

Original article**Prevalence of self-medication practice among caregivers of children under 5 years of age visiting health institutions in Addis Ababa: A cross-sectional study**Selamawit Shibiru Fanta¹, Tamirat Moges Aklilu¹¹ Department of Pediatrics and Child Health, School of Medicine, CHS, Addis Ababa University, Ethiopia.

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Abstract

Background : In the pediatric population, self-medication refers to the administration of medications by caregivers without physician consultation. The current study sought to determine the magnitude of self-medication and related factors among caregivers of under-5 children attending health institutions for their child's illness.

Methods: We conducted an institution-based cross-sectional survey between September and December 2023. Data were collected from 263 caregivers using a piloted and pretested questionnaire tool and analyzed using SPSS software version 25 (IBM, USA) to generate descriptive and analytical statistics.

Results: The prevalence of self-medication practice among the participants was 83%. Two-thirds of the children were females. Eighty-five per cent of the caregivers were urban dwellers. Twenty-nine percent of the participants had a family member who is a health professional. Prior self-medication experience and the mildness of the illness were the most common reasons for self-medication. Analgesics and antipyretics made up 75.3% of self-medication drugs. The odds of self-medication for urban community (AOR = 7.57; 95% CI: 2.83-20.29), having family members in the medical professions (AOR = 6.29; 95% CI = 1.62-24.47), having medical insurance (AOR = 4.1; 95% CI: 1.67-10.06), monthly income (AOR = 2.02; 95% CI: 1.13-3.61), and child's age (AOR = 1.03; 95% CI: = 1.00-1.06) were significantly associated with self-medication.

Conclusion: Self-medication practice was prevalent in all study settings. The major determinants were urban residency, family members in the medical profession, medical insurance, and monthly income. Focused interventions to address self-medication practice among urban communities,

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responsible medication use among health professionals, and those having medical insurance are highly recommended. Furthermore, the findings of the current study highlighted new insights within the changing population health dynamics relating to factors on self-medication. These factors have to be studied in bigger community-based studies, taking into account the limitations of the current study.

Keywords: *Self-medication, Under-five Children, Caregivers, Urban dwellers*

Introduction

Self-medication in children is a major international concern (1). The World Health Organization (WHO) defines self-medication as "using and selecting medications on one's own to treat ailments or symptoms that one has identified. Self-medication in the pediatric context refers to the administration of medicines by a caregiver without medical consultation (2). The International Pharmaceutical Federation (IPF) defines self-medication as the use of non-prescription drugs by individuals on their own volition (3). Children's self-medication habits are concerning because children are more vulnerable to various diseases and thus have a higher risk of being self-medicated by their caregivers (4). When their children are sick, most parents resort to self-medication (5).

Children under the age of five years are frequently affected by diarrhoea, respiratory tract infections, and other self-limiting illnesses. Caregivers often administer drugs for these diseases without seeking health professional advice, resulting in self-medication (6). There are numerous risks associated with self-

medication, including incorrect diagnosis, drug interaction, increased polypharmacy, drug resistance, and adverse drug reactions. Self-medication has both unjustified and absurd consequences, including the waste of healthcare resources and the possibility of hospitalization (2). Numerous studies assessing children's self-medication patterns have found that self-medication is relatively common among children in both developed and developing countries. In a study done in Sydney, Australia, the overall prevalence of self-medication was 77.25%. In this study, the prevalence of self-medication among children 1 to 5 years and 5-12 years of age was 47% and 33%, respectively. Antimicrobials were commonly used to treat diarrhea, sore throats, coughs, and colds. The ease with which antimicrobials can be obtained from pharmacies and medical supply stores without a prescription, and the lack of regulations governing their sale, is the cause of their widespread use (7). A community-based study conducted in Indonesia found that 58.8% of children under the age of five years were self-medicated. In this study, mothers with average monthly income and upper secondary school education

demonstrated an increased tendency to self-medicate. This practice is also affected by one's residential location. Self-medication occurred in both rural and urban settings, with frequencies of 58.8% and 39.2% in the community, respectively.

