

ORIGINAL RESEARCH

Evaluation of Knowledge and Practice of Disposal of Leftover and expired Medicine among MBBS Students

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ABSTRACT

Aim: Evaluation of knowledge and practice of disposal of leftover and expired medicine among MBBS students. **Methods:** One hundred male and female medical undergraduates participated in the study. Participants were informed and gave their consent by signing a consent form. Personal information was collected, including names, ages, genders, and more. The number of unused medications, their origins, the most common drug class, and the dosage form were all recorded. Statistical tests were performed on the data gathered. **Results:** We can see that 54 percent of consumers verify the medication's expiry date before making a purchase, whereas 21 percent do not and 25 percent are unclear. 42% throw away, 13% give to a hospital, 18% hand out to loved ones, and 27% go back to the pharmacy. When asked what they do with stale medicine, the majority (57%) say they dump it down the drain, while 15% say they donate it to loved ones and just 11% say they throw it away. An overwhelming majority (84%) believed that there was a potential for damage to the environment and human health from the incorrect disposal of unused and expired pharmaceuticals. **Conclusion:** This study demonstrated that the awareness of proper and safe drug disposal of left over or expired medicine among the medical students is quite fair. To make it more effective, the concerned authorities need to implement educational programs regularly for general public and medical students.

Keywords: Expired medicine, MBBS students

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INTRODUCTION

In recent years, there has been a rise in attention paid to the issue of how best to dispose of unused or expired drugs across the globe. Unintentional overdose, prescription drug abuse, and poisoning are just a few of the potential outcomes of a lack of education on how to safely dispose of unused medicine. [1] In order to deal with the issue of how to get rid of old or useless drugs, several countries have instituted regulations. Accidental poisoning of children, contamination of the environment, negative effects on animals, and antibiotic resistance are all possible outcomes of improper medicine disposal. Medication waste is used as an indicator of the efficiency of the health care system. Most medicinal components are polar molecules. [2,3]

METHODS

It was a descriptive cross-sectional questionnaire based study conducted among medical students. One

hundred male and female medical undergraduates participated in the study conducted in a tertiary care teaching hospital. Participants were informed and gave their consent by signing a consent form. Personal information was collected, including names, ages, genders, and more. The number of unused medications, their origins, the most common drug class, and the dosage form were all recorded. Statistical tests were performed on the data gathered. If the probability ratio (P ratio) was less than 0.05, the result was considered significant.

RESULTS

From the data in Table 2, we can see that 54 percent of consumers verify the medication's expiry date before making a purchase, whereas 21 percent do not and 25 percent are unclear. 42% throw away, 13% give to a hospital, 18% hand out to loved ones, and 27% go back to the pharmacy. When asked what they

do with stale medicine, the majority (57%) say they dump it down the drain, while 15% say they donate it to loved ones and just 11% say they throw it away. 57% answered the ministry of health, 16% said pharmacists, 6% said the pharmaceutical industry, and 21% said the general public are responsible for spreading knowledge about the proper disposal of

unwanted and outdated pharmaceuticals. An overwhelming majority (84%) believed that there was a potential for damage to the environment and human health from the incorrect disposal of unused and expired pharmaceuticals. The difference was big enough to be seen statistically ($P < 0.05$).

Table 1: Sex distribution

Sex	Number and percentage
Female	57
Male	43

Table 2: Analyzing and Attitudes Toward Unused and Expired Medications

Parameter		Number and percentage	P value
Do you verify that a drug hasn't passed its expiration date before buying it?	Yes	54	0.2
	No	21	
	Not Sure	25	
What happens to unused medication?	Put in the trash can at home	42	0.03
	Make a hospital donation	13	
	Donate to a worthy cause or present to loved ones	18	
	Come back to the pharmacy	27	
What do you do with unused medication that has beyond its expiration date?	Put in the toilet or the sink to flush.	57	0.02
	Donate to close associates or family members.	15	
	Place in the trash can for residential usage.	11	
	Go back to the medical shop.	17	
Who should be making sure people know how to properly dispose of old or unused medications?	The Government Office for Health	57	0.03
	Pharmacist	16	
	Business in the pharmaceutical sector	6	
	Public	21	
Negative health and environmental effects have been linked to the improper disposal of unwanted and expired pharmaceuticals.	Yes	84	0.01
	No	16	

DISCUSSION

Globally, the improper disposal of leftover medicine poses a danger to public health and environmental safety. Therefore, it is important to investigate the prevalence of this practice and to create awareness of and solutions for safe medicine disposal methods, particularly among health care providers.

54% of respondents in this study inspected the drug's expiry date before buying it, compared to 21% who didn't and 25% who weren't sure. Fourteen percent go to charity, eighteen percent give to friends and family, and twenty-seven percent go back to the drugstore. Most individuals (57%) flush expired pills down the toilet, while 15% donate them to friends and family and just 11% throw them away. Five-seven percent cited the Ministry of Health, sixteen percent cited pharmacists, six percent cited the pharmaceutical industry, and twenty-one percent cited the general

public. A large majority of respondents (84%) agreed that there may be potential health and environmental consequences to improperly disposing of unused or expired pharmaceuticals. There have been parallel investigations conducted by other researchers.[4] Study authors Alazmi et al. [5] looked at patients' drug disposal knowledge and attitudes. A self-administered questionnaire was used to gather information from various outpatient pharmacy services. 73% of respondents reportedly throw away medicines, 14% return them to pharmacies, 5% never dispose of them, and 3% donate them to charity. Eighty percent or more of those polled reported never receiving advice or information from healthcare professionals on how to properly dispose of unwanted medications. The results highlight the need of working together to establish global standards for the proper disposal of expired medications. Patient

education, as well as public and community-based educational and communal events, should contain a drug donation policy.

This study has a limitation of being conducted in a limited study subjects.

CONCLUSION

The results of present study demonstrate the need for improvement in practices by Indian medical students regarding the disposal of leftover and expired medicine. Improper disposal of medication can cause contamination of water supplies, introduce toxins into the environment, and risk unintentional overdose or drug abuse. To make it more effective, the concerned authorities need to implement educational programs regularly for medical students and general public.

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