INDIVIDUAL FACTORS CONTRIBUTING TO HOUSEHOLD STORAGE OF MEDICINES AMONG RESIDENTS OF KAPEKE VILLAGE IN KIBOGA DISTRICT. A CROSS-SECTIONAL STUDY.

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Abstract
Background
Medicine refers to the practice concerned with maintaining health and preventing, alleviating, or curing disease. The study aims to assess the individual factors contributing to household medicine storage among residents of Kapeke village in Kiboga district.

Methodology
The study used a cross-sectional study design with a simple random technique as a sampling technique on a sample of 50 respondents. Data was collected using questionnaires with semi-structured and open-ended questions written in English; data was later analyzed manually and systematically by compiling it in the form of percentages, bar graphs, tables, and pie charts.

Results
More than half of the respondents (58%) were females by sex, whereas the minority (42%) were males by sex. The majority of the respondents (86%) reported that they keep the medicines after feeling better, (40%) pain killers were the common medicines stored at home, (50%) reported improved disease or symptom as the reason as to why they had unused medicines at home, (48%) reported family member's safety as the main purpose of discarding unused medicines and common conditions that influenced participants to store unused medicines was malaria (38%).

Conclusion
The outstanding individual factors contributing to household storage of medicines were improved illness or symptoms.

Recommendations
MoH and NDA should review the medication utilization chain and offer community-based training on proper medication storage and disposal techniques, including intensively focusing on take-back programs to nearby health facilities and secure disposal of medical waste to reduce the hazard of toxicity and incidental exposure to the medication.

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Background
Medicine refers to the practice concerned with the maintenance of health and the prevention, alleviation, or cure of disease. Global use of medicines grew by 4% over the past five years, and a further increase is expected through 2028, bringing annual use to 3.8 trillion defined daily doses by global estimates. Nevertheless, based on age groups in 2020, about 5.5% of those between 15 and 64 years had used drugs at least once in the past year, while 36.3 million people, or 13% of the total number of people who used drugs, suffered from drug disorders due to unnecessary stockings in households (IQVIA, 2024). The high disease burden in sub-Saharan Africa means that fostering sustainable medicine use is essential to health security in the region. To achieve this, understanding the current situation of sustainable medicines use in this region is essential. Consequently, the region suffers a high burden of disease and weak health systems and lags behind other global regions in life expectancy (average of 64.5 years vs global average of 73.3. This means that

many sick patients do not have access to locally produced drugs and may not be able to afford to buy imported ones. That's why they resort to self-medication and re-use of the already stocked medicines in their households, which results in a variety of adverse consequences (WHO, 2023). In southwest Ethiopia, a study conducted in line with the prevalence and determinants of household medication storage during the COVID-19 outbreak showed that the magnitude of household medication storage was 48%, Analgesics (28.7%) and antibacterial (21.1%) agents were the most predominant class of drugs stored in the households. The most significant proportion of the home–stored medications (34.7%) was reserved for future use, and 31.8% were for treating current medical conditions (Semere *et al.,* 2023).

In the Parkland sub-county in Nairobi-Kenya, an investigation of household storage of medicine and disposal practice showed that out of the 164 households randomly selected, 148 (9%) had kept medicine in their houses, and among them, 77 (48%) households had kept

those medicines because their symptoms improved over time and they felt better (Noah, 2024). A prevalent parental practice towards drug storage and disposal study revealed that a total of 306 parents (86.7%) stored medications at their house. The most frequently stored medications included analgesics (92.5%), antihistamine medications (62.1%), vitamin and iron supplements (51.6%), and other chronic health disease medications (Al Ghadeer *et al.,* 2024). Studies on prevalence and predictors of Storage of Unused Medicines among Households in Northwestern Ethiopia revealed that Anti-infective medicines were found to be the most common unused medicines, 53 (58.9%), followed by anti-pain medicines, 16 (17.8%) (Dawit *et al.,* 2020). From the economic burden of unused medicines and its causes in households of Perinthalmanna region, 70.4% had a drug count less than 50, 15.6% had 51100 drugs, 7% had 101-150 drugs, 7% of the households had unused drug count of more than 150. 47% of households had 1-20 unused antibiotics. KMSCL antibiotics end up unused most of the time (Panel *et al.,* 2020). In Saudi Arabia, the prevalence of unused or expired medicine in the community was 89.3%. The majority (80.9%) of respondents said that they used miscellaneous drugs (which include inhalers, sprays, asthmatic drugs, and cosmetics) (Syed *et al.,* 2020). The study aims to assess the Individual factors contributing to household storage of medicines among residents of Kapeke village in Kiboga district.

METHODOLOGY
Study design
A descriptive cross-sectional study design was used to collect quantitative data. This is simply because it is suitable for the collection of data at one point in time in a dynamic population.