Another study conducted in the Democratic Republic of the Congo (DRC) reported a prevalence up to 95.8%. In this study, mothers mentioned the high cost of medical care (84.18%), the distance from home to the health institution (10.2%), and previous experience (5.61%) as the primary reasons for their self-medication. The easy access to over-the-counter medications made an important contribution to children's self-medication (8).

A cross-sectional study conducted in Tanzania revealed that drug stores were the primary source of antibiotics in 99.7% of cases, and parental self-medication with antibiotics (SMA) to children under the age of five was significantly associated with middle-income households, living further away from a medical facility, and having less knowledge about POMs and antibiotic use(9, 10).

A systematic review done in Ethiopia on the adult population found that self-medication rates ranged from 12.8% for town residents to 77.1% for health science students (11). There have been no published data in the pediatric population on self-medication, at least to our knowledge, in this country. Therefore, we aimed to study the magnitude of self-

medication practice among health-seeking caregivers of under-five children, and their contributing factors in three health care institutions.

Materials and methods

Settings

The research was carried out in Tikur Anbessa Specialized Hospital (a tertiary referral centre), Teklehaimanot Health Centre (a primary health care institution), and Bethezatha General Hospital (BGH)(a private healthcare institute). We included these study sites to have representation of the different types of healthcare institutions. TASH is the largest referral hospital in Addis Ababa, established over 50 years ago. Over 400,000 patients are seen annually, of which 40% are children aged 0-14 years. Bethzatha General Hospital is a private health care institution located at the heart of Addis Ababa with a patient flow of 60 -70 per day. Teklehaymanot Health centre gives a primary level outpatient services to sick children in the area.

Study design and period

A cross-sectional study design was conducted between September 01 and December 30, 2023.

Study population

Primary caregivers of children who are 0-5 years old attending the health institutions for medical care of their children.

Inclusion/exclusion criteria

Primary caregivers of children under 5 years of age who visited the designated health facilities during the study period and consented to participate were included. Mothers of neonates under one month of age were excluded. Caregivers who either declined participation or were not the primary caregivers were excluded.

Sample size and sampling technique

We calculated the sample size using the single population proportion formula, taking the prevalence of self-medication practice from a previous study as 78%, a confidence interval of 95%, and 5% precision to get the final sample size of 263.

Sampling method

For limited time and resources, we used the consecutive sampling method.

Data collection

Data were collected using a semi-structured questionnaire tool, which was prepared and piloted on 5% of a different set of patients. Direct interviews with caregivers were conducted after informed consent was secured. The interview was conducted by three trained data collectors, one at each study site, and checked by the principal investigator.

Variables

Age, sex, educational status, monthly income, residency, and home distance from health fa-

cility were documented. Reasons to self-medicate, previous experience of self-medication, severity of the illness, cost of health service, Health insurance, and waiting hours in the health facility were also collected. Medication type, source, symptoms, or illnesses that trigger self-medication were recorded. We also collected information on awareness of prescription-only medications (POM).

Operational definitions

Self-medication is defined as the administration of over-the-counter and prescription-only medications by caregivers without physician consultation.

Prescription-only medication (POM): is a drug that can only be obtained with a valid prescription from a licensed healthcare professional. These medications are regulated to ensure they are used safely and appropriately under medical supervision (11)

Over-the-counter treatments (OCT) are medicines sold directly to a consumer without a requirement for a prescription from a healthcare professional (12).

Frequency of primary caregiver self-medication practice: this is operationally defined based on the Sorrel Brown ANR program “Frequency” evaluation, Iowa State University Extension, Dec 2010 (13):.

