International Journal of Health Sciences and Research
[Indexed, Peer-Reviewed Journal]
Volume 15; Issue: 9; September 2025
Website: www.ijhsr.org
Original Research Article *ISSN: 2249-9571*

Prevalence and Factors Associated with Self-Medication in Under-Five Children by Care-givers in Lusaka District: A Cross-Sectional Study

Charles Saleji[1], Eustarckio Kazonga[1,2], Steward Mudenda[3]

[1]School of Postgraduate Studies, University of Lusaka, Lusaka, Zambia
[2]Department of Public Health, School of Medicine and Health Sciences, Lusaka, Zambia
[3]Department of Pharmacy, School of Health Sciences, University of Zambia, Lusaka, Zambia

Corresponding Author: Charles Saleji

DOI: https://doi.org/10.52403/ijhsr.20250908

ABSTRACT

Introduction: Universally, studies have shown that self-medication has been on escalation and continues to be a public health challenge. Without consulting specialists, most people treat their ailments. The objective of the study was to determine the prevalence and factors associated with self-medication in under-five children by care-givers in Lusaka District.
Methods and Materials: Random sampling technique was used to collect data. Care-givers of under-five children attending under-five clinic at Matero Level One Hospital 102 (29.57%), George Clinic 72 (20.8%) and Chainda South Clinic 171 (49.56%) were randomly selected. Qualitative data analysis was done using thematic analysis in Atlas. ti. Quantitative data was analysed using descriptive statistics, correlation and regression analyses were performed using Stata14.2 College Station, TX: Stata Corp LP software package.
Results: Of the 345 respondents, the prevalence of self-medication was 75.6%. The study found that of care-givers (mothers) 164 (47.53%) shared and 117 (33.91%) used left-over medicines. Additionally, the relationship to child (p=0.015), marital status (p=0.033), and education level (p=0.005) were associated with obtaining a medical prescription. Qualitative findings revealed that the main factors behind the practice of self-medication were quick relief, habitual, experience with disease, lack of funds, distance, lack of medication, pharmacy closed, among others.
Conclusion: This study found a high prevalence of self-medication in Lusaka District of Zambia. Socio-economic factors such as education, household income, relationship to under-five child, care-givers marital status; individual factors: perception of disease; clinical factors: long waiting time and easy access to medication were among the major factors that led to self-medication.

Keywords: Self-medication; left-over medication; sharing medication; care-giver; Zambia

INTRODUCTION

Self-prescription and self-medication (SM) are widespread practices in both developed and developing countries, where many people manage their illnesses without consulting healthcare professionals [1,2]. This growing trend has serious short-term and long-term consequences, including antimicrobial resistance (AMR), adverse drug reactions, drug abuse, and dependence [3,4].

The World Health Organization (WHO) defines SM as the use of drugs without professional medical guidance, including self-diagnosis and treatment [1,5]. This practice commonly involves over-the-counter medications but can also include prescription drugs, reused prescriptions, advice from family or friends, or leftover medications [6–8]. Self-medication can lead to inappropriate drug use and adverse effects, especially in children under five [6,9]. Despite the risks associated with this practice, SM is common in pediatric care [10–12].

Self-medication is prevalent among caregivers of children below the age of five years [13–15]. Hence, parents must recognize that self-medicating can have harmful effects on children, who are more vulnerable to drug side effects, potentially contributing to early development of AMR and complicating future clinical treatments [16,17]. Globally, antibiotic SM rates are high, with pooled prevalence reported at 43% and the highest countries up to 92% [18].

In Low-and Medium-Income Countries (LMICs), the prevalence of SM is high due to the burden of disease [19]. Antibiotics SM is higher in the sub-Saharan African (SSA) region at 55.2% and North Africa at 48.3% [18]. In Sudan, SM among children was reported at 25.6%, with caregivers often citing long wait times at healthcare facilities and prior success with medications as reasons [20]. In Tanzania, 47.7% of caregivers self-medicated children under five with antibiotics [14], while in the Democratic Republic of Congo, 95.8% of mothers reported self-medicating their infants [11].

In Zambia, SM has been reported in some studies [21–24]. However, there is a paucity of information on the prevalence and factors associated with SM among caregivers for chidlren under-five years. This study aimed to address the gap by exploring SM practices for children under five, helping to inform strategies to improve drug use in Zambia.

