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REVIEW

Self-medication practice in Ethiopia: a systematic review

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Mohammed Biset Ayalew

Department of Clinical Pharmacy, School of Pharmacy, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia

Background: Self-medication patterns vary among different populations, and are influenced by many factors. No review has been done that comprehensively expresses self-medication practice in Ethiopia. The aim of this study was to provide an overview of the literature on self-medication practice in Ethiopia.

Materials and methods: Databases (PubMed, Google Scholar, ResearchGate, and Hinari) were searched for published studies on the practice of self-medication in Ethiopia without restriction in the year of publication or methodology. Some studies were also identified through manual Google search. Primary search terms were "self medication", "Ethiopia", "self care", "non-prescription", "OTC drug use", "drug utilization", and "drug hoarding". Studies that measured knowledge only or attitude only or beliefs only and did not determine the practice of self-medication were excluded.

Results: The database search produced a total of 450 papers. After adjustment for duplicates and inclusion and exclusion criteria, 21 articles were found suitable for the review. All studies were cross-sectional in nature. The prevalence of self-medication varied from 12.8% to 77.1%, with an average of 36.8%. Fever/headache, gastrointestinal tract diseases, and respiratory diseases were the commonest illnesses/symptoms for which self-medication was taken. The major reasons for practicing self-medication were previous experience of treating a similar illness and feeling that the illness was mild. Analgesics/antipyretics, antimicrobials, gastrointestinal drugs, and respiratory drugs were the common drug classes used in self-medication. Mainly, these drugs were obtained from drug-retail outlets. The use of self-medication was commonly suggested by pharmacy professionals and friends/relatives.

Conclusion: Self-medication practice is prevalent in Ethiopia and varies in different populations and regions of the country. Some of the self-medication practices are harmful and need prompt action. Special attention should be given to educating the public and health care providers on the types of illnesses that can be self-diagnosed and self-treated and the types of drugs to be used for self-medication.

Keywords: self-medication, self-care, OTC drug, Ethiopia

Introduction

Measures taken to achieve well-being and freedom from illness are different based on the attitudes and experiences of individuals. Beliefs, feelings, and thoughts of an individual significantly influence his/her understanding of an illness, which in turn affects the decision taken to address it.[1] A small proportion, around 10%–30%, of symptoms experienced by an individual are brought to the attention of a physician. The majority of symptoms are either tolerated or self-medicated.[2] According to the World Health Organization, self-medication is the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms.[3]

Correspondence: Mohammed Biset Ayalew
College of Medicine and Health Sciences, University of Gondar, PO Box 196, Gondar, Ethiopia
Tel +251 93 949 6171
Email mb6767@gmail.com

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Self-medication is a fairly widespread practice worldwide. Both developed and developing nations are giving due attention to self-medication as a component of their health care policy.[4–9] Studies have revealed that increases in self-medication are due to a number of factors. These include socioeconomic factors, lifestyle, ready access to drugs, increased potential to manage certain illnesses through self-care, and greater availability of medicinal products. In most economically deprived countries, including Ethiopia, many drugs are dispensed over the counter (OTC), and the majority of health-related problems, nearly 60%–80%, are treated through self-medication as a lower-cost alternative.[10–13]

When practiced correctly, self-medication has a positive impact on individuals and health care systems. It allows patients to take responsibility and build confidence to manage their own health, thereby promoting self-empowerment. Furthermore, it can save time spent in waiting for a doctor and even lives in acute conditions, and may contribute to decreasing health care costs.[14] If used appropriately, self-medication can lighten the demand on doctors and make people more health-conscious.[15] The World Health Organization has also pointed out that responsible self-medication can help to prevent and treat ailments that do not require medical consultation, and provides a cheaper alternative for treating common illnesses.[6]

Regardless of the unquestionable benefits obtained from self-medication with nonprescription drugs, there are undesired outcomes that occur, due to improper usage. These have been indicated in studies where self-medication may have carried risks of misdiagnosis, use of too high a dose, incorrect duration of use, and adverse drug reactions related to the improper use of OTC drugs.[16,17] Inappropriate self-medication results in irrational use of drugs, wastage of resources, increased risk of unwanted effects, and prolonged suffering.[18] Irrational usage of antibiotics leads to the emergence of resistance pathogens worldwide.[19] Furthermore, risks associated with self-medication also include potential delay in treating serious medical conditions, masking of symptoms of serious conditions through the use of nonprescription products, and increased polypharmacy and interaction with other regularly used medications.[5] Even though self-medication is difficult to eliminate, interventions can be made to discourage the abnormal practice. Increasing self-medication practice requires more and better education of both the public and health professionals to avoid irrational use of drugs.[10,20] All parties involved in self-medication should be aware of the benefits and risks of any self-medication product.[6]

Self-medication patterns vary among different populations, and are influenced by many factors, such as age, sex, income, expenditure, self-care orientation, education level, medical knowledge, satisfaction, and perception of illnesses.[14] The type and extent of self-medication and the reasons for its practices may also vary from country to country.

