

Group D1

Expired medications and disposal practices in Arab households

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Research paper

By Al Ain University, UAE, 2022

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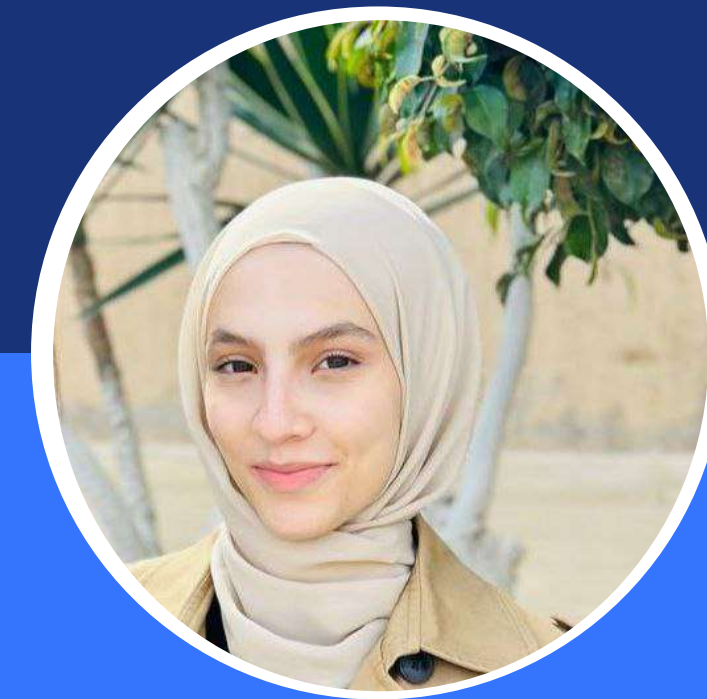
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Aims

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Introduction



The global spending on pharmaceutical products is increasing, with 42% going to diabetes, cancer, and lung diseases. However, expired and unused medications accumulate in households, leading to public health issues such as adverse patient outcomes, environmental safety, and rising costs. Improper disposal of medications can also lead to water and air contamination, adverse effects on aquatic species, and antibiotic resistance.



Introduction



Countries like the US, UK, and Australia have mandated policies for proper waste management and disposal. However, in Arab countries, guidelines for pharmaceutical waste management exist only for hospitals and pharmacies. The study followed the STROBE Statement for reporting observational cross-sectional studies and was conducted through a descriptive survey-based approach. Data was collected through face-to-face interviews and social media platforms. The sample size was determined to be 503.

(Aitken, 2017; Hayes et al., 1989; Kang & Lee, 2009)



AIM

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Our goal was to examine the prevalence of expired medications in Arab households located in the United Arab Emirates (UAE). We aimed to identify which therapeutic groups had higher quantities of unused medications, assess the disposal practices of drugs, and promote safe medication waste management and safe disposal practices among the population.



Methods



The study design and methodology were carefully planned and executed to ensure ethical conduct, rigorous methodology, and comprehensive data collection.

- 1. Ethical Considerations:** Participants gave written consent, and the study was approved by the research ethics committee at Al Ain University.
- 2. Study Protocol:** The study used the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) Statement to report observational cross-sectional studies comprehensively.
- 3. Study Design:** A cross-sectional survey was conducted using interviews and social media for data collection.



Methods



- 4. Method of Data Collection:** Data was collected via a self-designed questionnaire administered through social media and face-to-face interviews conducted by research associates in various locations to ensure participant anonymity and confidentiality.
- 5. Inclusion and Exclusion Criteria:** Arab individuals over 18 years of age, residing in the UAE, were eligible to participate. Individuals with mental health issues, non-Arabs, and those who did not consent were excluded.

Methods



- 6. Questionnaire Design:** The questionnaire had two sections: demographic info and expired medication disposal.
- 7. Validation of Questionnaire:** The questionnaire was modified and validated through testing and expert review, with Cronbach's alpha assessing consistency.
- 8. Statistical Analysis:** Data were analyzed using SPSS software.



Results



- Characteristics of participants
- Expired medications in participants' households
- Disposal of expired medications by participants