MATERIALS AND METHODS

Study design and setting

A cross-sectional study design was used in this study. The study was conducted within Lusaka District at three health facilities namely; Matero Level One Hospital, George Clinic, and Chainda South Clinic. The researcher chose the three sites to collect the appropriate data to answer the research questions. The participants of this study were care-givers to under-five children. The participants were randomly sampled. The study ran from February 2023 to October 2023. The study utilized the convergent mixed methods design, which is defined as a type of mixed methods design in which the investigator combines quantitative and qualitative data in an effort to provide an all-inclusive analysis of the study problem.

Study Population

This study involved the caregivers to under-five children attending under-five clinic at three sites in Lusaka District namely; Matero Level One Hospital, George Clinic and Chainda South Clinic. The care-givers in this study included fathers, siblings, baby sitters, grandparents, neighbours, family members (relations). That is to say any person that was directly associated with the treatment of the under-five children during sickness or period of disease at home.

Inclusion and Exclusion Criteria

Inclusion criteria for the study were males or females aged 18 years and above. The participant was expected to be an individual been a direct care-giver of a child under-five attending under-five clinic at Matero Level One Hospital, George Clinic and Chainda South Clinic. On the other hand, the exclusion criteria used were being a male or female aged below 18 years, not attending the aforementioned under-five clinic sites and/or not been a direct care-giver of an under-five child.

Sampling Techniques and Sample Size

A random sampling technique was used to sample the respondents in the study sites for

one-on-one interviews. Given the study design used, this technique aided in unbiased recruiting study participants that gave required data for the study as per inclusion criteria.

A sample of 345 (89.6% of the calculated sample) care-givers to under-five children was randomly selected, that is 171 Chainda South Clinic, 102 Matero Level One Hospital and 72 George Clinic. The sample size was calculated using the Cochran's formula [25], as it was necessitated by the large populations in excess of 10, 000 units. This is so given that Lusaka Province has a population of over 3.3 million [26]. Participants were randomly selected to ensure representation of different socio-economic groups to allow for the collection of population representative data.

Data collection techniques

The present study adopted a mixed methodology where quantitative data were collected using closed-ended questions while qualitative data were collected using open-ended questions in the questionnaire. One-on-one interviews were conducted with interviewees to safeguard their privacy and to ensure responses from the respondents were not influenced by those of others. The interviews were conducted using a questionnaire and in the language the participants were conversant with local languages including Bemba and Nyanja. English language was used for participants who were conversant with the language. Therefore, for the interviews that were conducted in Bemba and Nyanja, they were later translated into themes in English.

Data analysis

Qualitative data was analyzed using thematic analysis. This involved the developing of codes based on the identified themes from the interviews guided by open ended questions in the questionnaire with care-givers of under-five children. The data collected from open-ended questions (qualitative responses) were obtained, coded, ordered into various themes and thematic analysis was performed in Atlas.ti. The data was interpreted in relation to the self - medication practices of the under-five child care-givers.

Quantitative data was analysed in Stata version 14.2. Descriptive statistics, correlation and multivariable regression analysis were performed to show the frequency, associations and analyse the relationship between a single dependent variable and several independent variables. Self-medication variables such as prescription, use of left-over medication, age of the care-giver, and occupation among others were used in the analysis. Logistic regression analysis was conducted between the outcome and all relevant predictor variables and odds ratios with their corresponding 95% Confidence Intervals (CI) were calculated. A logistic regression model was constructed from the variables that were used in the analysis. *P*-value <0.05 was used to denote statistical significance.

Ethical approval

The ethical clearance for this study was obtained from the University of Lusaka, School of Medicine and Health Sciences Research Ethics Committee Ref Number is: ORG0010092-2023/036 and ethical approval by the National Health Research Authority Ref Number NHRA0005/19/10/2023. Informed consent was obtained from care-givers before completing the questionnaire. Participant information was kept confidential and anonymous.

RESULTS

Socio-demographic characteristics of participants

A total of 345 respondents out of the targeted 385 were successfully interviewed, yielding an overall response rate of 89.61%. The response rates by facility were 18.7% for George Clinic, 26.49% for Matero Level One Hospital, and 44.42% for Chainda South Clinic. The majority of respondents were aged between 25–49 years (73.04%), followed by those aged 18–24 years (25.8%), with only 1.16% aged 50 and above. Most

participants were female (96.23%) and married (77.1%), while single individuals made up 20.87%, and the remaining marital categories each accounted for less than 1%. In terms of education, nearly half of the participants (48.7%) had completed secondary school, 30.14% had only primary education, and 2.61% reported no formal education. A small proportion held tertiary qualifications, with 8.99% having diplomas and 2.9% holding graduate or postgraduate degrees. Employment status revealed that 39.71% were unemployed, 31.59% engaged in business, and 23.77% were formally employed, with farmers and students comprising less than 6% combined. Most respondents (76.81%) reported a monthly income of less than $120, with 36.52% earning between $0–$40 and 25.51% earning between $40.04–$80. Higher income brackets accounted for a smaller proportion of participants, collectively representing less than 25% (Table 1).

