

# Knowledge and Practices Regarding Expired Medications Among Saudi Citizens

HSD67

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## INTRODUCTION

The mismanagement of expired medications poses a significant challenge to public health and the environment globally. Low public knowledge, attitudes, and practices (KAP) regarding their safe storage and disposal often lead to unnecessary pharmaceutical waste and potential health risks. This study assessed the KAP of Saudi citizens concerning expired medications and identified demographic factors influencing these behaviors.

## OBJECTIVE

This study aims to fill this critical research gap by assessing the KAP of Saudi citizens regarding expired medications, identifying individual factors contributing to drug retention and improper disposal, and exploring perceptions about associated health and economic consequences. The findings will provide essential data to inform regulatory strategies for pharmaceutical waste management, optimize drug use, and ultimately mitigate potential harms from expired medications in Saudi Arabia.

## METHOD

- A cross-sectional, self-administered online survey was conducted using a convenience sample across all Saudi regions from January to August 2023.
- A structured questionnaire was developed based on a review of the literature and existing KAP studies regarding medication use and disposal. The survey was divided into four sections: Demographics, Knowledge and Perception, Attitude and Practices
- Statistical analysis, including chi-square tests and logistic regression, was performed to determine predictors of safe medication handling and disposal.

## RESULTS

Of the 602 distributed surveys, 524 valid responses were analyzed. The majority of participants were female (69%) and highly educated, with 64% holding a bachelor's degree. While a large percentage of respondents reported checking expiration dates before use (64%), concerning, 14% admitted to using expired medications, and 59% were unsure of their own practice. Key barriers to checking dates included forgetfulness (14%) and disinterest (10%). Education level was significantly associated with safe disposal practices ( $p < 0.05$ ).

Table 1. Demographic characteristics

characteristics	N (total =524)	(%)
Gender		
Female	364	69%
Male	160	31%
Marital status		
Single	214	41%
Married	284	54%
Divorced	18	3%
Widower \ Widow	8	2%
Region of Residence		
Central Region	351	67%
Eastern Region	74	14%
Western Region	75	14%
Southern Region	9	2%
Northern Region	15	3%
Number of household members		
Less than two	16	3%
Two – Four	122	23%
Five – Seven	284	54%
More than eight	102	20%
Monthly Income		
Less than 5000 SR	88	17%
5000-10,000 SR	123	23%
10,000-20,000 SR	160	31%
20,000-30,000 SR	76	14%
More than 30,000 SR	77	15%
Health Insurance		
Yes	216	41%
No	308	59%
Occupation		
Student	140	27%
Public sector employee	153	29%
Private sector employee	80	15%
Unemployed	30	6%
Retiree	64	12%
Housewife	57	11%
Family members Health Professional		
Yes	211	40%
No	313	60%

Table 2: Medication Disposal Practices

What do you do with unused/expired medications		
Continue using it	35	5%
Throw it in household trash	388	59%
Donate it to hospitals	35	5%
Give it to friends and relatives	27	4%
Return it to the pharmacy	11	2%
Keep it at home until it expires	135	21%
Flush it in the toilet	24	4%
Do you read the inner leaflet or the medication label to know the correct storage method		
Yes	335	64%
No	189	36%
Expiration of medications means		
Loss of shelf life	46	9%
Become toxic	41	8%
Loss of potency	80	15%
Become ineffective	55	10%
All the above	302	58%
Do you visit more than 1 physician for the same disease in a short time		
Yes	79	15%
No	445	85%
How often did you visit a doctor last year		
Two to three times a year	259	49%
Four to six times a year	139	27%
Other	126	24%
How many medications are kept at home		
One - Four	185	35%
Five - Eight	147	28%
More than 8	167	32%
I don't store medications in my house	25	5%
What are the causes of noncompliance with medication instructions		
Not taking medications as prescribed by the doctor	257	41%
More medications were prescribed by doctors or purchased by you	183	29%
Because of side effects, the medication was changed	119	19%
Others	66	11%
How long have you kept the expired medications in your home		
Months	405	77%
1-2 years	84	16%
3-4 years	11	2%
More than 4 years	24	5%

Table 3. Knowledge and perception

Expired medications negatively affect the body		
TRUE	346	66%
FALSE	53	10%
I don't know	125	24%
You can use expired medications anytime you need them		
TRUE	31	6%
FALSE	437	83%
I don't know	56	11%
Syrup/liquid medications that have been opened can still be used after 3 months		
TRUE	72	14%
FALSE	334	64%
I don't know	118	22%
Are manufactured medications used only for a certain period and after that they should not be used		
TRUE	318	61%
FALSE	72	14%
I don't know	134	25%
The specific time that shows the duration of use of any medication mentioned in the packages as the "expiration date"		
TRUE	392	75%
FALSE	62	12%
I don't know	70	13%
There is a need to initiate awareness programs about expired medicines		
Yes	465	89%
No	59	11%
If you heard that there is a competent authority that collects or disposes of excess medications, whether they are expired or not, will you give them the ones you no longer need?		
Yes	453	86%
No	71	14%
What is the site you prefer to find these programs		
In hospital pharmacies	167	32%
In specific community pharmacies within each residential neighborhood	293	56%
Others	64	12%

## CONCLUSIONS

- This study provides a detailed assessment of Saudi citizens’ knowledge, attitudes, and practices regarding expired medications. While awareness of medication safety is generally high, significant gaps persist in disposal behaviors, routine checking of expiration dates, and appropriate use of leftover medications.
- Addressing these gaps requires multi-faceted interventions. Targeted educational campaigns, pharmacy-based counseling, and structured medication take-back programs can promote safe medication use, reduce environmental contamination, and limit economic losses from expired pharmaceuticals. Community pharmacists, as accessible healthcare providers, play a critical role in guiding patients on proper storage, usage, and disposal practices. Leveraging digital health platforms and collaborative public health initiatives can further reinforce responsible behaviors.

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