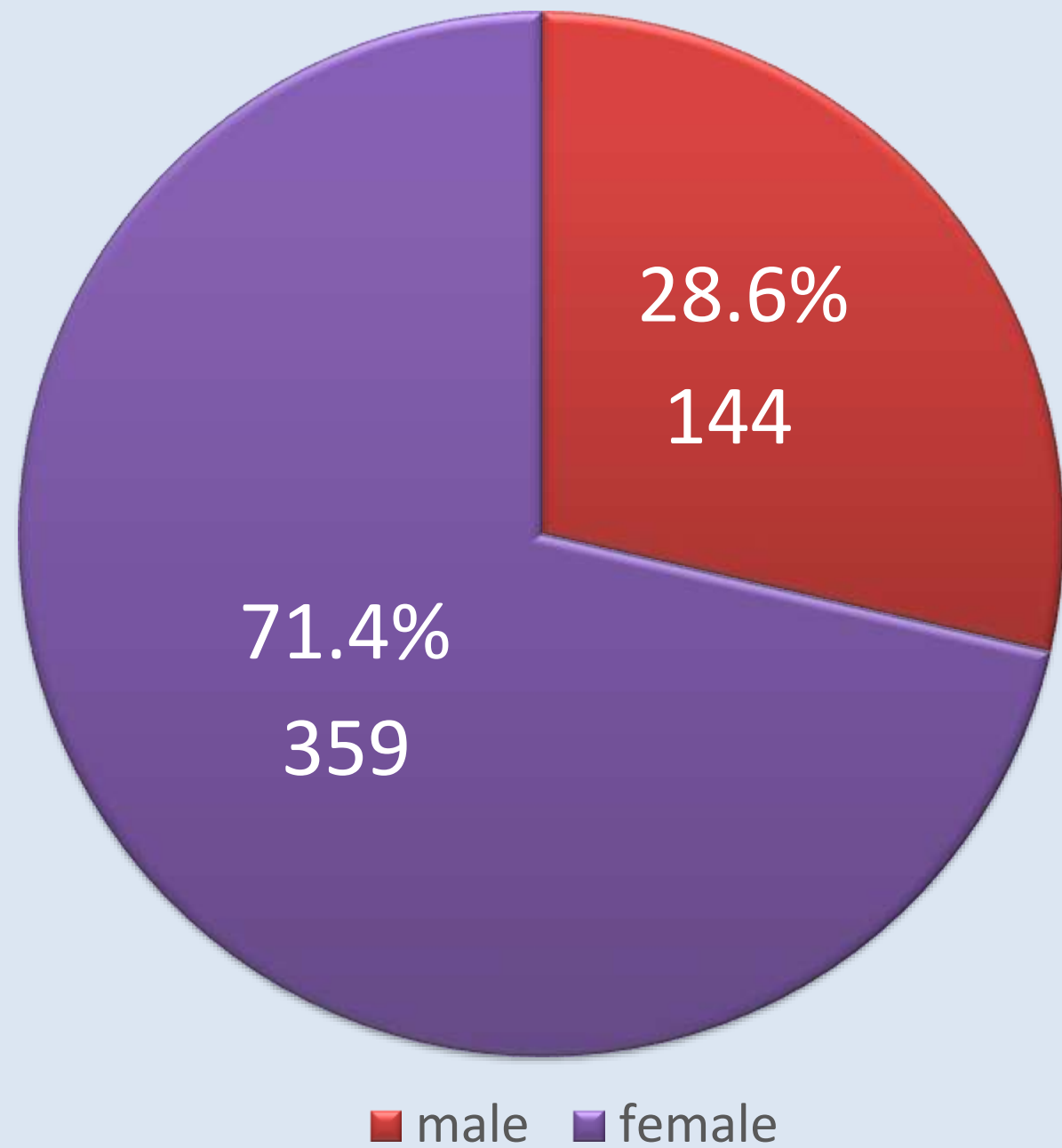
503 individuals participated in this study
405 completed the self-administered survey
98 via face-to-face data collection