Even though various studies have been conducted on self-medication practices in different parts of Ethiopia, there has not been any review done that comprehensively expresses self-medication practice in the country. Therefore, there is a need to know the overall situation of self-medication practice in the country, in order to devise appropriate educational, regulatory, and administrative measures in alleviating public health risks arising from improper practices of self-medication. The objective of this review was to provide an overview of the literature on self-medication practice among the Ethiopian population. It gives a comprehensive account of self-medication, more specifically its prevalence, common illnesses that cause the use of self-medication, commonly used drugs in self-medication, common reasons to practice self-medication, source of drugs for self-medication, and factors associated with the practice of self-medication.

Materials and methods

Search strategy

Databases (PubMed, Google Scholar, ResearchGate, and Hinari) were searched for published studies done on the practice of self-medication in Ethiopia. Some studies were also identified through a manual Google search. Additional articles were also searched from the reference lists of retrieved articles. No restriction was applied on the year of publication, methodology, or study subjects. Primary search terms were "self medication", "self care", "non-prescription", "OTC drug use", "drug utilization", "drug hoarding", and "Ethiopia".

Article selection

Studies were included in the review if they aimed to assess self-medication practice in Ethiopia. Studies that measured knowledge only or attitudes only or beliefs only and did not determine the practice of self-medication were excluded.

Assessment of methodological quality

Methodological validity of all the 21 studies was checked prior to inclusion in the review by undertaking critical appraisal using a standardized instrument adapted from Guyatt et al.[21] The instrument has eleven criteria. Each study was evaluated for each criterion/question as "yes", "cannot tell", or "no", with values of 2, 1, and 0 assigned, respectively.

Studies with a total score of more than 90% were considered to be of high quality, 75%–90% medium quality, and below 75% low quality.

Data abstraction

The author screened the articles based on the inclusion/exclusion criteria. The following details were extracted from each study using an abstraction form: author, year of publication, study area, study subjects, sample size, study design, sampling technique, recall period, prevalence of self-medication, common illnesses that resulted in the use of self-medication, drugs used in self-medication, reasons to practice self-medication, and factors associated with self-medication.

Results

Literature search results

The search of the PubMed, Google Scholar, ResearchGate, and Hinari databases and Google provided a total of 450 studies. After adjustment for duplicates, 132 remained. Of these, 105 studies were discarded, since after review of their titles and abstracts, they did not meet the criteria. Four studies were discarded as their full text was not available. The full texts of the remaining 23 studies were reviewed in detail. Six studies were discarded after the full text had been reviewed, since they did not address much of the needed information. An additional four studies that met the criteria for inclusion were identified through searching the reference lists of retrieved papers. Finally, as shown in Figure 1, 21 studies were included in the review.

Study characteristics

The 21 studies differed substantially in sample size, recall period, and location. From these 21 articles, the majority were conducted to assess the self-medication practice of any drug or disease, while three studies focused on self-medication with antibiotics and antimalarials only. Ten studies assessed self-medication practices at the community level, five assessed self-medication practices of university students, and four assessed self-medication practices of drug-retail outlet customers. Two studies reported self-medication practices of pregnant women who were on antenatal care follow-up. The studies were conducted in different parts of the country on samples of 237–10,170 individuals. All the studies were cross-sectional in nature. The majority of the studies used stratification and random sampling to select study subjects. Detailed description of the characteristics of individual studies is provided in Table 1.

Methodological quality of included studies

Critical appraisal showed most studies were of high quality (n=18, 85.7%), whereas three (14.3%) were of medium quality. No difference was observed in terms of

