Self-Medication Practice and Associated Factors in under-Five Children by Parents in Bortown, Jonglei State, South Sudan

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Abstract

Parents who self-medicate children under-five risk exposing them to serious health consequences such as drug resistance, worst treatment outcome and toxicity. Despite these health consequences, self-medication among children under-five years in BorTown is on the rise. Thus, the study sought to determine self-medication practice and associated factors among children under-five years in BorTown, South Sudan. Descriptive cross-sectional design, which involved stratifying the population by location and drawing representative sample using probability proportional to size formula, was utilized. 373 households with children under-five were chosen using simple random selection. In-person interviews using pre-test questionnaire were conducted. SPSS was used to analyse data. Data was summarized using descriptive statistics and the relationship between constructs was determined using chi-square. All statistical tests were deemed significant at P-value < 0.05. The findings of the study indicated that self-medication was practiced by 88.3% (n=323/). Women were the majority (66.4%), and farmers made up 91.1% of the self-medicating population. Self-medication was associated to age (p -value 0.005) and occupation (p -value 0.008). Leftover medications from prior treatments were the leading cause of self-medication (98.1%), followed by the low cost/no consultation or laboratory expenses (97.8%). 37.2% of self-medication medicines came from unused prescriptions, and 34.4% came from local pharmacies. Self-medication was most often driven by diarrhoea (40.7%), followed by fever (20.5%). Antimalarial (36.6%) and antimicrobials (29%) were the main medicines used for self-medication. Factors causing self-medication, features of self-medication and perceptions on self- medication were associated to self-medication (p-value 0.000). Self-medication, irrational use of medicines and myths on self-medication are public health problems in BorTown. Therefore, this study called for public health education and promotion for parents and health care providers, and should stress risks associated with parents' self-diagnose of children under-five, indiscriminate use of antimalarial and antimicrobials, inappropriate sources of medicines, and wrong perceptions on self-medication.

Key words: *Associated factors, self-medication practice, under five-year children, prevalence, perceptions*

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1.0 Introduction

Self-medication (SM) is a global public health problem that results to irrational use of drugs though it is mostly common in developing countries. According to World Health Organization (WHO, 2022), self-medication refers to the use of drugs to treat illness or symptoms that an individual has independently identified. Self-care medication often consists of over the counter medications, antimalarial, antibiotics (Chaudhry et al., 2022). Insufficient and sometimes prohibitively costly healthcare infrastructure mostly in developing has given rise to self-medication. When a child is unwell, many parents may take them to the doctor, but they also want to have access to natural home treatments. Studies in Tunisia indicate that majority of children (71%) who self-medicated with antibiotics for respiratory illnesses did so without seeing a doctor, or sought herbal remedies which have been linked to serious health issues (Nasir et al., 2020). Many factors prompt the high prevalence of SM in Indonesia, including subpar medical care, large uninsured population, lack of healthcare personnel, poor transportation, unprofessionalism by healthcare provider, lengthy waits, and easy access to pharmaceutical services (Alduraibi, 2021).

In Sri Lanka, research has shown that self-medication, especially for cough and fever, is practised primarily by parents of high socio-economic status (Subashini & Udayanga, 2020). As a result of SM, drug resistance has become a major problem in Nigeria, where over half of parents self-medicate their children aged 1 to 5 years, with a third of them doing so even for children aged 5 to 12 years (Awosan et al., 2018). In Kenya, 80% of the population engage in self-medication. Here, cases of parents utilizing antibiotics like amoxicillin syrup to treat children under the age of 5 o the increase. This phenomenon is attributable to factors such as poor regulations put in place to govern the sale and distribution of antibiotics, as well as inaccessibility of healthcare facilities and medication (Mageto et al., 2018).

Prevalence of self-medication varies according to location, culture, and social norms (Ahmed et al., 2021). Findings of a study done by Katumbo et al. (2020) in Lubumbashi, Democratic Republic of Congo established a 95.8% prevalence of self-medication practice. Their study found out that mothers in DRC opt to treat their children of ailments such as fever (91.1%), and malaria (91%) without advice from health care provider. They attributed this to high cost of healthcare.

"Parents who self-medicate children under-five, risk serious health repercussions for their children."