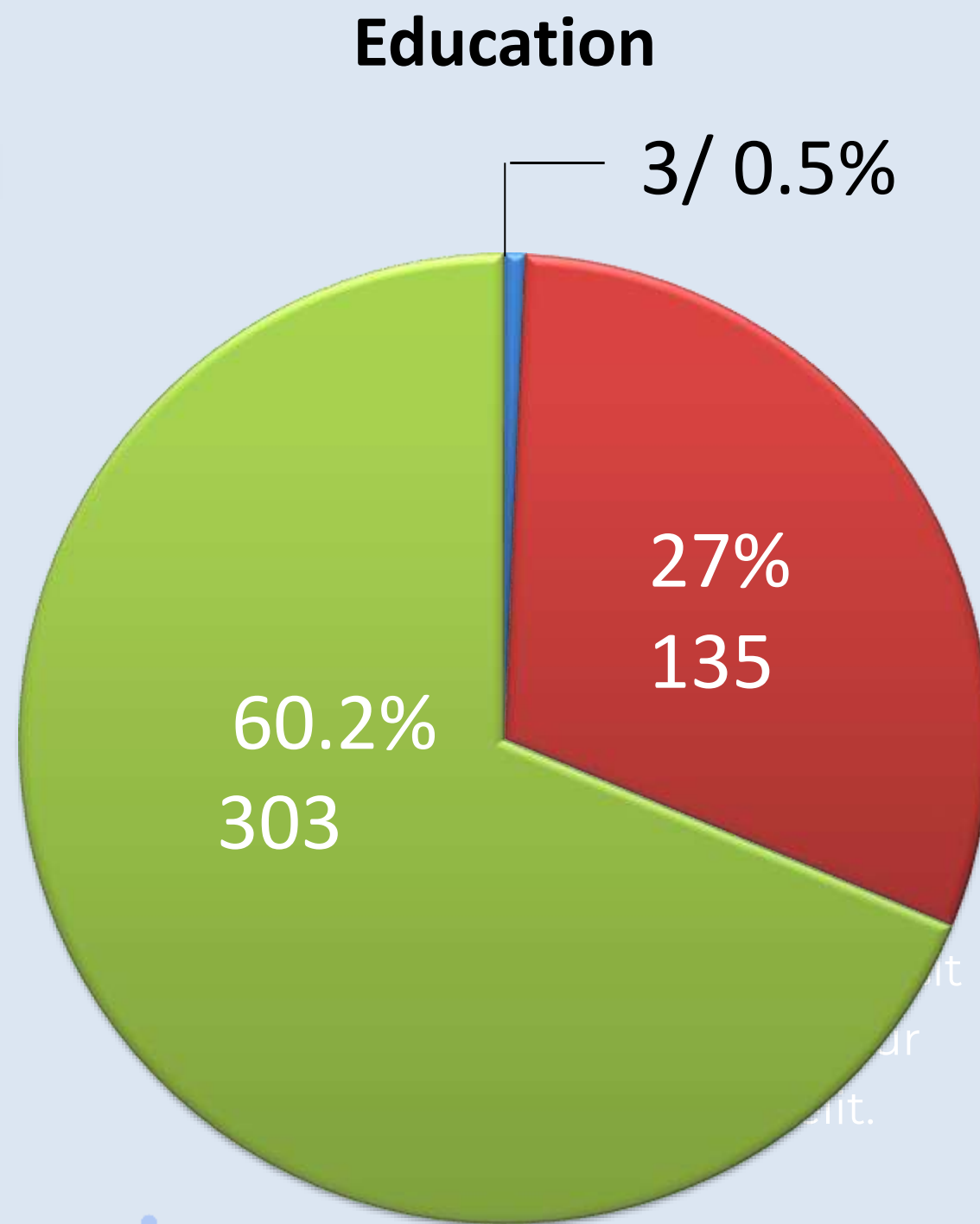
Characteristics of participants





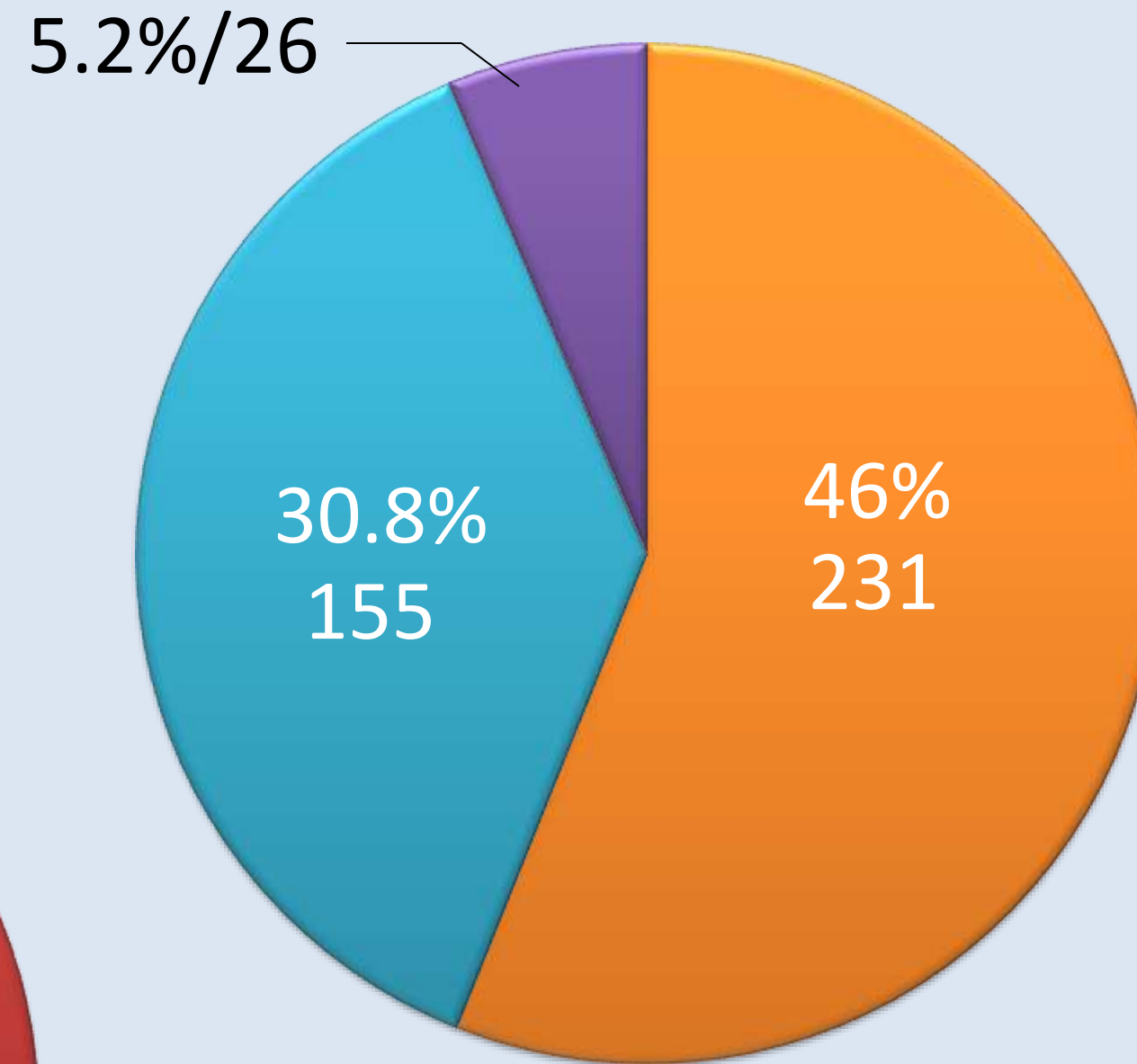
■ male ■ female

Gender