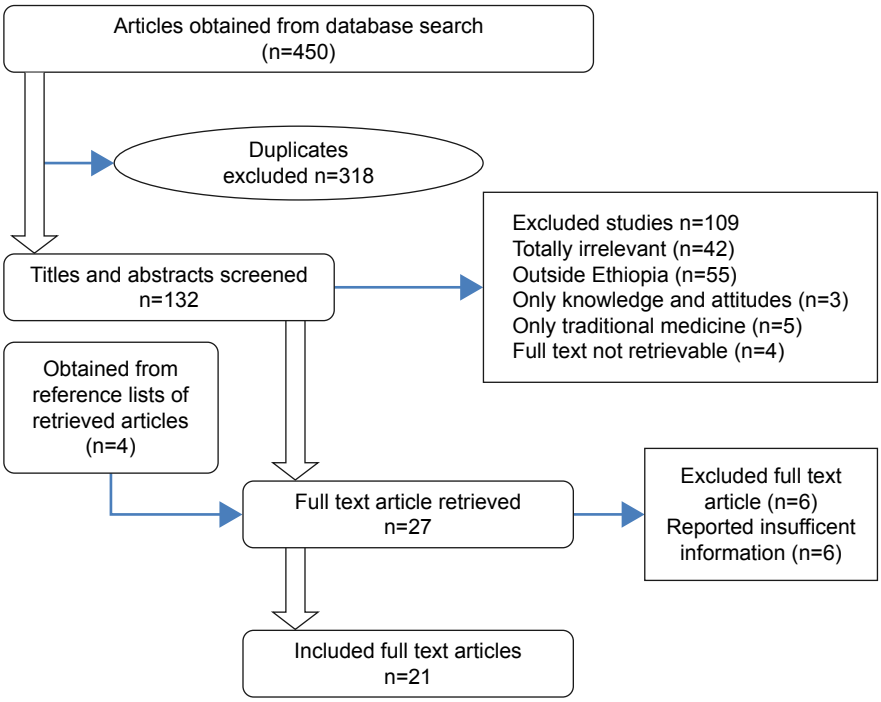

Figure 1 Flow diagram of study selection.

Table 1 Study characteristics

Study	Area	Subjects	Design	Sample size	Sampling technique
Abay and Amelo[71]	Gondar University, northwest Ethiopia	Medical, pharmacy, and health science students	Cross-sectional	414 students	Stratified sampling followed by random sampling
Tenaw and Tsige[73]	Addis Ababa, central Ethiopia	Customers of community pharmacies	Cross-sectional	918 respondents from 24 community pharmacies	Multistage stratified sampling followed by convenience sampling
Worku and Mariam[10]	Jimma, southwest Ethiopia	Residents of Jimma town	Community-based cross-sectional survey	352 respondents	Systematic random sampling
Ararsa and Bekele[74]	Jimma, southwest Ethiopia	Private pharmacy clients	Community-based cross sectional study	398 clients	Systematic random sampling
Befekadu et al[68]	Jimma University Specialized Hospital, Jimma, southwest Ethiopia	Pregnant women attending antenatal care	Hospital-based cross-sectional study	315 pregnant women	Random sampling
Jaleta et al[75]	Sire town, west Ethiopia	Inhabitants of Sire town	Community based cross-sectional study	423 households	Systematic random sampling
Abrha et al[76]	Kolladiba town, northwest Ethiopia	Heads of households	Community based cross-sectional study	261 respondents	Systematic random sampling
Eticha and Mesfin[6]	Mekelle, north Ethiopia	People who came to community pharmacies for self-medication	Cross-sectional study	270 clients	Convenience sampling
Mossa et al[13]	Worabe town of Silte Zone, south Ethiopia	Residents of Worabe town	Community-based cross-sectional survey	405 households	Multistage stratified sampling followed by random sampling
Bekele et al[70]	Arsi University, Asella	Health science students	Cross-sectional study	548 students	Stratified sampling followed by random sampling
Mihretie[15]	Bahir Dar, northwest Ethiopia	Urban dwellers of Bahir Dar town	Community-based cross-sectional survey	595 households	Two-stage cluster sampling followed by random sampling
Abeje et al[69]	Bahir Dar, northwest Ethiopia	Pregnant mothers attending antenatal care	Institution-based cross-sectional study	510 pregnant women	Multistage stratified sampling followed by systematic random sampling
Deressa et al[77]	Butajira, southern Ethiopia	Rural communities of Butajira	Cross-sectional study	630 households with malaria cases	Simple random sampling
Sado and Gedif[78]	Nekemte town and surrounding rural areas, western Ethiopia	Household heads	Cross-sectional study	820 household heads	Cluster sampling followed by systematic random sampling
Hailemichael et al[72]	Harar, eastern Ethiopia	Harar Health Sciences College students	Institution-based cross-sectional study	237 students	Two-step stratified sampling followed by simple random sampling techniques
Angamo and Wabe[5]	Jimma, southwest Ethiopia	Medical sciences students in Jimma University	Cross-sectional study	403 students	Random sampling
Gutema et al[11]	Mekelle, north Ethiopia	Health sciences students of Mekelle University	Cross-sectional study	283 students	Two-stage stratified random sampling methods
Ali et al[79]	Addis Ababa, central Ethiopia	Private pharmacy customers seeking self-medication	Cross-sectional survey (quantitative and qualitative)	400 clients	NR
Suleman et al[80]	Asendabo, southwest Ethiopia	Residents of Asendabo town	Community-based cross-sectional study	1,257 individuals (242 households)	Systematic random sampling
Gedif[81]	Butajira, southern Ethiopia	Residents of Butajira town	Community-based cross-sectional study	4,861 households	Random sampling
Abula and Worku[2]	Gondar, Kolladuba, and Debark towns, northwest Ethiopia	Residents of Gondar, Kolladuba, and Debark towns	Community-based cross-sectional survey	10,170 individuals (1,880 households)	Systematic random sampling

Abbreviation: NR, not reported.

self-medication prevalence between high- and medium-quality studies.

