self-medication was found to significantly contribute to the practicing of self-medication. Respondents who thought that self-medication is an acceptable practice were about 1.65 times more likely to self-medicate as compared to respondents who thought that self-medication was not acceptable (AOR = 1.65, 95% CI: 1.32 – 1.887). A plausible reason is that they think self-medication does not negatively impact health.

Peer influence was also found to be significantly associated with self-medication. Respondents who had peer influence were

Table 4. Bivariate model and final multivariable model of risk factors for self-medication in Gubre town

Factor	Self-medication		Crude OR (95% CI)	Adjusted OR (95% CI)
	Yes	No		
Marital status				
Single	27	64	1	1
Married	70	199	1.199 (2.097 – 2.996)**	1.59 (1.09 – 2.62)*
Divorced	2	5	1.05 (0.84 – 4.51)	1.01 (0.22 – 1.19)
Widowed	14	17	0.51 (2.35 – 2.82)	1.06 (1.01 – 1.92)
Educational status				
Illiterate	20	58	1	1
Read and write	26	48	0.636 (0.54 – 2.90)	1.10 (0.76 – 1.97)
Elementary (1 – 8)	30	46	0.528 (0.27 – 4.47)	1.33 (0.75 – 3.21)
Secondary (9 – 12)	26	93	1.02 (0.458 – 2.25)	1.87 (0.34 – 1.67)
Higher (12+)	11	40	1.25 (1.55 – 2.47)**	1.672 (1.032 – 2.01)**
Occupation				
Employed	59	205	0.39 (0.253 – 2.59)	0.93 (0.12 – 2.02)
Non-Employed	54	80	1	1
Income (Ethiopian birr)				
<1500	46	116	0.280 (0.04 – 0.97)	0.56 (0.33 – 1.76)
1500 – 5000	66	160	0.27 (0.16 – 0.89)	0.431 (0.32 – 0.90)
>5000	1	9	1	1
Thinking about self-medication				
A good practice	93	227	1.494 (1.12 – 1.78)**	1.65 (1.32 – 1.89)**
Not an acceptable practice	20		1	1
Peer influence for self-medication				
Yes	70	190	1.23 (1.02 – 1.73)**	1.54 (1.30 – 2.32)**
No	43	95	1	1

NB: *0.05> *P*>0.01; **P≤0.01. OR: Odds ratio; CI: Confidence interval

about 1.54 times more likely to self-medicate as compared to respondents who had no peer influence (AOR = 1.54, 95% CI: 1.304 – 2.321). This result was supported by a study carried out in the Meket district in northeast Ethiopia. Peer influence on self-medication might stem from the belief in oneself and compliance with what is considered normal by one's friends.

Access to medical information was also implicated in a significant association with self-medication. Respondents who had no access to medical information were about 1.452 times more likely to self-medicate as compared to respondents who had access to medical information (AOR = 1.452, 95% CI: 1.263 – 1.570). This finding was supported by another study [16]. Possibly, the increased prevalence of self-medication was precipitated by a lack of adequate knowledge about adverse reactions and side effects.

A notable limitation of this cross-sectional study is that a cause-effect relationship cannot be delineated.

5. Conclusion

According to this study, nearly a quarter of the study participants practice self-medication. Headache, cough, fever, and abdominal pain are identified as the most common symptoms for respondents to practice self-medication. Being married, being literate, perceiving self-medication as an acceptable practice, peer influence, and access to medical information were significantly associated with self-medication practice. Health education should be given to the Gubre town residents to minimize inappropriate self-medication practices. It is highly essential to disseminate health information to create awareness among people regarding the disadvantages of self-medication practice through leaflets, mass media, and health education.

Conflict of Interest

The authors declare that they have no competing interest.

Ethical Approval and Consent to Participate

Ethical clearance was obtained from the Wolkite University, College of Medicine and Health Science Institutional Ethical Review Board. All procedures were performed in adherence with the guidelines and regulations relevant to human research. Both verbal and written informed consent was obtained from all subjects for the study. Legally authorized representatives of illiterate participants provided informed consent for the study.

Before data collection, the participants were instructed to sign on free and informed consent form. The personal identification of study participants was not recorded to ensure anonymity.

Consent for Publication

Not applicable.

Availability of Data

Data are available from the corresponding author upon reasonable request.

References

[1] Baracaldo-Santamaría D, Trujillo-Moreno MJ, Pérez-Acosta AM, Feliciano-Alfonso JE, Calderon-Ospina C and Soler F. Definition of self-medication: A scoping review. Ther Adv drug Saf 2022;13:1-14.
doi: 10.1177/20420986221127501

[2] Montastruc JL, Bagheri H, Geraud T, Lapeyre-Mestre M. Pharmacovigilance of self-Medication. Therapie 2007;52:105-10.