Research has indicated that factors such as location of health facility from the residential area, level of enlightenment of the general

populace, availability of medications from the previous treatment, presence of chronic diseases, less serious ailments, long waiting times at the health facilities, and fear of paying consultation and laboratory charges are major factors that contribute to self-medication (Nepal et al., 2021). Further, illnesses such as diarrhoea, upper respiratory infection, as well as malaria among children under 5-years have prompted parents to buy medicines without proper medical consultation, thereby resulting to since many diseases have similar signs and symptoms (Wang & Muennig, 2022).

Despite the negative outcomes associated with self-mediation, such as foetus anomalies and death, SM is believed to be easily accessible, cheap, and easy in the treatment of minor illnesses. However, the consequences of misuse of prescribed only medicines and over the counter drugs especially from drugs sellers who do not have medical background are severe and detrimental to health (Harris, 2020).

Moreover, availability and easy accessibility of medical literature and medical apps in Gorgan, north of Iran and other developed countries has encouraged literate mothers to surf the net looking for information to enable them treat their children without consulting a healthcare provider (Aref & Barati, 2021). However, this phenomenon is contrary to findings of a study done in Nigeria where personal experience of previous treatment and pharmaceutical advertisements in which there is remission of sign and symptoms on taking particular pharmaceutical drugs has influenced the decision self-medicate among mothers with children under-five years (Okunola, 2020).

On the other hand, low income and high academic levels are significantly associated to self-medication (Saima et al., 2015). Further, previous experience and advice from friends/neighbours has duped patients in rural areas to buy drugs on their own. However, financial constraint is the main reason for not taking a child to the clinic, or to a nearby health Centre, since the parents want to avoid high cost of consultation and laboratory tests (Molento, 2020). A study in India revealed that ignorance, poverty, expensive healthcare services and advertisement of drugs on media have contributed to self-medication practices, which carry high risk for organ damage among children (Akhtar et al., 2022; Mathias & Prabhu, 2020).

Parents who self-medicate children under-five risk serious health repercussions for their children. World Health Organization has confirmed that self-medication is a harmful practice. In the effort to lower prevalence of SM, South Sudan government has put in place clear regulatory frameworks. South Sudan government and humanitarian agencies have strived to hire health workers, establish health facilities and initiate educative programs about health effects of self-medication for children under-five years in BorTown. However, despite the efforts put, there is high prevalence of self-medication among under-five children by parents in BorTown. Consequently, self-medication has been linked to decreased

medicine efficacy, greater infection difficulties, drug-resistance, higher medical expenses, and perhaps worse treatment results manifest in prolonged illness, higher morbidities rates and high fatalities rates among children under the age of five in Bortown (International Organization of Migration, 2022). Nevertheless, studies that investigate this phenomenon in BorTown are scanty. Thus, this study sought to determine self-medication practice and associated factors among parents with children under-five years in BorTown, Jonglei State, South Sudan.

2.0 Materials and Methods

The research adopted descriptive cross-sectional research design. The design allowed the study to collect quantitative data from the sample. The study location was BorTown, located to the east of White Nile, north of Juba, and the capital city of Jonglei State in South Sudan. The study targeted 4, 592 parents of children under-five years. The 4,592 included parents who had at least one child younger than five and who had been residents of Bortown for at least six months prior to the study. A Cochran's formula was used to select 373, with 5% non-response rate as sample size as shown below.

Cochran's formula;

$n_0 = Z^2pq/e^2$

Where n_0= sample size

p= 50%- estimated population proportion of success; (Note that 5% was chosen because estimated prevalence was unknown in Bortown.

e=0.05 margin of error (5%)

Z= 1.96; according to normal reduced centre law when confidence interval is 95%

$n = \{(1.96)^2 (0.5) (1-0.5)\}/ (0.05)^2 = \underline{384}$

However, adjusted formula was used when total population of the study was below 10,000; Thus, $n_i = \frac{n}{1+n/N}$

Where N_i = the minimum sample size

n = sample size

N = total number of under-5 children

$N_i = 384 / (1+384/4592) = \underline{354;}$

The none response rate is projected to be 5% of the sample size calculated;

$0.05 \times 354 = \underline{19}$

n=354+19; n=373

The study stratified the heterogeneous geographical locations. Probability Proportionate to size formula was utilized to acquire homogenous samples from each stratum and given as; Sample size/Population size x Stratum population as shown in table 1.