Prevalence of self-medication

Of the 21 studies reviewed, 16 reported on prevalence of self-medication. Four studies did not calculate prevalence, since their subjects were community-pharmacy customers who came for self-medication. The reported prevalence of self-medication in the studies varied from 12.8% (Bahir Dar town residents) to 77.1% (Arsi University health science students), with an overall prevalence of 36.8%. The prevalence of self-medication in the studies was determined based on the illness history for different recall periods (2 weeks to 6 months). Two-week recall periods were used in many studies. There was no difference in the prevalence of self-medication in studies with small and large sample sizes. The prevalence of self-medication with respective recall period for each of the studies is indicated in Table 2.

Common illnesses that cause self-medication, reasons to practice self-medication

Fever/headache, gastrointestinal (GI) tract diseases, and respiratory diseases were the commonest illnesses or symptoms for which self-medication was taken, accounting for an average of 30.5%, 19.7%, and 18.3% of self-medication use, respectively. The major reasons to practice self-medication were previous experience of treating a similar illness, feeling that the illness was mild and did not require the service of a physician, less expensive in terms of time and money, and need for emergency use. Table 3 shows the illnesses that resulted in self-medication and reasons that drove people to practice self-medication as reported in each study.

Drugs used in self-medication, where they are obtained, and who suggested their use

As indicated in Table 4, analgesics/antipyretics, antimicrobials, GI drugs, and respiratory drugs were the common drug classes used in self-medication. On average, 38.7%, 30.8%, 16.7%, and 7.3% of people who practice self-medication used these drugs, respectively. Mainly, these drugs were obtained from drug-retail outlets (66.6%), shops (10.3%), relatives/friends (9.3%), and left over from previous use (6.5%). The use of self-medication was commonly suggested by pharmacy professionals, friends/relatives, and clinicians, but without formal prescriptions.

Factors associated with practice of self-medication

Even though most of the studies reviewed did not address factors associated with self-medication, some checked the presence of association between sociodemographic characteristics and self-medication practice. As shown in Table 3, age, place of residence, sex, educational status, occupation, income, ethnicity, prior self-medication experience, attitude toward self-medication, year of study, and

Table 2 Prevalence of self-medication

Study	Subjects	Recall period	Prevalence of self-medication in those who faced an illness
Abay and Amelo[71]	Medical, pharmacy, and health science students	2 months	38.5%
Worku and Mariam[10]	Residents of Jimma town	1 month	27.6%
Befekadu et al[68]	Pregnant women attending antenatal care	During current pregnancy	20.1%
Jaleta et al[75]	Inhabitants of Sire town	2 weeks	27.16%
Abrha et al[76]	Head of households	2 weeks	62.8%
Mossa et al[13]	Residents of Worabe town	3 months	16.9%
Bekele et al[70]	Health science students	3 months	77.1%
Mihretie[15]	Urban dwellers of Bahir Dar town	2 weeks	12.8%
Abeje et al[69]	Pregnant mothers attending antenatal care	During the current pregnancy	36%
Sado and Gedif[78]	Household heads	1 month	35%
Hailemichael et al[72]	Harar Health Sciences College students	NR	62%
Angamo and Wabe[5]	Medical sciences students in Jimma University	2 months	45.89%
Gutema et al[11]	Health Sciences students of Mekelle University	3 months	43.24%
Suleman et al[80]	Residents of Asendabo town	2 weeks	39%
Gedif[81]	Residents of Butajira town	2 weeks	17%
Abula and Worku[2]	Residents of Gondar, Kolladuba, and Debark towns	2 weeks	27.5%

Abbreviation: NR, not reported.

Table 3 Common illnesses leading to self-medication, reasons to practice self-medication, and factors associated with self-medication