- Frequently performed - If the caregiver self-medicates their children at least once a week

- Sometimes performed - If the caregiver self-medicates their children 1-3 times per month
- Rarely performed- caregiver self-medicated their children once or twice in the past 3 months

Statistical analysis

Data consistency and completeness were checked before data entry. Data were entered into the SPSS software package version 25, USA. Descriptive as well as analytic statistics were made to compute the mean, median, standard deviation, interquartile range (IQR), prevalence, frequencies, and percentages. Factors that affect caregivers' self-medication, such as parent residence, parental education status, child's age, home distance to the nearest health facility, family member with a

health profession background, monthly income, and use of medical insurance, were analyzed using bivariate analysis. After identifying those variables with p-values below 0.2 from the bivariate analysis, a multivariate logistic regression model was used. P-values < 0.05, with a 95% confidence interval, were considered statistically significant for all statistical tests.

Results

Socio-demographic characteristics:

Two hundred sixty-three participants participated in this study. The mean (SD) age of caregivers was 32.3 (6.0). The majority of the index children were female, between the age range of 24-60 months, and from an urban area (Table 1).

Table 1: Sociodemographic characteristics of caregivers of under-five children practicing self-medication, Addis Ababa, 2024 (N = 263).

Variables	Category	Frequency	Percent
Child age (months)		31.0	12.4
Age categories(months)	1-6	5	1.9%
	6-12	15	5.7%
	12-24	64	24.3%
	24-60	179	68.1%
Sex	Male	80	30.4%
	Female	183	69.6
Residency	Urban	223	84.8%
	Rural	40	15.2%
Educational level	Illiterate	30	11.4%
	Primary school	40	15.2%
	Secondary school	76	28.9%
	University/collage	117	44.5%
Monthly income	<5000 birr	66	25.1
	5000-10,000 birr	108	41.1
	>20,000birr	28	10.6
Medical Insurance	Yes	115	43.7
	No	148	56.3
Family member with a medical profession	Yes	75	28.5
	No	188	71.5
Medical profession type	Nurse	30	40.0
	Health officer	8	10.7
	Pharmacist	27	36.0
	Doctor	9	12.0
	Others	1	1.3
Chronic Disease	Yes	7	2.7%
	No	256	97.3%
Self-Medication	Yes	219	83.3%
	No	44	16.7%

The result shows that the majority of caregivers (83.3%) practiced self-medication for their children. The majority of the participants are caregivers of female children(69.6%) and re-

side in urban areas (84.8%). A high proportion of the sample is well-educated caregivers, with 44.5% holding a degree or higher. Most participants fall into the medium-income class

(41.1%). Less than half (43.7%) of the caregivers have medical insurance.

Self-medication practice assessment data:

The prevalence of self-medication was shown in Figure 1.

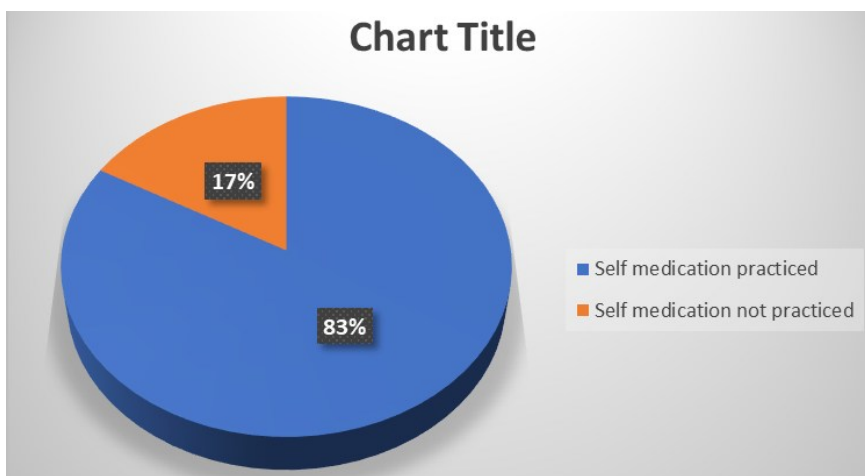


Figure 1: The prevalence of self-medication among children under 5 years in three health institutions in Addis Ababa.