■ illiterate ■ school ■ bachelor

Education



■ employee ■ student ■ retiree

Occupation

Family size

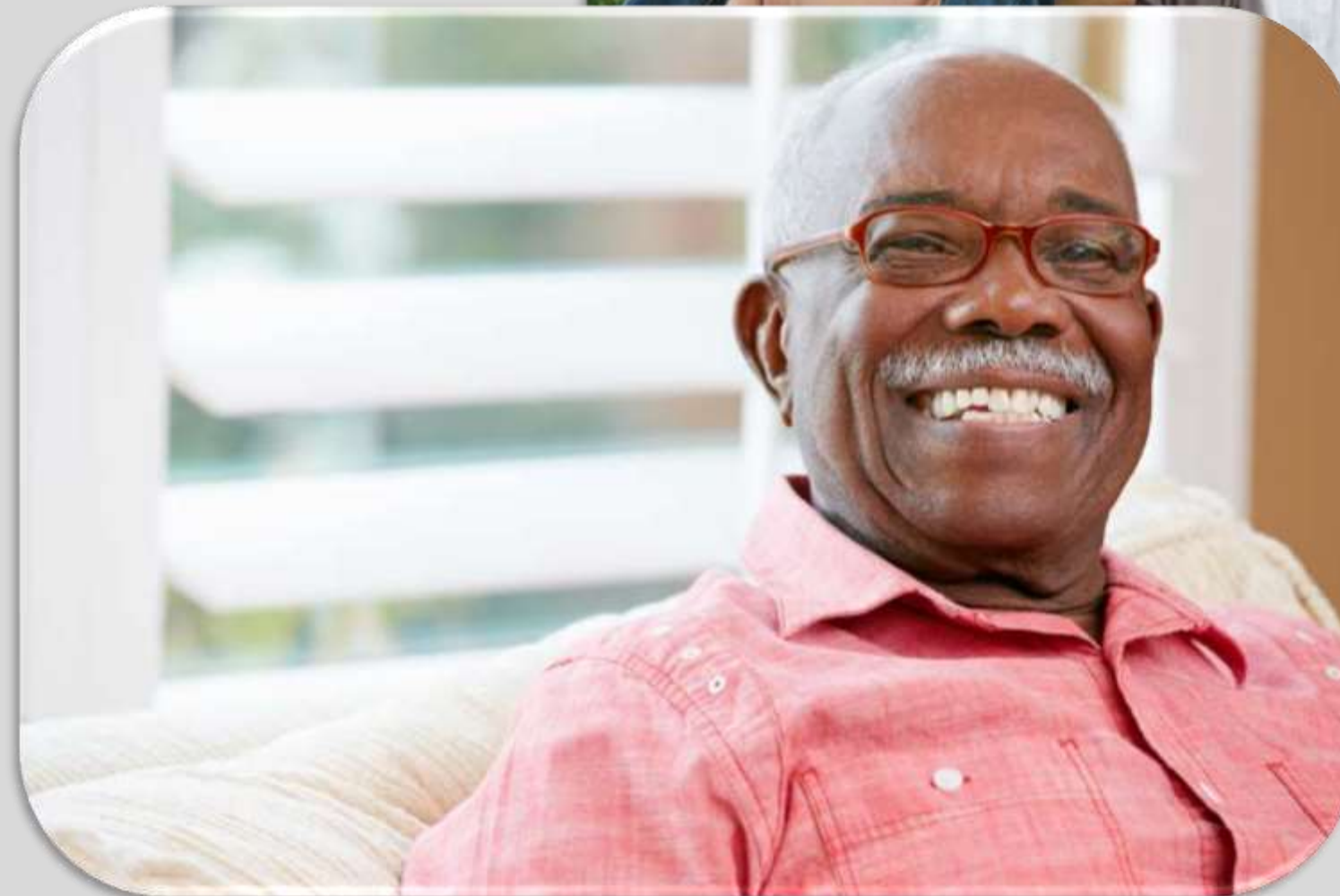
>5 → 269 (53.5%)