Study	Illnesses	Reasons	Factors
Abay and Amelo[71]	Fever and headache 24.8% Respiratory diseases 23.9% Gastrointestinal tract diseases 13.2% Diarrhea 8.9% Malaria 6.1% Pneumonia 6.1% Constipation 5.6% Eye disease 3.8%	Prior experience 35.4% Minor illness 30.5% Less costly 9.8% Emergency use 15.8%	Year of study (in which prevalence of self-medication increases)
Tenaw and Tsige[73]	Gastrointestinal 25.1% Headache/fever 24.9% Respiratory problems 21.4% Skin diseases/injuries 8.4% Eye infections/inflammations 7.1% Sexually transmitted diseases 2.6%	Minor illness 36.6% Emergency use 19.8% Prior experience 18.2% Less costly 12.6% For prevention of illness 11.2%	NR
Worku and Mariam[10]	Headache 13.2% Fever 21.7% Cough 21.7% Diarrhea 6.5% Abdominal pain 10.5% Dyspnea 1.3%	Less costly 35.7% Minor illness 33.3% Less waiting time 19.1% Prior experience 9.5%	NR
Ararsa and Bekele[74]	NR	Previous experience 30.16% Less costly 31.75% Minor illness 25.4% Emergency 6.35%	NR
Befekadu et al[68]	Cough 13.1% Typhoid 14.8% Headache 47.5% Common cold 1.6% Diarrhea 3.3% Anemia 13.1% Asthma 6.6%	Time-saving 44.3% Easily available 57.4% Know about drug and illness 13.2%	Self-medication experience (P=0.001) Maternal education (P=0.03) Age of respondents (P=0.005) Number of children (P=0.001) Place of residence (P=0.007)
Jaleta et al[75]	Headache 10.29% Fever 5.35% Cough or common cold 3.29% Diarrhea 3.29%	Less costly 31.82% Emergency use 22.73% Previous experiences 13.64%	No significant association
Abrha et al[76]	Headache or fever 30.9% Respiratory tract infection 23.2% Gastrointestinal disease 21.8% Malaria 8.7%	Less costly 44.5% Minor illness 31.1% Remoteness of health care facilities 1.2% Repetitiveness of symptoms 11.6% To save time 4.3% No benefit from modern health care 7.3%	NR
Eticha and Mesfin[6]	Headache or fever 20.7% Gastrointestinal disease 17.3% Respiratory tract infection 15.9% Eye disease 14% Skin disease/injury 13.1% Dysmenorrhea 11.3%	Emergency use 17% Minor illness 21.7% Prevention of illness 16.9% Prior experience 20.7% Less costly 20.2%	NR
Mossa et al[13]	Headache 38.5% Fever 35.9% Cough 14.1% Diarrhea 10.2% Abdominal pain 10.2% Joint and back pain 35.9% Nausea and vomiting 8.5%	Less costly 7.7% Minor illness 19.2% Avoiding waiting time 33.3% Distance of health facility 9% Emergency case 16.7%	Monthly income (P=0.006) (the higher the income, the more self-medication practice) Level of education (P=0.000) (self-medication practice increases as the level of education increases)

(*Continued*)

Table 3 (*Continued*)

Study	Illnesses	Reasons	Factors
Bekele et al[70]	Headache/fever 56.5% Gastrointestinal disease 34.1% Respiratory tract infection 31.8% Eye disease 22.4% Skin diseases or injury 17.4% Sexually transmitted disease 10.4% Maternal/menstrual 29.2%	Disease not serious 44.1% Poor quality of service 27.1% Emergency use 24.7% Prior experience 23.4% Took pharmacology course 21.1% Saves time 20.3% Less expensive 19.4%	Sex (female) Field of study (midwives) Positive attitude for self-medication
Mihretie[15]	Respiratory tract disease 58.8% Diarrhea 41.2% Fever 17.6% Headache 11.8% Gastrointestinal tract disease 5.9%	Previous experience 82.2% Minor problem 17% Less costly 11.8% Emergency use 5.9%	No significant associations
Abeje et al[69]	NR	Less costly 6.25% Minor illness 22.6% Saves time 11.7% Prior experience 48.4%	Gravida (multigravida) ($P<0.05$) Maternal illness (current illness) ($P<0.05$) Location of antenatal care service (rural) ($P<0.05$)
Deressa et al[77]	Malaria 100% (study done on self-treatment of malaria only)	Prior experience 50.9% Less costly 23.6% Saves time 10.9% Peer influence 5.5% Minor illness 1.8% Dissatisfaction with health services 1.8%	NR
Hailemichael et al[72]	Headache or mild pain 47.3% Gastrointestinal problems 30.8% Eye and ear symptoms 29.1% Vomiting 6.3%	Knowledge about the disease/drug 37% Time-saving 29% Less costly 19% Increase in confidence 19%	Student's year of study (as study year increased, prevalence of self-medication increased)
Angamo and Wabe[5]	Headache 36.85% Abdominal pain 30.55% Cough 23.16% Fever 6.32%	Prior experience 46.32% Minor illness 25.26% Time-saving 24.21% Low cost 4.21%	NR
Gutema et al[11]	Headache 51.56% Cough and common cold 44.8% Dysmenorrhea (painful menses) 20.3% Dyspepsia/heartburn 17.2% Fever 14.1% Diarrhea 10.9% Constipation 9.4% Cough and chest pain (like pneumonia) 7.8% Skin problems 3.13%	Prior experience 39.1% Mildness of illness 37.5% Time-saving 15.6% Less costly 4.7% Lack of interest in medical services 1.56%	Sex (female) Specific field of study (pharmacy students practiced self-medication more frequently than medical and other paramedical students) Study year (increases with year of study)
Ali et al[79]	Respiratory symptoms 22.8% Gastrointestinal symptoms 18% Abdominal pain 17%	Prior experience 61.8% Advised by pharmacists 24.8% Others use for similar cases 18.3% Know about it 12.3%	NR
Suleman et al[80]	Fever 40.6% Headache 23.1% Cough and cold 11.2% Eye disease 4.2% Gastric pain 4.2% Diarrhea 3.5% Abdominal pain 2.1%	Less costly 10.7% Minor illness 41.1% Saves time 12.5% Remoteness of health care facility 12.5% Low quality of modern health care 23.2%	NR
Gedif[81]	Headache 22.1% Fever 20.8% Diarrhea 10.3% Malaria 9% Eye disease 8.7% Respiratory tract complaints 8.4%	Minor illness 25.2% Prior experience 23.5% Neighbors/relatives recommend 20% Less costly 11.3%	Ethnicity (Meskan subgroup)