Table 1. Summary of Socio-demographic characteristics of participants.

	Variables	Frequency	Percentage
Age of Respondents	18 – 24	89	25.8
	25 – 49	252	73.04
	50 and above	4	1.16
Marital Status	Divorced	3	0.87
	Married	266	77.1
	Separated	3	0.87
	Single	72	20.87
	Widowed	1	0.29
Education	Certificate	23	6.67
	Diploma	31	8.99
	Graduate Degree	8	2.32
	High School	168	48.7
	Illiterate	9	2.61
	Post Graduate Degree	2	0.58
	Primary School	104	30.14
Occupation	Business	109	31.59
	Farmer	3	0.87
	Employee	82	23.77
	Student	14	4.06
	Unemployed	137	39.71
Household Income	$0-$40	126	36.52
	$40.04-$80	88	25.51
	$80.04-$120	51	14.78
	$120.04-$160	34	9.86
	$160.04-$200	7	2.03
	$200.04-$280	23	6.67
	$280.04-$400	9	2.61
	$400.04 & above	7	2.03

Relationship of Socio-Demographic Characteristics of Respondents Sharing and use of Leftover Medication.

The correlation between socio-demographic characteristics and self-medication practices among caregivers was examined, focusing on the sharing and use of leftover medication in under-five children. The level of education was not significantly associated with either sharing (p=0.051) or the use of leftover medication (p=0.832). However, caregivers with primary and secondary education were more likely to engage in both practices, with junior and senior secondary school attendees being the most prevalent group involved in self-medication. Respondents with higher education were less likely to share or use

leftover medications, suggesting a potential protective influence of advanced education.
Regarding the caregiver's relationship to the child, a significant association was observed with the use of leftover medication (p=0.031) but not with sharing medication (p=0.645). Mothers and fathers accounted for most of the cases in both practices, while guardians had a comparatively lower prevalence. Marital status was not significantly associated with either practice; however, married caregivers were more frequently involved in self-medication than their unmarried counterparts. Household income was not significantly associated with sharing of medication (p=0.319), but showed a strong significant association with the use of leftover medication ($p < 0.001$). Notably, caregivers in the lower income brackets (<$200) were more likely to self-medicate using leftover drugs, indicating that economic constraints may contribute to such practices.

Table 2. Table of Summary of Relationship of Socio-Demographic Characteristics of Respondents Sharing and use of Leftover Medication.

Characteristic	Total (N)	Share medication		*P*-value	Total (N)	Left-over medication		*P*-value
		Yes	Percent			Yes	Percent	
Level of education								
Up to Primary	113	49	14.2	0.051	113	60	17.39	0.832
Secondary and above	232	99	28.7		232	138	40.01	
Relationship to the child								
Mother/father	300	172	49.86	0.645	300	125	35.23	0.031
Guardians	45	26	7.5		45	23	6.67	
Marital status								
Married	269	147	46.61	0.311	269	107	31.01	0.153
Unmarried	76	51	14.78		76	41	11.88	
Household Income								
$0-$200	306	175	50.73	0.319	306	125	36.23	< 0.001
Above $200	39	23	6.67		39	23		

Factors Associated with Self-Medication.
The pseudo R-square value shows that 7.1% of changes in the outcome factor were because of its association with the predictor variables. This entails that, 7.1% of choices to get or not get a prescription for drug to be administered to an under-five by guardians can be attributed to the guardians: Education, marital status, relationship to the child, occupation and family income. This entails that the remaining 92.9% effect on the outcome variable are brought about by different factors not considered in this study.

