Original Research Article

Assessment of knowledge and practice of disposal of leftover and expired medicine among MBBS students

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Abstract

Background: The correct disposal of medicine poses a challenge and is receiving increasing attention. The present study was conducted to assess knowledge and practice of disposal of leftover and expired medicine among MBBS students.**Materials & Methods:**110 MBBS students of both genders were provided with the questionnaire and parameters such as the number of leftover drugs, reasons for leftover, most common class of leftover drugs and dosage form were recorded.**Results:** 56%check the expiry date of medicine before procuring, 20% no and 24% don't know. 45% throw away in household garbage, 12% donate to hospital, 17% give to friends or relatives and 26% return to medical store. In response to what to do with expired medicine, 60% flush in toilet or sink, 14% give to friends or relatives, 10% throw away in household garbage and16% return to medical store. In response to who is responsible for creating awareness of the proper disposal of unused and expired medicine, ministry of health by 60%, pharmacist by15%, pharmaceutical industry by 5% and general public by 20%. 85% responded that improper disposal of unused and expired medicine can affect the environment and health. The difference was significant (P< 0.05).**Conclusion:** There is requirement of providing knowledge about the disposal of leftover and expired medicine among MBBS students.

Key words: Knowledge, Practice, Medicine.

Introduction

Universally, the correct disposal of medicine poses a challenge and is receiving increasing attention[1].A lack of knowledge about proper disposal of unused medicine can lead to serious consequences, such as an accumulation of toxins and chemicals from the medicine into the environment, unintentional overdose, and prescription drug abuse. A number of countries have established guidelines for disposing of leftover or expired medication[2].Improper disposal of medication has several possible consequences such as childhood poisoning, environmental pollution, a negative impact on wildlife, and antibiotic resistance. Effectiveness of health care system is evaluated by measuring the drug wastage. Most of the active pharmaceutical ingredients (APIs) are polar compounds[3]. Such APIs are called ''small molecules'' and are part of the compounds called ''micropollutants'' because they are often found in the mg or ng range in the aquatic environment. Pharmaceuticals from human use have serious effect on the environment due to micropollutants released into the nature, with well-known examples, i.e., estrogens and their effects on fish and the effects of diclofenac on vultures through chemical analysis[4].If unused post expiry date medicines may further increase the threat to the environment like expired tetracyclines can cause renal tubular damage. Storing of unused and expired medicines at households results from excessive prescribing by doctors or poor patients' adherence to prescribed medicines [5].The present study was conducted to assess knowledge and practice of disposal of leftover and expired medicine among MBBS students.

Materials & Methods

The present study comprised of 110 MBBS students of both genders. All were informed regarding the study and their written consent was obtained. Data such as name, age, gender etc. was recorded. Parameters such as the number of leftover drugs, reasons for leftover, most common class of leftover drugs and dosage form were recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table 1: Distribution of subjects

Total- 110		
Gender	**Male**	**Female**
Number	60	50

Table 1 shows that out of 110 subjects, males were 60 and females were 50.

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Table 2:Assessment of Knowledge and practice regarding unused and expired medicine

Parameters	Variables	Percentage	P value
Do you check the expiry date of medicine before procuring	Yes	56%	0.12
	No	20%	
	Don't know	24%	
What do you do with unused medicine?	Throw away in household garbage	45%	0.05
	Donate to hospital	12%	
	Give to friends or relatives	17%	
	Return to medical store	26%	
What do you do with expired medicine?	Flush in toilet or sink	60%	0.02
	Give to friends or relatives	14%	
	Throw away in household garbage	10%	
	Return to medical store	16%	
Who is responsible for creating awareness of the proper disposal of unused and expired medicine?	Ministry of Health	60%	0.01
	Pharmacist	15%	
	Pharmaceutical industry	5%	
	General public	20%	
Improper disposal of unused and expired medicine can affect the environment and health	Yes	85%	0.01
	No	15%	

Table 2, Fig 1 shows that 56%check the expiry date of medicine before procuring, 20% no and 24% don't know. 45% throw away in household garbage, 12% donate to hospital, 17% give to friends or relatives and 26% return to medical store. In response to what to do with expired medicine, 60% flush in toilet or sink, 14% give to friends or relatives, 10% throw away in household garbage and16% return to medical store. In response to who is responsible for creating awareness of the proper disposal of unused and expired medicine, ministry of health by 60%, pharmacist by15%, pharmaceutical industry by 5% and general public by 20%. 85% responded that improper disposal of unused and expired medicine can affect the environment and health. The difference was significant (P< 0.05).