Children

<12 → 241 (48%)

Elderly

>65 → 128 (25.4%)

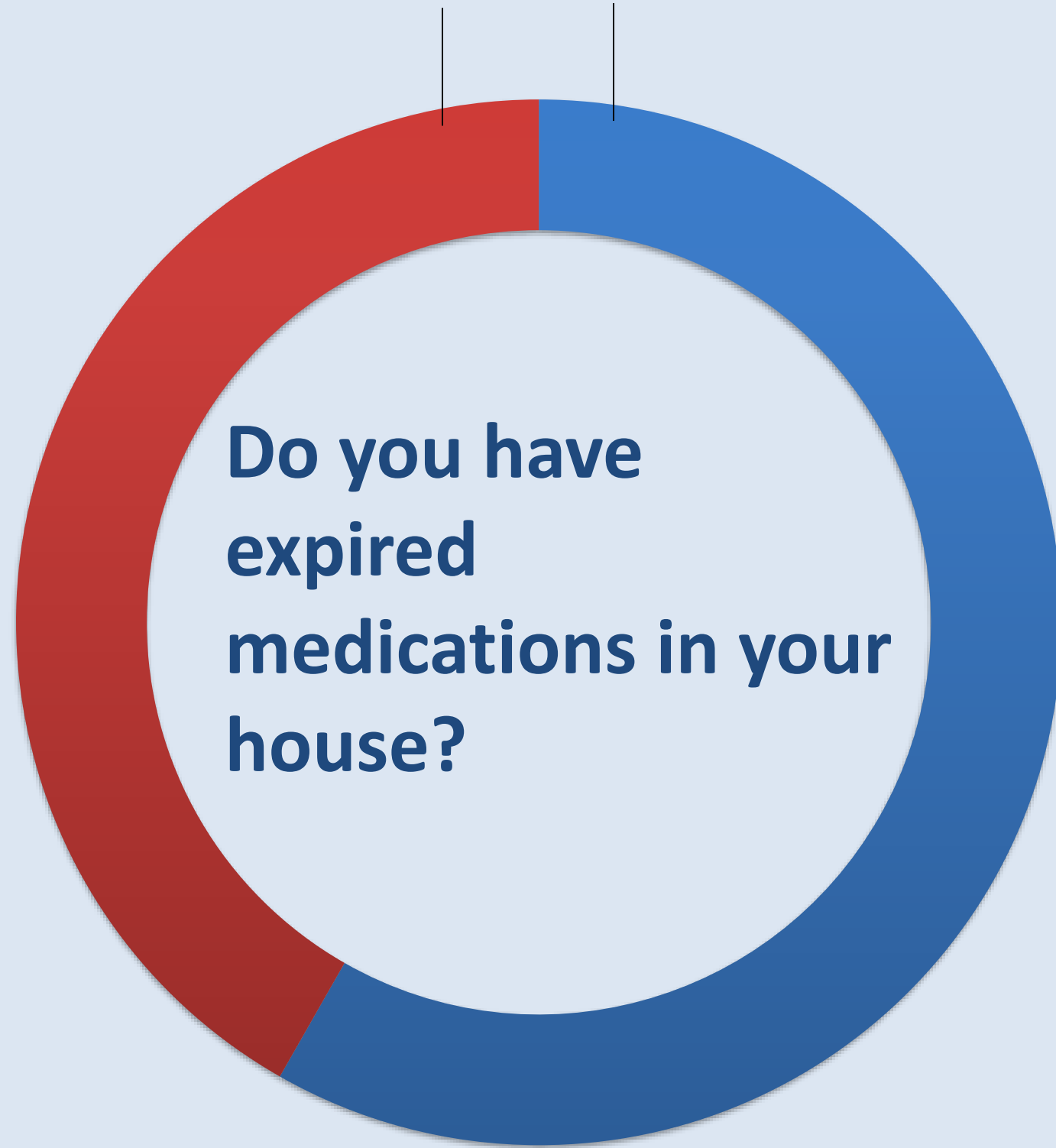




Expired medications in participants' households

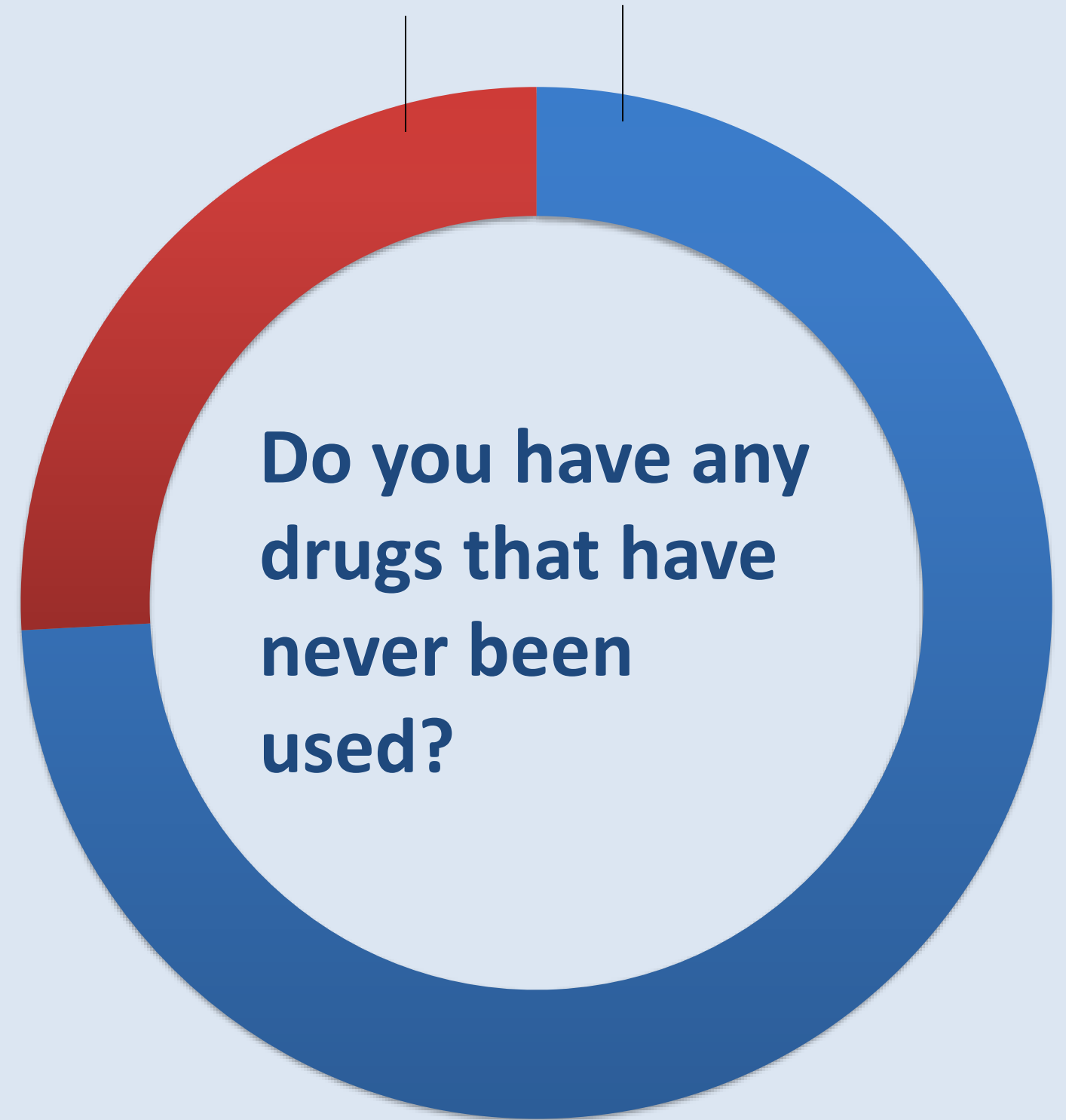


210
42% 293
58%



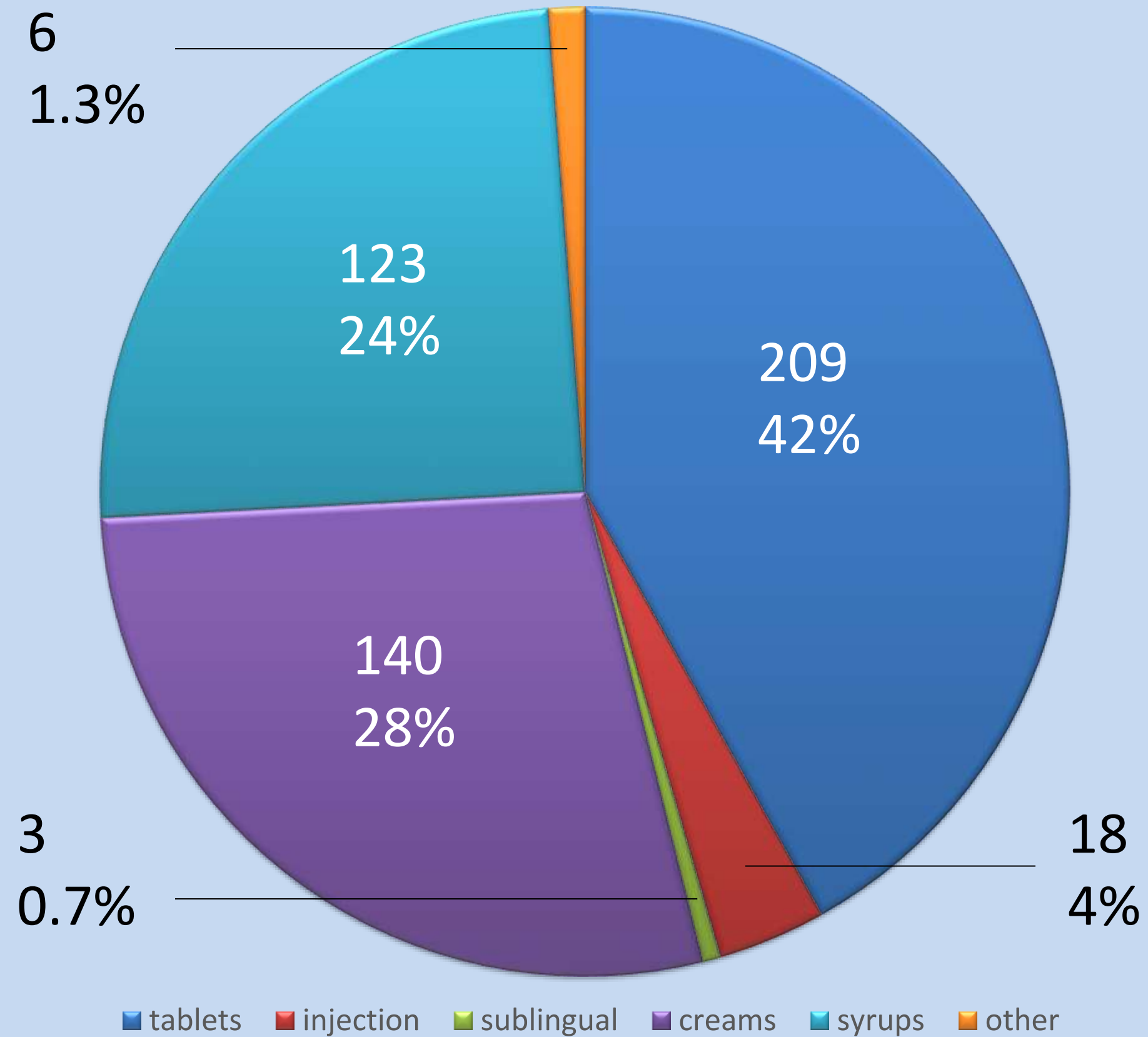
■ yes ■ no

130
26% 373
74%



■ yes ■ no

What form of expired medicine do you have?



Disposal of expired medications by participants

Do you think disposing the expired medicines into the garbage has bad effects on the environment?

Yes	159 (32%)
No	71 (14%)
Maybe	273 (54%)

How do you dispose of expired drugs?

Garbage	432 (86%)
Flushing	25 (5%)
Return to pharmacy	20 (40%)

In your opinion, who is responsible for the awareness of proper disposal of unused or expired medications?

Pharmacist	180 (36%)
Pharmaceutical industries	159 (32%)
Every person is responsible for his own awareness	146 (29%)

Discussion



1. Prevalence of Unused and Expired Medications:

The study reveals that a significant proportion of UAE households have expired or unused medications. Analgesics, antibiotics, and cosmetics are among the most commonly reported expired medicines. This accumulation of medications in homes can pose risks both in terms of potential misuse and environmental impact.