Parameter Analysis
Results obtained from Logistic regression analysis of education, marriage, relationship to the child, occupation, household income on prescription (whether a care-giver had a clinician's prescription or not for the medication given to the under-five child). The model used was:

$$logit(p) = log(\frac{p}{1-p}) = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n. \quad (2)$$

The level of significance for occupation was observed larger than 0.05. Given that its observed odds ratio is 0.937, this entails that care-givers in occupation are 0.9 times less likely to obtain a medical prescription compared to care-givers that have no occupation (OR: 0.937, 95% CI: 0.764 - 0.148, p=0.528). The Association between occupation and prescription was found to be statically insignificant at p-value 0.528 as such any association may have been just by some chance.
The result for relationship to the child reported an odds ratio of 1.443 that reveals

that care-givers related to the under-five child are 1.4 times more likely to obtain a medical prescription compared to care-givers who are not related to the under-five child (OR: 1.443, 95% CI: 1.074 -1.939, *p*=0.015). A *p*-value of 0.015 was obtained, which is indicative of a statistically significant relationship.

Under marriage, the result observed was an odds ratio of 1.893 which entails that married care-givers are 2 times more likely to obtain a medical prescription compared to those not married (OR: 1.893, 95% CI: 1.053 - 3.402 *p*=0.033). A *p*-value of 0.033 was obtained, which shows that the relationship between the two factors is statistically significant.

Education level was found to have a statistically significant inverse relationship with prescription by *p*-value of 0.005. Given that its observed odds ratio is 1.338, this indicates that care-givers with a higher education level are 1.3 times more likely to obtain a medical prescription compared to care-givers who are less educated or have no education at all before medicating an under-five child (OR: 1.338, 95% CI 1.093 -1.638, *p*=0.005).

The results of the study revealed that household income did not have a significant effect on a care-givers choice to self-medicate or not at *p*-value 0.054. Income was observed to have an odds ratio of 1.211, this entails that care-givers with higher household income were 1.2 times more likely to obtain a medical prescription compared to care-givers with lower household income (OR: 1.211, 95% CI: 0.997 - 1.471, *p*=0.054).

Lastly age was observed to have an odds ratio of 0.710 which entails that younger care-givers of under-five are 0.7 times less likely to obtain a medical prescription compared to elderly care-givers of under-five children (OR: 0.710, 95% CI 0.316 -1.598, *p*=0.408). The association between age and prescription was found to be statistically insignificant at *p*-value 0.408.

The study used $p<0.05$ as a cut-off point of level of significance for all statistical tests calculated. The results of the analysis based on this revealed that only relationship to the child (*p*=0.015), level of education (*p*=0.005), and marriage (*p*=0.033) were statistically significantly associated with obtaining a medical prescription before a care-giver medicating an under-five child. Other socio-economic variables included in analysis were non-significantly association with the dependent variable.

Table 3. Logistic Regression Analysis of Factors Associated with Self-Medication.

Variable	Odds Ratio (95% CI)	p-value
Occupation	0.94 (0.76–1.15)	0.528
Relationship Status	1.44 (1.07–1.94)	0.015
Marital Status	1.89 (1.05–3.40)	0.033
Education	1.34 (1.09–1.64)	0.005
Income Group	1.21 (1.00–1.47)	0.054
Age Group	0.71 (0.32–1.60)	0.408

Note. CI = confidence interval. Odds ratios are from a multivariable logistic regression. Variables with p < 0.05 are considered statistically significant.
Model Summary: Pseudo R^2 = 0.0707

Factors Associated with Self-Medication in Under-Five Children by Caregivers

Qualitative analysis identified a range of individual, socio-economic, community, and clinical factors contributing to self-medication practices among caregivers. Common individual-level drivers included prior experience with similar illnesses, habitual use of medication, reliance on local herbs, and perceived ineffectiveness of prescribed drugs. Other influencing factors were limited time to seek formal care, recent relocation, and a sense of confidence in recognizing symptoms. Financial constraints, long distances to health facilities, and unavailability of doctors or medication at

clinics were also cited as key barriers leading caregivers to self-medicate under-five children.

Factors Leading to Drug Sharing Among Family Members, Friends, and Neighbors

Sharing of medication was similarly driven by perceptions of urgency and convenience. Caregivers often opted to share drugs due to financial hardship, previous successful use of the medication, or when asked by someone in need. Distance to health facilities, long waiting times, pharmacy closures, and medication stockouts further discouraged clinic visits. The availability of familiar medication within the community or household, coupled with the perceived similarity of illnesses, reinforced this behavior.

Sources of Medication Used in Self-Medication

Caregivers reported accessing medication from multiple sources, including clinics, private pharmacies, shops, and leftover drugs. Other common sources were past prescriptions and drugs provided by family members, friends, or neighbors.

Table 3. Qualitative Findings Drivers and Sources of Self-Medication.