Table 1

Bortown's locations Sample proportions of the Study

Residential areas in Bortown	Target population	Sample size per stratum	Percent (%)
Leu-diet	1,253	1253/4592 ×373 = 102	27
Arek and Malou villages	1,003	1003/4592× 373 =82	22
Nigel and Block-2	1,063	1063/4592 x 373=86	23
Lekyak village	607	607/4592 x 373=49	13
Hai Panjak and Pan-Liet	666	666/4592 x 373=54	15
Total	4,592	373	100

The study used structured questionnaire to collect data. Questionnaires are deemed suitable because they collect data in a short time, are less costly and they collect data without manipulation. The study pre-tested the data collection tools on 18 respondents, constituting 5 % of the 373-sample size (Tseng & Sim, 2021) at Sherikat, a town with similar characteristics with Bortown. Pilot study enhances validity and reliability of the research tools (Bolarinwa, 2015). Data was screened for errors prior to analysis using Statistical Package for Social Sciences (SPSS 25). Descriptive statistics; frequencies, percentages, mean, standard deviation were presented using tables, while the Chi-Square test was used to analyse the relations between categorical data. A p-value of less than 0.05 was considered statistically significance. The researchers obtained research approval and introduction letter from Mount Kenya University. Further, study participants were asked to signed consent form before participation in the study. The study findings were disseminated to Mount Kenya University, School of public health as well, Jonglei State ministry of health and Bortown municipality.

3.0 Results and Discussion

Reliability and normality test

A reliability test was performed by use of Cronbach's alpha coefficient to determine the internal consistency. A Cronbach's alpha coefficient of 0.752 was termed good and

reliable (Taber, 2018). Shapiro-wilk statistic was less than 0.05, which means dependent variables do not adhere to assumption of normality. Therefore, we chose non- parametric method-Pearson Chi-square for statistical analysis.

Socio-Demographic characteristics

A total of 373 people were randomly chosen for this research. However, only 366 questionnaires, representing a response rate of 98.1%, were completed and returned. This high response rate was attributed to the simple design of the questionnaire used, availability of research permit that confirmed that the information obtained was to be used for academic purposes only, and the consent form which guaranteed respondents' privacy and confidentiality. Additionally, the study was conducted out of farming season; hence, many of care givers were at home.

Table 2

Association between social demographic characteristics and self-medication prevalence

Socio-demographic characteristics		Self-medication prevalence		Chi-square value	Fisher's exact test	P-value
		Yes (%)	No (%)			
Gender	Male	106 (86.2)	17 (13.8)	(1, n=366) =0.496		0.481
	Female	217 (89.3)	26 (10.7)			
Age-group	Less than 18	4 (50.0)	4 (50.0)	(3, n=366) = 12.694		0.005
	18-39	132 (89.8)	15 (10.2)			
	40-59	179 (88.2)	24 (11.8)			
	60 and above	8 (100)	0 (0.0)			
Religion	Christianity	317 (88.1)	43 (11.9)	(1, n=366) =0.069		0.793
	Islam	6 (100)	0 (0.0)			
Education level	None	61 (11.6)	8 (11.6)		(4, n=366) = 3.222.	0.484
	Primary	185 (88.9)	23 (11.1)			
	Secondary	59 (89.4)	7 (10.6)			
	Graduate	15 (78.9)	4 (21.1)			
	Post-graduate	3 (75)	1 (25.0)			
Occupation	Farmer	133 (91.1)	13 (8.9)	(5, n=366) = 15.768		0.008
	Business person	69 (90.8)	7 (9.2)			
	Employee	45 (84.9)	8 (15.1)			
	Housewife	46 (90.2)	5 (9.8)			
	Cattle keeper	8 (57.1)	6 (42.9)			
	Fisherman	22 (84.6)	4 (15.4)			
	Married	293 (88.9)	37 (11.1)			0.332

Marital status	Single	18 (78.3)	5 (21.7)		(4, n= 366) = 4.074	
	Divorce	3 (75.0)	1 (25.0)			
	Window	3 (100)	0 (0.0)			
	Widower	2 (100)	0 (0.0)			
Monthly income	less than 30,000	17 (85.0)	3 (15.0)	(3, 366) = 2.682		0.443
	30,000-69,000	120 (90.9)	12 (9.1)			
	70,000-100,000	149 (88.2)	20 (11.8)			
	100,000 and above	37 (82.2)	8 (17.8)			