2. Dosage Forms and Disposal Methods:

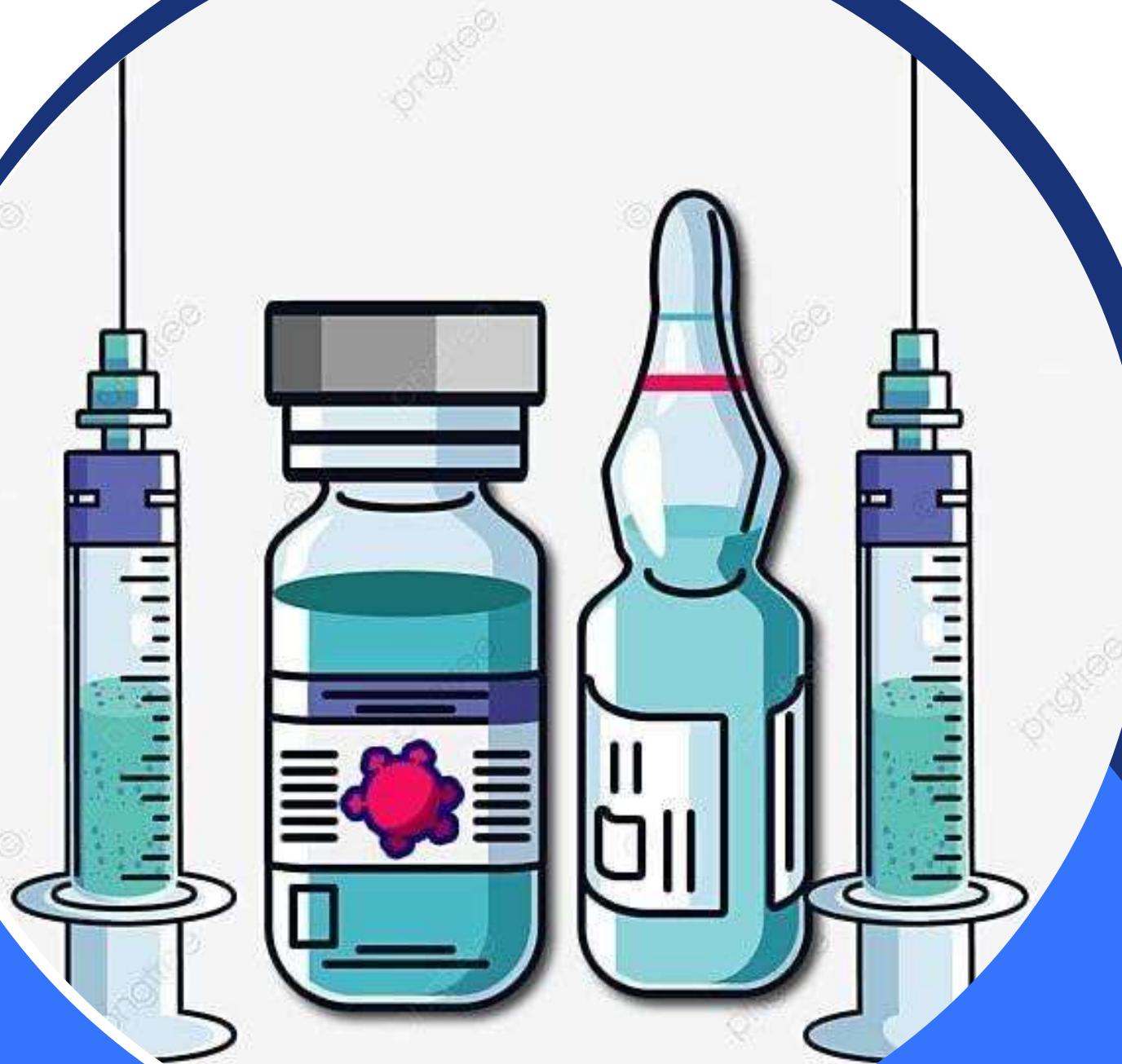
The majority of expired medications are in solid dosage forms, followed by semi-solid and liquid forms. Despite various disposal options available, such as return to pharmacies or designated collection boxes, the predominant method of disposal reported by participants is throwing medications into the garbage. This indicates a lack of awareness or accessibility to proper disposal methods.



3. Reasons for Accumulation:

Several factors contribute to the accumulation of medications in households, including buying extra medications, patients recovering before finishing their prescribed course, non-adherence to prescribed schedules, and forgetfulness.

4. Trends in Self-Medication: The study notes a global increase in self-medication, particularly with over-the-counter (OTC) products like analgesics. This trend is reflected in the UAE, where analgesics are commonly purchased OTC medications, potentially due to factors such as high healthcare costs and limited insurance coverage.



Discussion



5. Concerns with Antibiotic Use:

The study highlights concerns regarding the storage and use of antibiotics. Storing antibiotics without completing the prescribed course can contribute to antibiotic resistance and therapeutic ineffectiveness, posing risks to public health.

6. Global Trends in Medication Disposal:

The disposal of unused or expired medications in the garbage is not unique to the UAE but reflects a global lack of awareness regarding proper disposal methods. Various guidelines and recommendations exist for safe disposal, including medication take-back programs and the use of tamper-resistant disposal boxes in pharmacies



Discussion



Need for Education and Policy Development:

The low adherence to proper disposal methods underscores the importance of educational campaigns and policy initiatives to raise public awareness and improve medication disposal practices. Secure medication collection boxes in pharmacies and the implementation of medicine take-back programs could facilitate safe disposal and mitigate environmental and public health risks associated with medication waste. Similarly, FDA recommends that unwanted medications should be crushed or dissolved partially with water and mixed with an unpalatable substance to reduce the risk of being consumed by children or pets.

(Abahussain et al., 2012; Bashaar et al., 2017; Bekker et al., 2018; Gracia-Vásquez et al., 2015; Khan et al., 2017; Maciej Serda et al., 2013; Paut Kusturica et al., 2016a, 2016b; Rosenman et al., 2011; Tong et al., 2011; UAE Slashes Prices of 205 Drugs, n.d.; Zaghoul et al., 2013)



Conclusion

1-Study assessed expired and unused medications and disposal practices in Arab households in UAE.

2-High prevalence of expired and unused medications found.

3-Analgesics, antibiotics, and cosmetics were the most common expired medications.

4-Many households unaware of proper drug disposal procedures.

5-Disposing expired medications in garbage was the most common method.

6-Clear guidelines and medication take-back programs are needed for proper disposal.

7-Pharmacists should encourage return of unused medications and educate on proper disposal.

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Thank You.

For Your Attention