[3] Filho AI, Lima-Costa MF, Uchoa E. Bambui Project: A Qualitative Approach to Self-medication. Cad Saude Publica 2014;20:1661-9.

[4] Amayo EO, Jowi JO, Njeru EK. Migraine Headaches in a Group of Medical Students at the Kenyatta National Hospital, Nairobi. East Afr Med J 2017;73:594-7.

[5] Abula T, Worku A. Self-medication in Three Towns of North West Ethiopia. Ethiop J Health Dev 2001;15:25-30.

[6] Kloos H, Etea A, Degefa A, Aga H, Solomon B, Abera K, *et al*. Illness and Health Behavior in Addis Ababa and Rural Central Ethiopia. Soc Sci Med 1987;25:1003-19.
doi: 10.1016/0277-9536(87)90005-0

[7] Abebe D, Ayehu A. Medicinal Plants and Enigmatic Health Practices of Northern Ethiopia. Addis Ababa: B.S.P.E; 2013.

[8] Andualem T, Gebre-Mariam T. Self-medication Practice in Addis Ababa: A Prospective Study. Ethiop J Health Sci 2004;14:1-11.

[9] De Bolle L, Mehuys E, Adriaens E, Remon JP, Van Bortel L, Christiaens T. Home Medication Cabinets and Self-medication: A Source of Potential Health Threats? Ann Pharmacother 2008;42:572-9.
doi: 10.1345/aph.1K533

[10] Bassols A, Bosch F, Banos JE. How Does the General Population Treat their Pain? A Survey in Catalonia, Spain. J Pain Symptom Manage 2002;23:318-28.
doi: 10.1016/s0885-3924(01)00415-8

[11] Arikpo GE, Eja M, Enyi-Idoh KH. Self-medication in Rural Africa: The Nigerian Experience. Internet J Health 2014;11:1.

[12] Hong SH, Spadaro D, West D, Tak SH. Patient Valuation of Pharmacist Services for Self-care with OTC Medications. J Clin Pharm Ther 2018;30:193-9.
doi: 10.1111/j.1365-2710.2005.00625.x

[13] Singh I, Bard I, Jackson J. Robust Resilience and Substantial Interest: A Survey of Pharmacological Cognitive Enhancement among University Students in the UK and Ireland. PLoS One 2020;9:105969.
doi: 10.1371/journal.pone.0105969

[14] Ayalew MB. Self-medication Practice in Ethiopia: A Systematic Review. Patient Prefer Adherence 2017;11:401-13.
doi: 10.2147/PPA.S131496

[15] Phalke VD, Phalke DB, Durgawale PM. Self-medication Practices in Rural Maharashtra. Indian J Community Med 2015;31:34-5.
doi: 10.4103/0970-0218.54933

[16] Hughes CM, McElnay JC, Fleming GF. Review Benefits and Risks of Self-medication. Drug Saf 2001;24: 1027-37.

[17] Eticha T, Araya H, Alemayehu A, Solomon G, Ali D. Prevalence and Predictors of Self-medication with Antibiotics among Adi-have Campus Students of Mekelle University, Ethiopia. Int J Pharma Sci Res 2014;5:678-84.

[18] Hernandez-Juyol M, Job-Quesada JR. Dentistry and Self-medication: A Current Challenge. Med Oral 2012;7:344.

[19] Garofalo L, Di Giuseppe G, Angelillo IF. Self-medication Practices among Parents in Italy. Biomed Res Int 2015;25:580650.
doi: 10.1155/2015/580650

[20] World Health Organization. Guidelines on Core Components of Infection Prevention and Control Programs at the National and Acute Health Care Facility Level. Geneva: World Health Organization; 2016.

[21] Gutema GB, Gadisa DA, Kidanemariam ZA, Berhe DF, Berhe AH, Hadera MG, *et al*. Self-Medication Practices among Health Sciences Students: The Case of Mekelle University. J Appl Pharm Sci 2017;1:183-9.

[22] Worku S, Mariam AG. The Practice of Self-medication in Jimma Town. Ethiop J Health Dev 2015;17:111-6. doi: 10.4314/ejhd.v17i2.9851

[23] Ampadu H. Infection Prevention and Control Practices among Nurses in Selected Health Facilities in Greater Accra Region of Ghana. Ghana: University of Ghana; 2019.

[24] Girma F, Jira C, Girma B. Health Service Utilization in the Amhara Region of Ethiopia. Ethiop J Health Dev 2017;17:141-7

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