Factors Associated with Self-Medication in Under-Five Children by Care-Givers		***Factors Leading to Sharing of Drugs Among Family Members, Friends and/or Neighbours***	
Main Theme	*Sub Theme*	*Main theme*	*Sub Theme*
Individual	Past experience	Individual	Quick Relief
	Habitual		Habitual
	Use local herbs		Same sickness
	Lack of effectiveness doctors' medication		Have to care for neighbour's child too
	Know the disease		Someone asks it to give
	Lack of time to meet a doctor		Past experience with the drug on similar disease
	New to area		
Socio-economic	Financial constraints	Socio-economic	Lack of funds to buy
Community	Distance		Available medication
Clinical	Obvious medication prescribed at clinic	Community	Distance to the clinic
	Unavailability of a doctor		Pharmacies are closed
	Lack of medication at the clinic	Clinical	Long waiting time
			Lack of medication at the clinic
			Distance to clinic
Sources of Medication Used in Self-Medication in Under-Five Children by Care-Givers			
Clinic/hospital			
Clinic/pharmacy			
Private pharmacy			
Left-over drugs			
Shop			
Past prescription			
Family member/friend/neighbour			

DISCUSSION

This study revealed a high prevalence of self-medication (SM) among caregivers of under-five children in Lusaka District, with 75.6% of respondents reporting having administered medication without a prescription. This finding aligns with similar studies conducted in low- and middle-income countries (LMICs), where SM in pediatric populations is a common and often under-regulated practice [10].

A study conducted in Mexico reported a prevalence rate of 49.6% [9]. A prevalence of 50.2% was reported in Ethiopia [27]. In Uganda the practice was found to be prevalent at 75.7% [28]. however, a recent research conducted in Nigeria estimated a

prevalence of 99.4% [29]. An Indonesian study found a SM prevalence of 58.82% [10]. However, higher prevalence rates were reported in South-Western Nigeria at 90% [15], Another study conducted in Nigeria reported an alarmingly high prevalence of SM in Nigeria, reaching 99.4%, which is the highest rate among the reviewed literature [29]. The differences in the reported prevalence rates could have been caused by varying, sample sizes, socio-economic and cultural characteristics of the study populations given the diverse countries from which the studies were conducted.

The present study found that among the socio-demographic factors assessed, education level, marital status, and relationship to the child were significantly associated with the likelihood of obtaining a medical prescription before administering medication. Higher education levels were associated with a greater likelihood of seeking professional healthcare before medicating a child. This supports findings by Awad and Eltayeb (2006), who reported that increased health literacy reduces the likelihood of SM [30]. Similarly, studies in Nigeria and India also found that SM practice was less common among the highly educated [31–33].

The current study found that the practice of SM was common in rural areas. This is line with a study that was done in China where rural-based primary caregivers practiced higher SM compared to urban-based primary caregivers [33]. Our study findings are different with those found in Eastern Uganda where they reported that high prevalence rates of SM in most urban and in a lot of literate populations [6]. This disparity could be due to those interviewed been not of very high socio-economic status as such not been able to willingly spend on medication or it could really represent an elite group that has good understanding of the dangers of self-medicating under-five children. However, in Nigeria similar results were found among dental patients revealed that a greater part of the respondents had higher educational attainment, the majority of the respondents did not indulge in SM [34]. The disparity in the findings could be attributed due to the study having been conducted in the urban area where most are a likely more conscious about their health decisions and the effects that could arise from SM [34].

Caregivers who were biological parents of the children, particularly mothers, were more likely to obtain prescriptions. This is in line with previous findings in which biologica parents avoid self-medicating their children [13], indicating a stronger sense of responsibility or awareness compared to guardians. Our study further found that married caregivers were significantly more likely to seek prescriptions, similar to a study from Nigeria [13], possibly due to greater household support or joint decision-making.

Conversely, occupation, income, and age were not significantly associated with obtaining prescriptions. In contrast to our study, a study in China found that age of caregiver and child and their income were predictors of SM [33]. In the present study, qualitative findings suggested that economic hardship, time constraints, and poor access to healthcare facilities remain strong drivers of SM, regardless of income bracket. This suggests that while income may not statistically predict SM, structural barriers to healthcare access play a critical role, echoing the findings of other studies [35].

The study found a strong association between lower household income and the use of leftover medication, which is concerning given the risk of under-dosing, drug resistance, and adverse reactions. Sharing of medications, although not significantly associated with income or marital status, was common and influenced by social norms, urgency, and the perceived similarity of illness symptoms, as identified in qualitative interviews. These findings are consistent with studies from similar urban LMIC settings, where community-based drug sharing is normalized due to inadequate health infrastructure [36].