The most common reasons for self-medication were displayed in Figure 2.

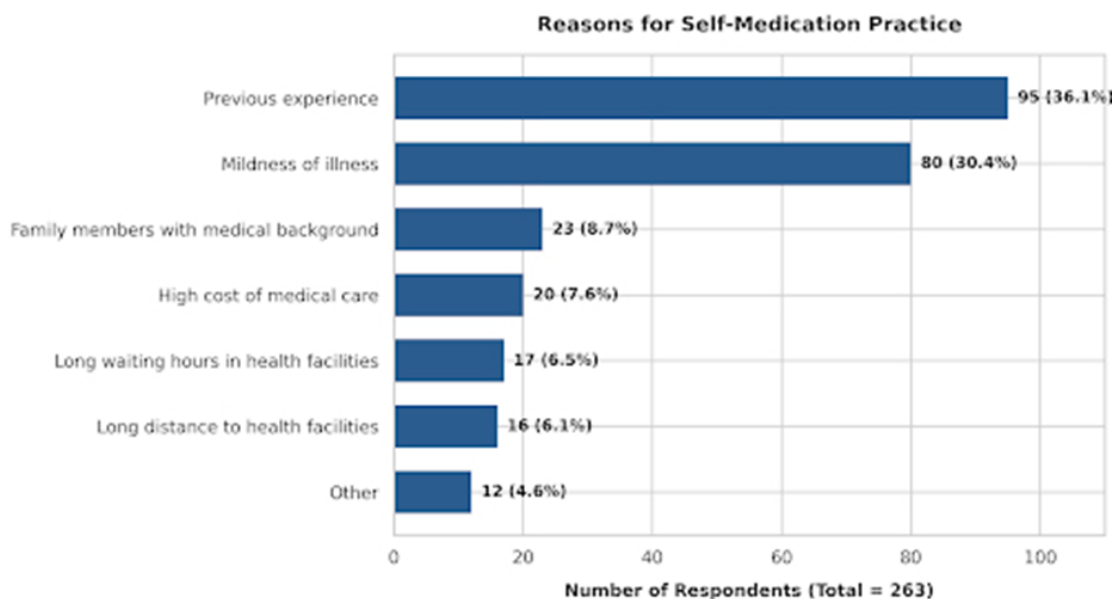


Figure 2: Reasons for self-medication practice among caregivers

Analgesics/antipyretics accounted for 75.3% of the drug group most commonly used for self-medication. The majority of the children were self-medicated for fever (81.3%), followed by

cough and vomiting (31.9% and 24.7%), respectively. A significant proportion of caregivers (89.5%) claimed that they bought the medications from drug stores, while a few

used leftover drugs from previous prescriptions. Most (86.3%) caregivers checked the expiry date before giving the self-medication drugs, and 45.2% always read the instructions before giving them. Most of the study participants (60%) claimed that they are aware of pre-

scription-only medications (POM). However, only 20.4% of them listed any of the POM drugs. The participants claimed that 90.4% of self-medicated children have improved from their symptoms (Table 2).

Table 2. Self-medication-related characteristics of the caregivers of under-five children, Addis Ababa, 2024 (N = 263).