Study area
The study was conducted in Kapeke village in Kiboga district. Kapeke is a village in Kasenge Parish in Kiboga, central Uganda, and has an elevation of 1,113 meters. Kapeke is situated near the villages of Sseesa and Kyayimba, as well as the localities of Kalyamwanyi and Kayera. Kiboga is situated 7 km southwest of Kapeke. It has an estimated population of 9500 males and 8500 (52.8%) females (47.2%)

Study population
The study was composed of individuals aged 18-45 years in Kapeke village in Kiboga District.

Sample size estimation
The sample was estimated using S=QR/T (Burton, 1965)
Where;
S=Sample size required
Q= Total number of days spent in data collection
R= Maximum number of people per day
T= Maximum time the interviewer spent on each participant
Q=5 days

R= 10 people
T=1hr
S= 5*10/1
=50

Sampling technique
A simple random sampling technique was used to select respondents. This technique was preferred because it is cheap and convenient since each study participant had an equal and fair chance of being selected to participate.

Selection criteria
Inclusion criteria
The inclusion criteria were comprised of individuals aged 18-45 years with sound minds who admitted to having kept drugs in their homes in Kapeke village and voluntarily willing to participate in the study.

Exclusion criteria
Those adults in the sample who were unable to participate or continue with the study were excluded.

Study variables
Dependent variable
Household storage of medicine

Independent variables
Individual, community, and health facility-related factors contribute to household medicines storage use.

Data collection methods
Data was collected using semi-structured questionnaires with open and closed-ended questions and also interviews with those respondents who were not able to read and write.

Data collection tool
Data for the quantitative part of the study was collected using a semi-structured questionnaire with both open and closed questions written in English language and later translated into the local language (Luganda)This data collection tool was preferred because it's cheap, takes little time; it's easy to administer, eliminates bias and provides quicker information.

Data collection procedure
The researcher presented a letter of introduction from the school to the Chairman LC I, who helped to introduce the researcher to the residents of Kapeke as our respondents. Upon reaching the respondents, the researcher, with her assistants with the guidance of community health workers, introduced themselves to seek the respondent's consent, preferably at their home place or workplace. Following the provision of the questionnaires, participants were provided with verbal explanations on how to answer the questions on each objective. Those who were not able to read and write were interviewed by the researcher or an

assistant while noting down the questionnaire. The questionnaires were collected after completion for management and analysis.

Quality control

The data collection tools were discussed with the research supervisor to ensure accuracy and appropriateness.

The relevance, reliability, and suitability of the research tool were assured through pre-testing of the questionnaire among 15% of the sample respondents in Ssemunyanya village, Wakiso district there, after the questionnaires were edited to fill in all the missing information and ambiguous questions were removed.

Two research assistants were trained in the data collection process to avoid many errors, and ample time was given to collect data.

Data analysis and presentation

Data was analyzed manually by use of tally sheets and entered in the Excel computer program to generate tables, graphs, and pie charts using computer Microsoft Excel program word with a narrative following.

Data management

After checking for completeness and accuracy, a filled questionnaire was kept under lock and key, and those with mistakes were corrected before respondents could leave the session and thereafter were kept for privacy and confidentiality.

Informed consent

The researcher commenced by introducing and explaining the topic and objectives to the participants. The respondents were informed that participation was voluntary, and an informed consent form was signed. The researcher affirmed to the respondents that the information given was strictly confidential, and serial numbers instead of respondents' names were provided.

Results

Table 1: Shows the distribution of respondents according to demographic data (N=50)

Response	Frequency (f)	Percentage (%)
Gender		
Female	29	58
Male	21	42
Total	**50**	**100**
Age (years)		
18-24	05	10
25-31	11	22
32-38	22	44
39-45	12	24
Total	**50**	**100**
Religion		
Protestant	09	18
Catholic	25	50
Muslim	03	6
Others	13	26
Total	**50**	**100**
Education levels		
Never went to school	03	6
Primary	8	16
Secondary	28	56
Tertiary/ university	11	22
Total	**50**	**100**
Occupation		
Employed	12	24
Un employed	11	22
Self-employed	27	54
Total	**50**	**100**
Marital status		

Single	06	12
Married	39	78
Divorced/separated	03	6
Widowed	02	4
Total	**50**	**100**
Tribe		
Mutoro	07	14
Munyankole	08	16
Muganda	20	40
Others	15	30
Total	**50**	**100**

Table 1, more than half of the respondents (58%) were females by sex, whereas the minority (42%) were males by sex. The study results also revealed that most of the respondents (44%) were within the age bracket of 32--38 years, whereas the least (10%) were within the age bracket of 18-24 years. The study further revealed that half of the respondents (50%) were Catholics by religion, whereas the least (6%) were Muslim by religion. Study results about education levels showed that more than half of the respondents (56%) had attained a secondary level of education, whereas the least (6%) had never gone to school. The study concealed that half of the respondents (54%) were self-employed, whereas the least (22%) were unemployed. Study results showed that the majority of the respondents (78%) were married, whereas the minority (2%) were widows. Based on study results, most of the respondents (40%) were Baganda by tribe, whereas the least (14%) were Batoro by tribe.