(*Continued*)

Table 3 (*Continued*)

Study	Illnesses	Reasons	Factors
Abula and Worku[2]	Cough and cold 23.9% Fever 9.5% Headache 8.5% Gastric pain 8.3% Diarrhea 5.6% Eye disease 5.4%	Less costly 37.4% Minor illness 29.9% Saves time 14.8% Less benefit from health institution 13.6% Remoteness of modern health care 4.3%	NR

Abbreviation: NR, not reported.

Table 4 Drugs used in self-medication, where they are obtained, and who suggests their use

Study	Drugs	Source	Suggested by
Abay and Amelo[71]	Paracetamol 46.3% Analgesics 24.4% Antacids 12.2% Anthelmintics 10.9% Antibiotics 4.8% Antimalarials 3.7%	Pharmacy or drug shop 72% Friends 5.9% Drugs left over from prior use 3.6% Home remedies 8.5%	Reading material 30.5% Advice from pharmacist 25.6% Advice from friend 19.5% Advice from clinician without prescription 13.4% Advice from traditional healers 3.7%
Tenaw and Tsige[73]	Analgesics/antipyretics 33.1% Antimicrobials 26.4% Gastrointestinal drugs 17.7% Respiratory drugs 9.7% Oral rehydration salts 0.6%	DROs (study subjects those who came to community pharmacies)	Clinicians, but without formal prescriptions 39% Friends, relatives, or neighbors 23.5% Pharmacy professionals 15.4% Labels, leaflets, or promotional materials 20%
Worku and Mariam[10]	NR	DROs 52.4% Open market 19% Left over from past prescription 11% Neighbor 9.6% Kiosk 7.1%	NR
Ararsa and Bekele[74]	Analgesics/antipyretics 28.94% Antimicrobials 28.13% Anthelmintics 17.56% Gastrointestinal drugs 15.2%	DROs (study subjects those who came to community pharmacies)	Drug outlets 48.2% Previous experience 30.52% Other health professional 11.25% Friend 6.83%
Befekadu et al[68]	Paracetamol 41% Aspirin 14.7% Chloramphenicol 13.1% Iron 11.5% Tetracycline 4.9% Amoxicillin 6.6% Cough syrup 9.8% salbutamol 6.6%	Private drug-retail outlets 85.2% Neighbors/friend 19.1% Shops 14.8%	Client 39.3% Pharmacist/druggist 34.4% Husband 18% Neighbor 4.9%
Jaleta et al[75]	Analgesics 40.96% Antibiotics 24.1% Traditional medicine 20.48% Antimalarials 4.81% Anthelmintics 3.61%	Drug-retail outlets 84.84% Neighbors 9.09% Left over from past prescription 6.06%	Dispensers 40.48% Previous experience 39.29% Health professional other than dispensers 10.71% Neighbors 9.52%
Abrha et al[76]	Analgesics/antipyretics 34.1% Antibiotics 24.7% Gastrointestinal drugs 22.4% Antimalarial drugs 8.2%	Drug vendor and pharmacy 69.5% Shops 16.5% Leftover drugs from previous illness 8.1% Neighbors and relatives 5.9%	NR
Eticha and Mesfin[6]	Analgesics/antipyretics 20.8% Gastrointestinal drugs 17.5% Respiratory drugs 14.9% Oral rehydration salts 14.2% Vitamins 11.1% Antimicrobials 8.4%	NR	Pharmacy professionals 22.9% Clinicians without formal prescriptions 20.6% Friends, neighbors, or relatives 18.5% Labels, leaflets, or promotional materials 12.8% Traditional healers 12.5%
Mossa et al[13]	Antibiotics 61.53% Antimalarials 38.02% Traditional medicine 26.92%	Neighbors 5.1% Left over from past prescription 7.7% Kiosks 17.9% Drug-retail outlet 59%	NR

(*Continued*)