The qualitative analysis enriched the quantitative findings by identifying recurring themes such as past experience, habitual use,

lack of trust in doctors' prescriptions, use of local herbs, and inaccessibility of health facilities as key motivations for SM. These perceptions reflect broader systemic issues such as stockouts, long wait times, and geographical barriers to healthcare access, highlighting the need for community-based health interventions.

CONCLUSION

Self-medication among caregivers of under-five children is a prevalent practice in Lusaka District, largely driven by socio-economic challenges, healthcare access barriers, and individual beliefs or experiences. While formal education and being a biological parent were associated with a lower likelihood of SM, the practice remains widespread, exposing children to potential health risks including drug resistance and treatment complications. The Zambian Ministry of Health and its stakeholders should organize health education programs targeting self-medication activities such as the use of left-over medication, sharing of drugs, safe and unsafe medication. Additionally, the Zambian Ministry of Health should work to strengthen and stabilize the supply of medicine in health facilities and the medication provided should be a variety so as to avoid getting clients familiar with the same drugs over and over again. The findings point to a complex interplay of structural and behavioral factors that necessitate a multi-faceted public health response.

Recommendations

1. **Health Education Campaigns**
   Promote caregiver awareness on the dangers of self-medication in children through community health talks, radio programs, and integration into maternal and child health services.
2. **Strengthening Health Systems**
   Improve drug availability, reduce clinic waiting times, and expand access to trained healthcare professionals at the primary care level to reduce the reliance on SM.
3. **Community-Based Interventions**
   Leverage community health workers to disseminate accurate information on child health and rational drug use, especially in underserved areas.
4. **Regulation of Pharmacies and Drug Outlets**
   Enforce existing pharmaceutical regulations to minimize the sale of prescription drugs without proper authorization, particularly in informal or unlicensed outlets.
5. Targeted Support for Low-Income Households
   Provide subsidized or free child healthcare services for economically disadvantaged families to reduce the financial barriers to formal healthcare.
6. Further Research
   Conduct longitudinal studies to understand long-term impacts of self-medication practices and assess the effectiveness of interventions aimed at curbing the practice.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: Many thanks go to Miss Jessy Banda for the help and support rendered during the process of obtaining permission from the Lusaka District Health Office and data collection for this work. To the healthcare workers from Matero Level One, Chainda South, and George Clinic in Lusaka, we are thankful for the support.

Source of Funding: The study was not externally funded as such all costs accrued were met by the researchers.

Conflict of Interest: There is no conflict of interest declared in the authorship of this article.

REFERENCES

1. Baracaldo-Santamaría D, Trujillo-Moreno MJ, Pérez-Acosta AM, Feliciano-Alfonso JE, Calderon-Ospina CA, Soler F. Definition of self-medication: a scoping review. Ther Adv Drug Saf. 2022 Oct 5; 13:20420986221127501. doi: 10.1177/20420986221127501.