INDIVIDUAL FACTORS CONTRIBUTING TO HOUSEHOLD STORAGE OF MEDICINE

Figure 1 shows the distribution of respondents according to what they do after taking medication or feeling better (N=50).
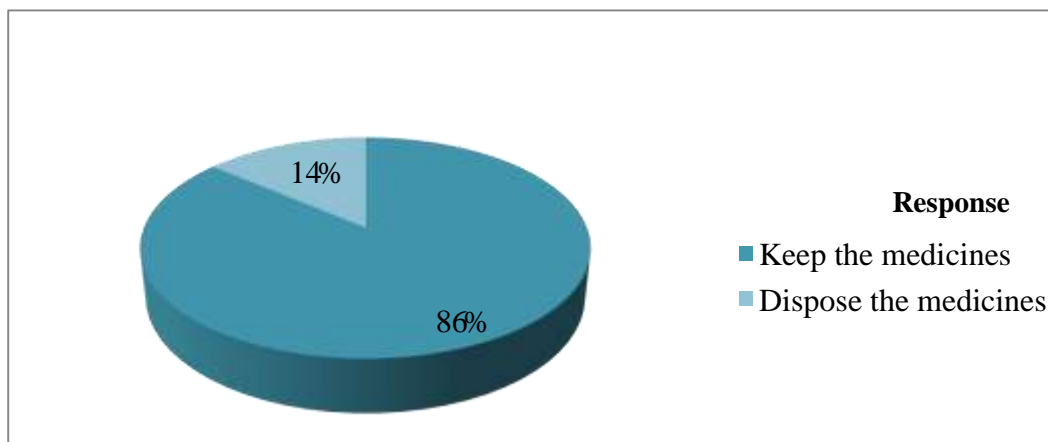

Figure 1 The majority of the respondents (86%) reported that they kept the medicines after feeling better, whereas the minority (14%) reported that they disposed of the medicines.

Table 2 shows the distribution of respondents according to the common medicines they store at home (N=50)

Response	Frequency (f)	Percentage (%)
Ant- malaria	15	30
Antibiotics	03	6
Anti-diabetics	07	14
Pain killers	20	40
Others	05	10
Total	**50**	**100**

Table 2, most of the respondents (40%) reported painkillers as the common medicines they store at home, whereas the least (6%) store antibiotics at home.

Table 3 shows the distribution of respondents according to the reasons for the presence of unused medicines in their homes (N=50)

Response	Frequency (f)	Percentage (%)
Improved disease or symptoms	25	50
For future use	13	26
Excess quality supplied	10	20
Others	02	04
Total	**50**	**100**

Table 3, half of the respondents (50%) reported improved disease or symptom as the reason as to why they had unused medicines at home, whereas the least (4%) reported other reasons, such as they didn't have money to buy medicines if they fall sick again and some didn't know how to dispose of the medicines.

Table 4 shows the distribution of respondents according to their views about the main purpose of discarding unused medicines (N=50)

Response	Frequency (f)	Percentage (%)
Environmental protection	01	2
Family member's safety	24	48
For children's safety	12	24
I don't know	08	16
Others	05	10
Total	**50**	**100**

Table 4, almost half of the respondents (48%) reported family member's safety as the main purpose of discarding unused medicines, whereas the least (2%) didn't know the main purpose of discarding unused medicines.

Figure 2 shows the distribution of respondents according to the status of medicines they stored at home (N=50)
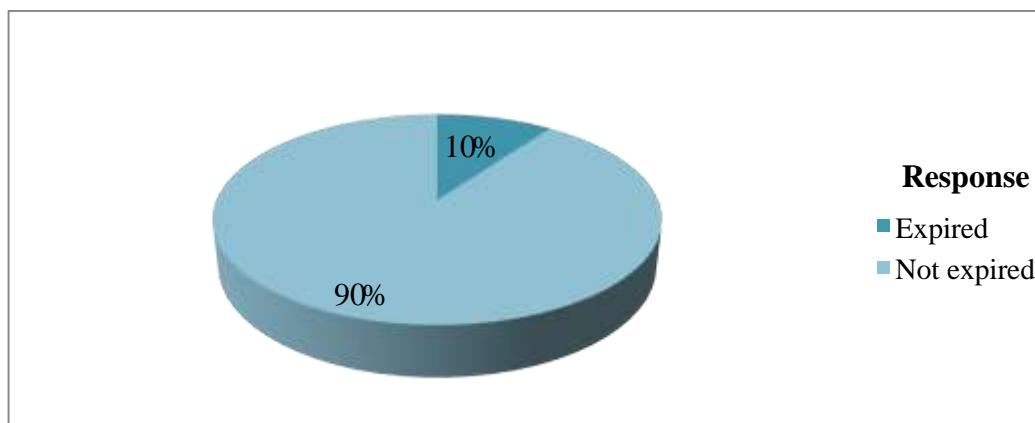

Figure 2, almost all respondents (90%) the medicines they had stored at home were not expired, whereas the least (10%) the medicines were not expired.