The prevalence of self-medication among children under-five years in Bortown was 88.3%, which is quite high. Most participants were women (n=243, 66.4%), and self-medication was more common among women (89.3%) than men (86.2%). Self-medication was practiced more among aged women aged 40 to 59 (n=203, 55.5%). Participants' major occupation was farming (n=146, 39.9%). Additionally, the study established the association between self-medication practices and socio-demographic characteristics. Results showed that self-medication was substantially linked to both age (P-value 0.005) and profession (P-value 0.008).

According to previous studies, SM prevalence varies from 18%-98%; for example, SM prevalence in Nigeria stands at 91.4% (Okunola, 2020) and 86.5% in Cameroon (Kojom et al, 2018). These differences could be due to geographical location and socio-economic activities which dictate their lifestyle. These raise a serious health concern not only in Bortown, but also the whole world since children do not choose to be self-medicated. Moreover, studies done in south-western Nigeria and Bameda Cameroon reported similar findings that more female respondents than males self-medicate (Okunola, 2020). This difference in gender could be attributed to the societal setting where men spend most of their time outside home, either working or playing communal games such as dominos or ludio with friends.

Factors that prompt self-medication practice

Table 3

Association between contributing factors and self-medication practice

Factor prompted to self-medication	Self-medication practice		Fishers' exact test	p-value
	Yes	No		
It is cheap (No laboratory and consultation fee)	89 (97.8)	2 (2.2)		0.000
Health facility far from home	75(94.9)	4 (5.1)	(7, 366) = 159.950	
Availability of stock medicines at home from previous treatment	104 (98.1)	2 (1.9)		
Severity of illness	7 (100)	0 (0)		
Advertisement on Media	8 (100)	0 (0)		
Recommendation from neighbor/Friend	25 (96.2)	1 (3.8)		
None	1 (2.9)	33 (97.1)		

Parents' self-medicate children because they have leftover medication from a prior course of treatment (98.1%), followed closely by the fact that it is inexpensive (97.8%) since there were no costs associated with seeing a doctor or a laboratory technician. Fishers' exact test analysis revealed a connection between the variables that prompt medication and self-medication practice in BorTown (P-value 0.000). This study had similar findings with a study conducted in Cameroon by Katumbo et al. (2020).

However, a study done in North Iran revealed that availability and easy accessibility of medical literature and medical apps in Gorgan contribute immensely to self-medication of children under-five years (Aref & Barati, 2021), while in Nigeria, the decision to self-medicate children under five is majorly influenced by advertisements on media, as well as personal experiences based on previous treatment (Okunola, 2020). These differences can be explained by accessibility to social media platforms, knowledge gaps and varied educational levels. Recommendations from friends, ignorance and previous experience of stock medicines have misled many parents to purchase medications on their own accord to self-medicate young children, especially in rural areas. However, financial constraints force many to avoid cost associated to laboratory and consultations (Akhtar et al., 2022; Mathias & Prabhu, 2020; Molento, 2020).

The characteristics of self-medication practice

136 (37.2%) said they get their medicines from left over prescriptions, while 126 (34.4%) followed by drugs from community

pharmacy. 149 participants (40.7%) said self-medication was most often used to treat diarrhoea, followed by fever 75 (20.5%); antimalarial 134 (36.6%), and antimicrobials 106 (29.0%) were common medicines for self-medication. Using fisher's exact test and chi-square, all self-medication characteristics were associated with self-medication (p-value 0.000).

Table 4
Sources of drugs for self-medication of under five children in Bortown

Source of drugs	Frequency	Percent
Community pharmacy	126	34.4
Left over from prescription	136	37.2
Drug vendor	18	4.9
Health Facility	54	14.8
Neighbor	32	8.7
Total	366	100.0

18 participants (4.9%) mentioned drug vendors and shops as cheap alternative sources to treat common illnesses such as malaria. These drug shops and vendors have informal training and do not follow principle of rational dispensing of medicines because they venture into medical practice as business to make fortune out of parents who have inadequate knowledge about medicines (Chaudhry et al., 2022). The recommendable main sources of medicines are community pharmacy and health facility. However, this study found out that left over prescription is the main source of drugs for self-medication. This demonstrates irrational drugs use in Bortown.