2. Gras M, Champel V, Masmoudi K, Liabeuf S. Self-medication practices and their characteristics among French university students. Therapies. 2020;75(5):419–28. Available from: https://pubmed.ncbi.nlm.nih.gov/32204933/
3. Choudhary N, Lahiri K, Singh M. Increase and consequences of self-medication in dermatology during COVID-19 pandemic: An initial observation. Dermatol Ther. 2020;(October):2–4.
4. Sunny T, Jacob R, K K, Varghese S. Self-medication: Is a serious challenge to control antibiotic resistance? Natl J Physiol Pharm Pharmacol. 2019;9(9):821–7. Available from: www.njppp.com
5. de Paula W, de Oliveira Gomes R, Meireles AL, Barbosa BCR, Cardoso CS, de Freitas PHB, et al. Exploring self-medication among university students during the covid-19 pandemic and its association with suspected Sars-CoV-2 virus infection. Discov Public Heal 2025 221. 2025;22(1):61. Available from: https://link.springer.com/article/10.1186/s12982-025-00447-3
6. Peter A, Musoke P, Nicollette N. Self-Medication Practices by Caretakers for Children Under five Years in a Rural District of Eastern Uganda. Int Invent J Med Med Sci. 2015;2(11):165–71. Available from: http://internationalinventjournals.org/journals/IIJMMS
7. Rojas-Miliano C, Galarza-Caceres DN, Zárate-Vargas AM, Araujo-Ramos G, Rosales-Guerra J, Quiñones-Laveriano DM. Characteristics and factors associated with self-medication due to COVID-19 in students of a Peruvian University. Rev Cuba Farm. 2022;55(1): covidwho-1820621.
8. Abdelwahed RNK, Jassem M, Alyousbashi A. Self-Medication Practices, Prevalence, and Associated Factors among Syrian Adult Patients: A Cross-Sectional Study. J Environ Public Health. 2022; 2022:9274610.
9. Alonso-Castro AJ, Ruiz-Noa Y, Martínez-de la Cruz GC, Ramírez-Morales MA, Deveze-Álvarez MA, Escutia-Gutiérrez R, et al. Factors and Practices Associated with Self-Medicating Children among Mexican Parents. Pharmaceuticals. 2022;15(9):1078. Available from: https://pubmed.ncbi.nlm.nih.gov/36145300/
10. Ahmed N, Ijaz S, Manzoor S, Sajjad S. Prevalence of self-medication in children under-five years by their mothers in Yogyakarta city Indonesia. J Fam Med Prim Care. 2021;10(8):2798–803. Available from: /pmc/articles/PMC8483128/
11. Astrid Mukemo K, Thierry Sonny T, Judith Sangwa S, Loriot Kayinga M, Peggy Mulunda M, Olivier M, et al. The practice of self-medication in children by their mothers in Lubumbashi, Democratic Republic of Congo. J Adv Pediatr Child Heal. 2020;3(1):027–31.
12. Pfaffenbach G, Tourinho F, Bucaretchi F. Self-Medication Among Children and Adolescents. Curr Drug Saf. 2010;5(4):324–8. Available from: https://pubmed.ncbi.nlm.nih.gov/20615182/
13. okunola oluseye A. Patterns of Self-medication Practices by Caregivers to Under-five Children in South-Western Nigeria. Child Care Pract. 2020;1–11. Available from: https://www.tandfonline.com/doi/abs/10.1080/13575279.2020.1845121
14. Simon B, Kazaura M. Prevalence and factors associated with parents self-medicating under-fives with antibiotics in bagamoyo district council, tanzania: A cross-sectional study. Patient Prefer Adherence. 2020; 14:1445–53. Available from: /pmc/articles/PMC7443408/
15. Muoneke VU, Una AF, Mbachu C, Eke CB, Ododo CI, Nkaleke DI, et al. Caregivers' Perception and Practice of Self-medication for Fevers in Under-five Children: A Cross-sectional Study in a Rural Community, South-East Nigeria. J Adv Med Med Res. 2018;27(12):1–12. Available from: https://www.journaljammr.com/index.php/JAMMR/article/view/3240
16. Darko E, Owusu-Ofori A. Antimicrobial resistance and self-medication: A survey among first-year health students at a tertiary institution in Ghana. Int J Infect Dis. 2020; 101:43. Available from: http://www.ijidonline.com/article/S1201971220308614/fulltext
17. Owusu-Ofori AK, Darko E, Danquah CA, Agyarko-Poku T, Buabeng KO. Self-Medication and Antimicrobial Resistance: A Survey of Students Studying Healthcare Programmes at a Tertiary Institution in Ghana. Front Public Heal. 2021; 9:706290.
18. Gashaw T, Yadeta TA, Weldegebreal F, Demissie L, Jambo A, Assefa N. The global prevalence of antibiotic self-medication

among the adult population: systematic review and meta-analysis. Syst Rev. 2025;14(1):49. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC11863577/