Table 4 (*Continued*)

Study	Drugs	Source	Suggested by
Bekele et al[70]	Antibiotics 59.9% Analgesics/antipyretics 47.8% Gastrointestinal drugs 28.8% Drugs for RTIs 24.7% Vitamins 22.1% ORS 16.7%	Drug-retail outlets 61.5% Shop/supermarkets 29.8% Relatives/friends 24.1% Left over from previous use 19.1%	Own experience 51.5% Pharmacy professionals 32.8% Previous prescription 27.1% Friends 21.4% Family 17.1%
Mihretie[15]	Amoxicillin 61.1% Cotrimoxazole 27.8% Ampicillin 11.1% Ciprofloxacin 5.6% This study assessed self-medication practices with antibiotics only	Drug-retail outlet 82.4% Friends or relatives 17.6%	Physician/nurse 11.8% Pharmacist 82.4% Friends or relatives 17.6% Reading 11.8%
Abeje et al[69]	NR	Pharmacy/drug shop 56.2% Leftover drugs 16.4% Friends/relatives 4.7% Self-prescribed herbal preparations 30.5% Market areas 2.3%	NR
Deressa et al[77]	Chloroquine 54.8% Sulfadoxine–pyrimethamine 43.2% Primaquine 3% (self-treatment of malaria only)	Malaria-control program 47.6% Private clinic 26.8% Health post 20.5% Health center 17.5% Pharmacy 5.9% Health station 2.1% Market or any shop 1.4% Drug shop 1%	NR
Sado and Gedif[78]	Antibiotics 33% Anti-inflammatories/analgesics 32% Gastrointestinal tract drugs 17% Cough preparations 2%	NR	NR
Hailemichael et al[72]	Antibiotics 47% Painkillers 37% Vitamins and minerals 10% Cough syrup 7%	NR	Previous prescription 33.9% Pharmacist 24.6% Textbooks/internet 21.6% Friends/family 16.9%
Angamo and Wabe[5]	Analgesics 49.38% Antimicrobials 35.8% Antacids 7.41%	Drug outlets 92.63% Shops/supermarkets 3.16% Relatives/friends 3.16% Leftover medicines 1.05%	Individual respondents themselves 34.74% Family 27.37% Friends 20.00% Health professionals 17.89%
Gutema et al[11]	Paracetamol 48.4% NSAIDs 42.2% Antibiotics 17.2% Cough syrup 12.5% Antacids 7.8% Topical agents 4.7% Herbal remedies 4.7% Anthelmintics 4.7%	Drug-retail outlet 40.63% Friend/relative 15.63% Open market 14.1% Drug leftovers 7.8% Traditional medicine 7.8% Kiosk (small shops) 1.56%	Self-decision 64% Family/friends 31.25% Media and reading material 14.1% Pharmacist/druggist 9.4% Prescribers without prescription 7.8%
Ali et al[79]	Antibiotics 35.5% Gastrointestinal medicines 19.3% Respiratory drugs 15.3%	NR	NR
Suleman et al[80]	NR	Home remedies 17.5% Drug outlets 5.6% Private clinics 5.6% Shops 4.2% Past prescription leftovers 3.5% Market 2.1% Neighbors 0.7%	NR

Abbreviations: DROs, drug retail outlets; NR, not reported; NSAIDs, nonsteroidal anti-inflammatory drugs; RTIs, respiratory tract infections; ORS, oral rehydration salt.

field of study of students were some of the factors identified in the reviewed studies.

Discussion

The prevalence of self-medication varied across the studies reviewed, ranging from 12.8% to 77.1%. This variation was found to depend on recall periods used in each study. Average prevalence rates of 31%, 31.3%, 42.2%, and 45.7% were reported for studies that assessed self-medication practice with 2-week, 1-month, 2-month, and 3-month recall periods, respectively. The main reasons for the wide variation in the prevalence of self-medication practice may be differences in social determinants of health, beliefs, and culture of the population, as Ethiopia is a country of multiple "nations". The difference in approaches used to collect information about self-medication may also have contributed to this variation in prevalence of self-medication. Similarly, review article by Shehnaz et al reported that the overall prevalence of self-medication varied from 2% to 92%.[22]

Higher self-medication use was reported in studies conducted on health science students than the general population. This may be because health science students have better knowledge of disease and drugs, so have less inclination to seek physicians help to treat their illnesses. Other studies conducted on health science students in different parts of the world have also reported higher prevalence of self-medication practice.[23–25] Martins et al also reported community members with a high level of education were more likely to use antimicrobial self-medication, possibly due to the exposure and increased focus on health.[26]