Table 5
Signs and Symptoms that compel parents to self-medicate under-five children

Signs and symptoms	Frequency	Percent
Fever	75	20.5
Diarrhea	149	40.7
Cough	49	13.4

skin problem	7	1.9
Flue	4	1.1
Vomiting	45	12.3
Eye problem	3	.8
None	34	9.3
Total	366	100.0

The results on Table 5 are similar with findings in DRC where 91.1% of mothers with children under 5 years treated their children with fever using antimalarial without advice from health facilities owing to the high cost in obtaining health services from health facilities (Katumbo et al, 2020). Other studies reported that diarrhoea and malaria prompt parents to self-medicate children under-five without consultation from health care providers, hence irrational use of medicines due to high possibility of wrong diagnoses since many diseases have similar signs and symptoms (Mageto & Zablon, 2018; Wang & Muennig, 2022). This relative consistency in findings on main signs and symptoms for self-medicating children under-five years could be attributed to geographical location and tropical climate conditions shared by Bortown in South Sudan and Lubumbashi in DRC.

Table 6

Common medications use to self-medicate under-five years children in Bortown

Medication	Frequency	Percent
Antimalarial	134	36.6
Antimicrobial	106	29.0
Cough Syrup	36	9.8
Antipyretics	39	10.7
Multivitamins	7	1.9
Antiemetics	8	2.2
Anthelmintics	6	1.6
None	30	8.2
Total	366	100.0

The results table 6 are consistent with findings of previous studies done in Democratic Republic of Congo (DRC) and Kiambu County in Kenya (Katumbo et al., 2020; Mageto & Zablon, 2018) where antimalarial and antimicrobial are leading drugs for self-medication. Using antimalarial and antimicrobial for self-medication is a point of concern because they are prescription only medicines (POM), and thus, their irrational use could result to resistance, toxicity, waste of limited resources due to wrong medication on wrong diagnoses, such as treating flu with antimalarial and decongestants.

The parents' perceptions on self-medication for their children

Respondents rated their agreement to statements relating to perceptions towards self-medication for children under-five years on a 5-point Likert scale as shown on Table 5.

Table 7

Perception of the parents on self-medication practice for under five children

Statement	1	2	3	4	5	M	STD
I belief in quick recovery with self-medication than from health professionals in health facility	4%	13%	35%	43%	5%	2.6749	4.959
Illness is caused by spiritual being hence, even if self-medication no harm	0%	16%	40%	40%	4%	2.678	4.6102
Self-medication is harmless to under 5 years children	4%	26%	37%	34%	0%	2.9972	6.8631
Self-medication is acceptable with illness with the same signs and symptoms of previous illness	5%	29%	34%	30%	2%	3.0575	7.6164
TOTAL						3.0	1.2622

Key: 1 -Strongly disagree; 2- Disagree; 3- Medium; 4-Agree; 5-Strongly Agree

The findings in table 7 show that respondents agreed to the most of the statements. The study established that the perception of parents has association with self-medication (χ^2 (15, 366), 43. 248; P-value-0.000). The findings were inconsistency with studies conducted on self-medication and perceptions where adults are more vulnerable

to the practice of self-medication due to their knowledge of drugs, easy access to internet, wider media coverage on related health issues, ready access to drugs, level of education, and their social status (Awosan et al., 2018; Katumbo et al., 2020).

4.0 Conclusion

The prevalence of self-medication is in Bor Town, Jonglei State, South Sudan is high. There is therefore irrational use of medicines, and myths on self-medication exists. Consequently, there is essential public health problem in Bortown. Therefore, the study calls for a public health awareness campaigns for parents and health care providers, which should enlighten them on risks associated with parents self-diagnosing their children below the age of five.

5.0 Recommendations

The study recommends Jonglei State ministry of health to work with private sector to harmonise laboratory and consultation fees to increase affordability and accessibility of health services. Further, Jonglei Ministry of Health should collaborate with humanitarian agencies to create comprehensive public health awareness and strengthen health education and promotion on rational medicine–use, as well as risks associated with self-medication practices in children under-five years. Finally, a study on the extent and trend of irrational use of medicines in relation to self-medication in Bor Town is recommended.

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