Variable	Category	frequency	Percent
Frequency of self-medication (n=219)	Frequently	28	12.8%
	Sometimes	115	52.5%
	Rarely	76	34.7%
Symptoms for self-medication (n=219)	Fever	178	81.3%
	Diarrhea	17	7.8%
	Cough	84	31.9%
	Vomiting	54	24.7%
	Abdominal pain	39	17.8%
	Sore throat	9	4.1%
Types of drugs and number of times they are self-prescribed	Analgesics/Antipyretics	165	48.7%
	Antibiotics	92	27.1%
	Anti-helmenthics	71	20.9%
	Anti malarias	2	0.5%
	Other drugs	9	2.6%
Source of medication (n=219)	Drug stores	196	89.5%
	Left over from a previous illness	19	8.7%
	Other family members	3	1.4%
	Other	1	0.5%
Check expiry date before giving medication (n=219)	Yes	189	86.3%
	No	30	13.7%
Do you have awareness of pre- scription-only medications	Yes	157	59.7%
	No	106	40.3%
Outcome after self-medication	Improved	197	90.4%
	Symptom persisted	14	6.4%
	Developed reaction	1	0.5%
	Symptom recurred	6	2.8%

In the bivariable logistic regression model, residency, education level, child's age, distance from the nearest health facility, family member with a medical profession, monthly income, and medical insurance were significantly associated with self-medication. However, urban residency, higher education, having a family member with a medical profession, and using medical insurance were the only significant predictors of self-medication practice in

the multivariable logistic regression model. The odds of self-medication for urban community (AOR = 7.57; 95% CI: 2.83-20.29), having family members in the medical professions (AOR = 6.29; 95% CI = 1.62-24.47), having medical insurance (AOR = 4.1; 95% CI: 1.67-10.06), monthly income (AOR = 2.02; 95% CI: 1.13-3.61), and child's age (AOR = 1.03; 95% CI: = 1.00-1.06) were significantly associated with self-medication (Table 3).

Table 3: Bivariate and multivariable regression of independent variables and self-medication among under-five children, Addis Ababa

Variable	Category	Self-medication		COR (95% CI)	p-value	AOR (95% CI)	p-value (AOR)
		Yes	No				
Residency	Urban	203	20	16.24 [7.36 – 35.85]	<0.001	7.57 [2.83 – 20.29]	<0.001*
	Rural	16	24	1			
Family Member in health profession	Yes	40	341	6.74 [2.02 – 22.51]	0.002		0.008*
	No	179	0				
Medical Insurance	Yes	23	21	3.16 [1.49 – 6.71]			0.002*
	No	196	23				
Monthly Income	<5000 birr	38	27	4.10 [2.42 – 6.96]	<0.001	2.02 [1.13 – 3.61]	0.018*
	5000-10,000 birr	95	13				
	10,000-20,000 birr	57	4				
	>20,000	29	0				
Child's Age (Months)	<6 months	52	14	1.02 [0.99 – 1.05]	0.117	1.03 [1.00 – 1.06]	
	6-12 months	88	17				
	12-24 months	54	9				
	24-60 months	25	4				0.076

Note: COR = Crude Odds Ratio; AOR = Adjusted Odds Ratio; CI = Confidence Interval. Significant results ($p < 0.05$) are in bold.

The Hosmer-Lemeshow test for this model was 2.4 ($p = 0.97$), showing that the model's predictions are consistent with the actual data. The multicollinearity test also lies below 8.0 (ranging from 1.6 to 7.7), confirming that there is no serious overlap between the variables.

Discussion

In this study, 83% of the children self-medicated. This was comparable to the study conducted in Rwanda (78%), Tanzania (80%), and Sydney, Australia (77.25%) (7,14,15). Our finding indicates a higher prevalence than those reported in Indonesia (58.8%) and Nigeria (47.60%). However, it is lower when compared with the study done in the democratic republic of Congo (95.8%) (8,16-17). The main reasons for self-medicating children in the current study were previous experience (43.3%), and mildness of the illness (36.5%) (2). A report of a systematic review of adult patients in Ethiopia indicated that self-medication practice was due to previous experience of treating a comparable disease and feeling that the sickness was mild (12,18). Similarly, reports from Australia and Indonesia supported our findings (7,16).

One of the factors that increased self-medication in children by their parents is caregivers' urban residency (7.6-fold increase). Our finding was in contrast to the finding in the Indonesian report, where a higher prevalence of self-medication is seen in rural residents (58.8% vs 39.2) (8,17).