19. Le TH, Ottosson E, Nguyen TKC, Kim BG, Allebeck P. Drug use and self-medication among children with respiratory illness or diarrhea in a rural district in Vietnam: A qualitative study. J Multidiscip Healthc. 2011; 4:329–36. Available from: https://pubmed.ncbi.nlm.nih.gov/21966227/
20. Shafie M, Eyasu M, Muzeyin K, Worku Y, Martín-Aragón S. Prevalence and determinants of selfmedication practice among selected households in Addis Ababa community. PLoS One. 2018;13(3): e0194122. Available from: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0194122
21. Mudenda S, Daka V, Matafwali SK, Kanaan MHG, Abdullah SS, Mohamed S, et al. Prevalence of Self-Medication and Associated Factors among Healthcare Students during the COVID-19 Pandemic: A Cross-Sectional Study at the University of Zambia. Open J Soc Sci. 2023;11(10):340–63. Available from: http://www.scirp.org/journal/PaperInformation.aspx?PaperID=128497
22. Banda O, Vlahakis PA, Daka V, Matafwali SK. Self-medication among medical students at the Copperbelt University, Zambia: A cross-sectional study. Saudi Pharm J. 2021;29(11):1233–7. Available from: https://pubmed.ncbi.nlm.nih.gov/34819784/
23. Mudenda S, Mukela M, Matafwali S, Banda M, Mutati RK, Muungo LT, et al. Knowledge, Attitudes, and Practices towards Antibiotic Use and Antimicrobial Resistance among Pharmacy Students at the University of Zambia: Implications for Antimicrobial Stewardship Programmes. Sch Acad J Pharm. 2022;11(8):117–24.
24. Mudenda S, Mufwambi W, Mohamed S. The Burden of Antimicrobial Resistance in Zambia, a Sub-Saharan African Country: A One Health Review of the Current Situation, Risk Factors, and Solutions. Pharmacol & Pharm. 2024;15(12):403–65. Available from: https://www.scirp.org/journal/paperabs?paperid=137998
25. Charan J, Biswas T. How to Calculate Sample Size for Different Study Designs in Medical Research? Indian J Psychol Med. 2013;35(2):121–6. Available from: /pmc/articles/PMC3775042/
26. ZamStats. Population Size by Province, Zambia 2010 and 2022 [Internet]. Zambia Statistics Agency. 2022. Available from: https://www.zamstats.gov.zm/population-size-by-province-zambia-2010-and-2022/#
27. Jember E, Feleke A, Debie A, Asrade G. Self-medication practices and associated factors among households at Gondar town, Northwest Ethiopia: a cross-sectional study. BMC Res Notes. 2019;12(1):153. Available from: https://bmcresnotes.biomedcentral.com/articles/10.1186/s13104-019-4195-2
28. Ocan M, Bwanga F, Bbosa GS, Bagenda D, Waako P, Ogwal-Okeng J, et al. Patterns and predictors of self-medication in northern Uganda. PLoS One. 2014;9(3): e92323. Available from: /pmc/articles/PMC3962384/
29. Arikpo GE, Eja ME, Enyi-Idoh KH. Self-Medication in Rural Africa: The Nigerian Experience. Internet J Heal. 2009;11(1):1–7.
30. Awad AI, Eltayeb IB, Capps PA. Self-medication practices in Khartoum State, Sudan. Eur J Clin Pharmacol. 2006;62(4):317–24. Available from: https://pubmed.ncbi.nlm.nih.gov/16521008/
31. Oche OM, Mansur Oche O, Jiya Godwin G, Yahaya M, Aliyu Gambo A, Abdulkarim A, et al. Prevalence and Factors Associated with Self Medication Among People Living in Urban Slums of Sokoto Metropolis, Sokoto State, Nigeria. Cent African J Public Heal. 2019;5(6):302–9. Available from: https://www.sciencepg.com/article/10.11648/j.cajph.20190506.22
32. Rathod P, Sharma S, Ukey U, Sonpimpale B, Ughade S, Narlawar U, et al. Prevalence, Pattern, and Reasons for Self-Medication: A Community-Based Cross-Sectional Study from Central India. Cureus. 2023;15(1): e33917. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC9936784/
33. Ge J, Sun X, Meng H, Risal PG, Liu D. Factors associated with self-medication in children and the decomposition of rural-urban disparities in China. BMC Public Health. 2021;21(1):2123. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC8603473/
34. Afolabi AO, Akinmoladun VI, Adebose IJ, Elekwachi G. Self-medication profile of

dental patients in Ondo State, Nigeria. Niger J Med Med. 2010;19(1):96–103. Available from: https://pubmed.ncbi.nlm.nih.gov/20232763/

35. Bi B, Qin J, Zhang L, Lin C, Li S, Zhang Y. Systematic Review and Meta-Analysis of Factors Influencing Self-Medication in Children. Inq (United States). 2023; 60:1–13. Available from: https://journals.sagepub.com/doi/full/10.1177/00469580231159744
36. Bennadi D. Self-medication: A current challenge. J Basic Clin Pharm. 2013;5(1):19–23. Available from: /pmc/articles/PMC4012703/

How to cite this article: Charles Saleji, Eustarckio Kazonga, Steward Mudenda. Prevalence and factors associated with self-medication in under-five children by care-givers in Lusaka District: a cross-sectional study. *Int J Health Sci Res.* 2025; 15(9):52-63. DOI: *https://doi.org/10.52403/ijhsr.20250908*

******