The most common reasons for self-medication in Ethiopia were previous experience of treating a similar illness, feeling that the illness was mild, less costly, and less time-consuming. Similarly, the patient's assessment of their ailment as minor was identified as one of the major factors in self-medication in many studies conducted outside Ethiopia.[27–35] Prior experience of treating the same condition by self-medication has also been mentioned as the main reason for practicing self-medication.[34,35] Studies conducted in other developing countries also mention lack of time to visit the physician and economic problems as the main reason to use self-medication.[23,33]

Fever/headache, GI-tract diseases, and respiratory diseases were the commonest illnesses/symptoms for which self-medication was taken. Fever and headache were indicated as the most frequent health complaint that led to self-medication in different studies.[22–24,35–37] There were also studies that reported respiratory diseases[23,34,35,37–39] and GI-tract diseases[23,40] as common illnesses for which self-medication was used. This may be because these illnesses are very common and occur frequently in individuals with experience of treating them. The mild and self-limiting nature of these illnesses may also prevent patients from seeking physician consultation. However, patients should not forget that when these illnesses/symptoms occur repeatedly or for prolonged periods, they should be investigated further by physicians, as they may be manifestations of serious illnesses.

Analgesics/antipyretics, antimicrobials, GI drugs, and respiratory drugs were the most frequently used drug classes in self-medication. Multiple studies conducted to assess the practice of self-medication outside Ethiopia also reported analgesics as the most widely consumed OTC drugs in self-care.[22,23,35,40–43] Antimicrobials were also reported in many studies as commonly used drugs in self-medication.[23,34,37,44–46] One review article indicated that the overall estimate of antimicrobial self-medication in low- and middle-income countries was 38.8%.[47] Even though every medication used in self-care needs responsibility, the high rate of antimicrobial use in self-medication needs special emphasis. Despite their prescription-only legal status in most countries, antibiotic use as an OTC medication occurs globally.[48] This practice poses great risks, like antibiotic resistance. The practice of self-medication should be conducted only insofar as the benefits outweigh the risks. It should also be understood that the potential benefits of self-medication will only be obtained if it is practiced responsibly.[49] Responsible government and nongovernment organizations should work hard to ensure the rational use of antimicrobials.

Common sources of drug recommendation included pharmacy professionals, friends/relatives, and clinicians, but without formal prescriptions. It was also mentioned in different studies that community drug sellers were commonly used as a source of advice or information for the drugs used in self-medication.[23,34,35,47,50,51] The advice of friends or family was also reported as a commonly used source to identify drugs used for self-medication.[23,24,34,51] As most of the self-medication users take drugs after consulting drug dispensers, the main role of assuring the rationality of self-medication practice will primarily lay on them. As such, they should be well trained to respond to symptoms. They should also have professional conduct, and abide by the rules and regulations of the drug-control authority of the country. They should avoid the nonprescription sale of prescription-only drugs. The community should also be educated on which illnesses they can seek drugs without the advice of a physician and for which they have to seek a clinician's consultation.

Drugs used in self-medication were mostly obtained from drug-retail outlets (66.6%), shops (10.3%), relatives/friends (9.3%), and left over from previous use (6.5%). According to the current study, more than 10% of self-medication users in Ethiopia take drugs from shops. This is another important issue that needs due attention. Drugs should not be allowed to be present in shops, since they need special storage conditions, special handling, and advice from a pharmacy professional who is knowledgeable on dispensing. Even though Ethiopian law forbids the availability of drugs in shops, the implementation of regulation is weak. Ethiopian food, medicine, and health care control authorities need to enforce this law more judiciously.

There were several studies that reported significant associations between self medication practice and sociodemographic characteristics such as age,[52–59] sex,[34,52,56,57,60–63] educational status,[58,62,64–66] income,[58,62,64–66] and prior self-medication experience.[62,67] Similarly, the current review identified some sociodemographic factors to affect the prevalence of self medication. These were age,[68] place of residence,[68,69] sex,[11,70] educational status,[13,68] income,[13] prior self-medication experience,[68] attitude toward self-medication,[70] student's year of study,[11,71,72] field of study,[11,70] and ethnicity.[81]

Limitations

Even though this review has its own strengths, such as inclusion of both published and unpublished research works and critically appraising the selected studies, it is not without limitations. As all of the studies reviewed were cross-sectional, the limitation of this type of study will be reflected. Some information was not reported in some of the studies. The recall periods used to assess the practice of self-medication varied across the studies, which made difficult to compare among prevalence rates. There was also high heterogeneity among the studies reviewed. This may have been due to a lack of standardized criteria for data-collection tools.

Conclusion

Self-medication practice is prevalent in Ethiopia and varied in different populations and regions of the country. Some of the self-medication practices are harmful and need prompt action. Implementation of laws that regulate drug dispensing should be emphasized. Special attention should be given to educating the public and health care providers on the type of illnesses that can be self-diagnosed and self-treated and the type of drugs to be used for self-medication.

Disclosure

The author reports no conflicts of interest in this work.

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