In cities like Addis Ababa, the high-density

private drug retail outlets (DROs), and a competitive commercial environment may have contributed to a higher rate of self-medication practice. The retail outlets are the main source of drugs for over 83% of self-medicators, creating ground for urban dwellers to easily bypass prescription requirements by visiting different pharmacies until one complies (11). A report from the Ethiopian pharmaceutical regulatory body indicated that a gap in regulatory supervision has contributed to the high self-medication practice.

Studies in the major Ethiopian towns showed that perceiving the illness as "mild" is the leading cause (approx. 47-50%) for self-medication. Especially urban caregivers often feel competent to manage coughs and fevers based on "previous experience" or "peer influence," which were significantly associated with the practice of self-medication (19). Our study showed that caregivers who received informal medical advice from a family member in the medical profession had 6.3 times higher self-medication practice than those families without a family member with a medical background. Reports from adult studies support our findings (20). Caregivers frequently seek advice from medically trained family members when managing children's illnesses, perceiving such guidance as professional despite the absence of a formal clinical assessment. Studies on infant self-medication identify nurses, pharmacists, and doctors within families as important informal sources

of treatment advice. While this may improve early recognition of illness in some cases, it also carries significant risks during childhood, including inaccurate dosing, out-of-scope recommendations, delayed health-facility presentation, and use of medicines not approved for children. Family members of caregivers with a medical background often give quick advice like “the child’s illness is mild; therefore just give him/her Paracetamol or Oral Rehydration Solution (ORS), etc.”. Therefore, family members may feel confident treating the child without visiting a health facility.

Having medical insurance was found to associate 3 folds with the practice of self-medicating. This finding was also in contrast to the earlier report by Gemmechu et al., a study done on adults’ self-medication practice in the general community (21). Further controlled studies are recommended to verify these contradictory findings. Caregivers with higher monthly income have a 4-fold chance of self-medicating their children. Economically well-off caregivers may prioritize convenience and opt for self-medication to quickly address minor health issues without taking time off work or disrupting their daily routine with a doctor’s visit.

A trend was also observed in emerging urban centers across Sudan and Brazil. Caregivers tend to self-medicate older children more frequently than their younger children, but this difference was not statistically significant in our findings. Reports from other investigators showed a similar pattern (5).

Limitation of the study

As this study is institution-based, the findings may not represent the community at large. The study may have suffered from a recall bias as caretakers may not remember all the events of self-medication in the past. The use of consecutive sampling may have introduced a non-random selection bias, hence limiting generalizability. The report that the majority of children’ improved’ after self-medication, based on only the caregiver self-report, with no clinical and objective verification, may overestimate the positive outcomes and underestimate the harm of self-medication.

Conclusion

This study showed highly prevalent self-medication practice among caregivers of under-five children attending the three health institutions in Addis Ababa. The major determinants of self-medication practice include urban residency, high monthly income, a family member in the medical profession, and having medical insurance. The findings revealed the need for attention to address the issue of self-medication in the study area given its high level of practice. To substantiate these findings, a more robust community-based study is recommended, taking into account the above limitations to verify some of the inconsistent results, and medical insurance predisposing parents to self-medicate their children.

Declarations

Ethical Considerations

The study was approved by the Departmental Review and Publication Committee (DRPC) of the Department of Pediatrics and Child Health, School of Medicine, College of Health Sciences, Addis Ababa University. Informed consent was obtained from each participant, and participation was voluntary. Data confidentiality was completely maintained throughout the study. All methods were carried out in accordance with the Declaration of Helsinki.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Competing interests

We declare that we have no conflict of interest.

Authors' contributions

TM perceived the research idea and guided SS to write the proposal. SS wrote the proposal. SS monitored data collection and performed statistical analysis supported by trained per-

sonnel. SS also prepared the write-up. TM reviewed the write-up and approved the submission. TM is the corresponding author of this manuscript.

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