Figure 3 shows the distribution of respondents according to the common conditions that influence them to store medicine at home (N=50)
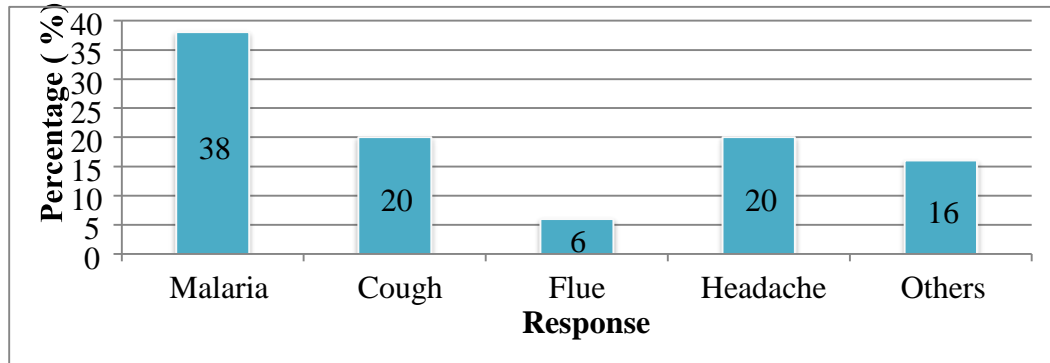
Figure 3, most of the respondents (38%) reported malaria as the condition that influenced them to store medicines at home, whereas the least (6%) reported flue.

Discussion
Individual factors contributing to household storage of medicines
The study discovered that the majority of the respondents (86%) reported that they kept the medicines after feeling better. Such a high response rate reveals that participants had reasons as to why they kept the medicines, which the study ascertained. The study also revealed that most of the respondents (40%) reported painkillers as the common medicines they store at home. This could be attributed to the fact that participants used to self-medicate themselves with conditions that are managed by painkillers. The study results differ from Al Ghadeer *et al.* (2024), where analgesics (92.5%) were the common medicines stored at home.

However, half of the respondents (50%) reported improved disease or symptom as the reason why they had unused medicines at home. This reveals that study participants were not completing the recommended dosages of medicines. The study results showed that almost half of the respondents (48%) reported family member's safety as the main purpose of discarding unused medicines. This implies that even though they were keeping the medicines, most of the respondents had some knowledge of the purpose of discarding the medicine, even though they were very reluctant to discard the medicines. In regards to common conditions that influenced participants to store medicines, most of the respondents (38%) reported malaria. This could be attributed to the fact that malaria prevalence was high in the area since most of the participants were unemployed. Therefore, they were unable to meet the costs of medication. The study results were not in line with Panel *et al.* (2020), where 49.7% of the population was suffering from one or more than one form of chronic diseases that demand chronic medicine use, such as diabetes, hypertension, osteoarthritis, and thyroid disorders stored medicines at home.

Conclusion
The outstanding individual factors contributing to household storage of medicines were improved illness or symptoms.

Recommendations
MoH and NDA should review the medication utilization chain and offer community-based training on proper medication storage and disposal techniques, including intensively focusing on take-back programs to nearby health facilities and secure disposal of medical waste to reduce the hazard of toxicity and incidental exposure to the medication.

There should be an increase in households understanding and behavior about the use, storage, and disposal of unused and expired medications. Community members should be educated and trained by community health care providers on appropriate usage, storage, and disposal practices of expired or unused medications.

List of abbreviations
IQVIA: Institute for Human Data Science
LC: Local Council
MoH: Ministry of Health

NDA: National Drug Authority
WHO: World Health Organization

Source of funding

Conflict of interest

The author did not declare any conflict of interest

Author contributions

Faith Batamuliza collected data and drafted the manuscript of the study.

Dr. Mulodokayi Niwagiira supervised all stages of the study.

Ethical considerations

The researcher obtained an introductory letter from the school approved by the principal, which in turn was used to get permission from the LC1 chairperson of Kapeke village, who later introduced the researcher to the residents. A written consent was obtained from the respondents for their approval to be part of the study. Participants were assured of confidentiality and anonymity.

Data availability

Permission to re-use published work can be sought from the Kampala School of Health Sciences.

Author Biography

Faith Batamuliza is a student of a diploma in pharmacy at Kampala School of Health Sciences.

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