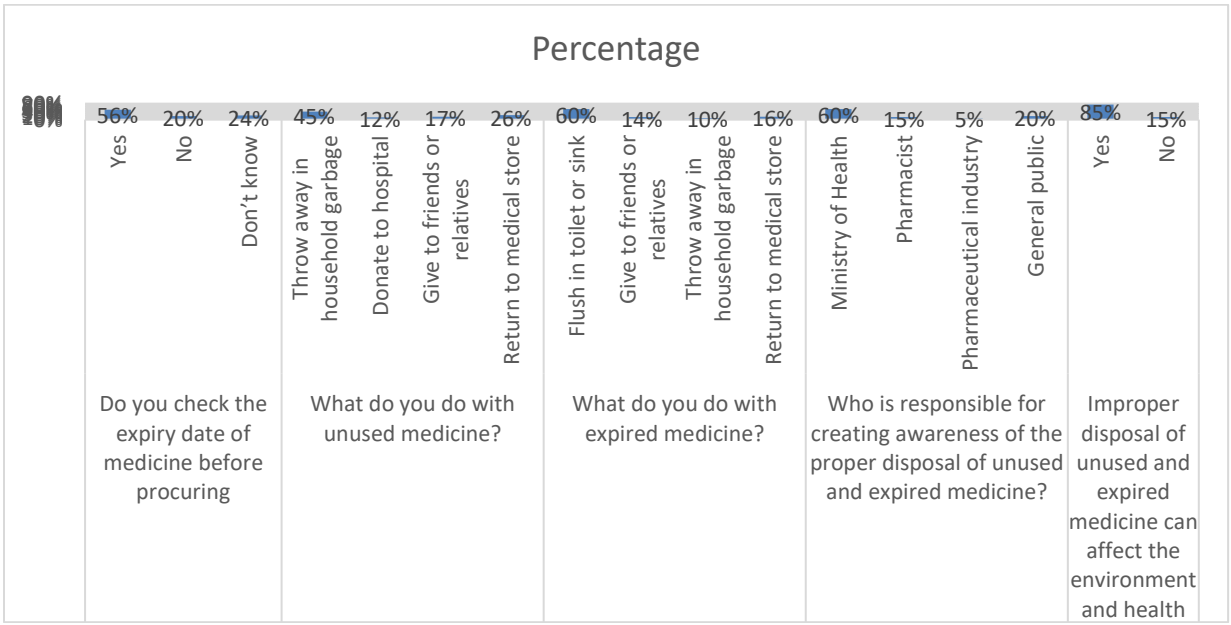

Fig 1:Assessment of Knowledge and practice regarding unused and expired medicine

Discussion

Medicines are prescribed and consumed for various reasons and sometimes patients do not finish the medicines completely and hence these medicines end up in the medicine cabinets, drawers, or else are disposed in the household trash[6,7].Failure to properly store and dispose unused medicines can contribute to accidental consumption by children or pets and inappropriate use by drug seekers; on the other hand, they can also find their way into the environment[8]. Literature suggests that pharmaceuticals are present in low levels in a high percentage of tested surface water, ground water, and drinking water supplies. Some studies have found significant effects on wildlife, for example, decrease in the population of vulture species and aquatic life, for example, demasculinization and feminization of male fish.Some studies also link development of antibiotic resistance and abnormal thyroid function to this problem [9]. Countries such as the USA, the UK, and some others in the Middle-East region have taken steps in educating people on proper disposal of medicines. Countries like the USA and Sweden have

even started "Community drug back programmes."However, in India, we are still not aware of the problem and its implications [10]. The present study was conducted to assess knowledge and practice of disposal of leftover and expired medicine among MBBS students.In present study, out of 110 subjects, males were 60 and females were 50. Bashatah et al[11]investigated the knowledge and practices concerning unused and expired medicine among pharmacy and nursing students. The response rate was 70.4% (n = 352). The results indicated that 57.4% of pharmacy students and 53.4% of nursing students check the expiry date of medicine before procuring, and 37.6% of pharmacy students and 52.5% of nursing students keep unused medicine until it expires. With regard to disposal, 78.9% of pharmacy students and 80.5% of nursing students reported discarding expired medicine in household garbage or flushing it down a sink or toilet. Only a small percentage returns leftover medicine to a medical store. There was a statistically significant difference between pharmacy and nursing students in regard to checking the expiry date of medicine before procuring and keeping unused medicine until it expires. The study concluded that the majority of respondents dispose of medicine unsafely. The findings suggest that creating awareness regarding proper medicine disposal procedures among university health care students in Saudi Arabia is needed.We found that 56% check the expiry date of medicine before procuring, 20% no and 24% don't know. 45% throw away in household garbage, 12% donate to hospital, 17% give to friends or relatives and 26% return to medical store. In response to what to do with expired medicine, 60% flush in toilet or sink, 14% give to friends or relatives, 10% throw away in household garbage and16% return to medical store. We found that in response to who is responsible for creating awareness of the proper disposal of unused and expired medicine, ministry of health by 60%, pharmacist by 15%, pharmaceutical industry by 5% and general public by 20%. 85% responded that improper disposal of unused and expired medicine can affect the environment and health. Alazmi et al[12]assessed patients' knowledge and attitude regarding the disposal of medications. A self-administered questionnaire was used to collect data from various outpatient pharmaceutical services. The study revealed that 73% of the respondents throw the medications in the trash, 14% return the medications to a pharmacy, 5% never dispose them, and 3% donate the medications to a friend or charity centers. More than 80% of the respondents never received any information or advice from healthcare providers about safe and proper disposal of medications. Findings suggest that there is an immediate requirement for the establishment of collaborative and uniform guidelines for the safe disposal of leftover medications. A policy for drug donation needs to be included in routine patient education as well as educational and collective programs for the public.

Conclusion

Authors found that there is requirement of providing knowledge about the disposal of leftover and expired medicine among MBBS students.

Conflict of Interest: Nil
Source of support:Nil

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