

Original Research Article

Practice towards disposal of medicines (unused/expired drugs) among the patients visiting tertiary care teaching hospital in Haryana, India

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ABSTRACT

Background: Awareness towards improper disposal of medicines and its hazardous impact on environment is one of the major issues which we are neglecting but needs to be focused. In general, expired medicines/waste medicines/ left out medicines are disposed in the garbage or, rinse in sink or flushed down toilet, which ends up in the water system and have a potential effect on ecosystem. With this background, the present study was conducted to assess the practice towards disposal of medicines (Unused/Expired Drugs) among the patients visiting tertiary care teaching hospital in Haryana.

Methods: This study was a descriptive, cross-sectional study conducted through face-to-face interviews by using a validated structured Questionnaire in patients attending the OPD of PGIMS, Rohtak, Haryana. A total of 150 patients participated in this study.

Results: Among the 150 Patients participated in the study, 94 were male and 56 were female. Most common class of medicines used were NSAIDS (34%). About the practice of disposal of medicines 62% of them threw into the dustbin (household garbage) 18% into the toilet/sink. About consequences of improper disposal (55%) of them answered that they were not aware. The most common reason for left out medicines in home was incompleteness of the course due to getting relieved from disease (50%). Most common way of procuring medicine was purchased on prescription and surprisingly only 30% participants checked the expiry date of medicine before procuring. Among the participants 75% said that government should be responsible to create awareness for proper disposal of unused medicines.

Conclusions: The present study brought out the current status and lacuna towards the disposal of medicines. Patients do not use all the medications and there is lack of knowledge about awareness of disposal of medicines and its consequences.

Keywords: Ecosystem, Expired/unused drugs, Improper disposal

INTRODUCTION

Awareness towards improper disposal of medicines (pharmaceuticals) and its hazardous impact on environment is one of the major issues which we are neglecting but needs to be focused. In general, expired medicines/waste medicines/left out medicines are disposed in the garbage or, rinse in sink or flushed down toilet, which ends up in the water system and have a

potential effect on ecosystem. Much confusion exists about the proper way of drug disposal as many countries do not have standard drug disposal protocols.

For the past decades, there have been numerous reports revealing the presence of pharmaceuticals in groundwater, lakes, rivers, and drinking water and these pharmaceuticals may have a hazardous effect on ecosystem and on human health.

Increasing disease incidence and prevalence necessitate healthcare practitioners to prescribe and dispense different medications. The consumer (patients) are not able to use all the dispensed medications because of adverse effects, alteration of dosage, feeling healthy, medications reaching the expiration date, promotional practices by manufacturers, physicians' prescribing practices, or dispensers' practices.¹⁻²

According to World Health Organization (WHO), more than half of all medication is inappropriately prescribed, prescribed and sold, which causes unnecessary storage and creates environmental threat.³ Non-adherence to medication can also cause storage of left over medicines at home. According to WHO 50% of patients fail to take medicine correctly.⁴ Therefore, it is usual that, families and patients are in possession of unused or expired medications and its risks have gained attention across the world.⁵ When there is a concern of unused and expired medication storage, patients and family members require clear guidance about its disposal. Specifically, the presence of discarded medicines in waterways and drinking water is a serious and multifaceted issue that has gained national and international attention with the public, lawmakers, and regulators.⁶ For instance, non-steroidal anti-inflammatory drug (NSAID) diclofenac has been shown to induce renal failure in vultures following the ingestion of carrion from cattle treated with this drug.⁷

The improper disposal of unused and expired medication challenges the environment for example in the USA many drugs such as acetaminophen, verapamil, and estradiol are found in waterways.⁸ The trace levels of ethinyl estradiol, the active component of a common oral contraceptive, impairs sexual development and the feminization of fish.⁹ Evidence shows that the presence of antibiotics in water may lead to antibiotic resistance and in long term may cause genetic effects in humans and marine life. So far, no study has been conducted regarding disposal practices of unused and expired pharmaceuticals among the patients in PGIMS ROHTAK and no data is available about the disposal knowledge and practices towards expired medication. This study was therefore planned with the aim to report the current practices and attitudes of patients towards disposal of unused and expired pharmaceuticals.

METHODS

This study was a descriptive, cross-sectional study conducted through face-to-face interviews by using a validated structured Questionnaire in patients attending the OPD in PGIMS, Rohtak. A total of 150 patients of either sex participated in this study.

Study instrument

Literature was reviewed to develop the questionnaire.¹⁰⁻¹⁵ The questionnaire consisted of two sections. Section one

was about respondent's personal information including gender, age, marital status, the level of education, ways of procuring medicines, classes of medicine used and checking the expiry date of medicine before procuring. Section two of the questionnaire included patient's knowledge and practices concerning unused and expired medication disposal. This included questions related to the existing unused medicines at their home, what they did with expired and unused medicines, who according to them was responsible to create awareness for proper disposal, have you ever heard about safe disposal of medicines, do you know what are proper disposal methods for medicines, what are reasons for left out medicines in home and whether improper disposal affected environment and health.

RESULTS

In this study, prescription data of 150 patients was analysed out of which 94 patients were male whereas 56 patients were female (Figure 1).

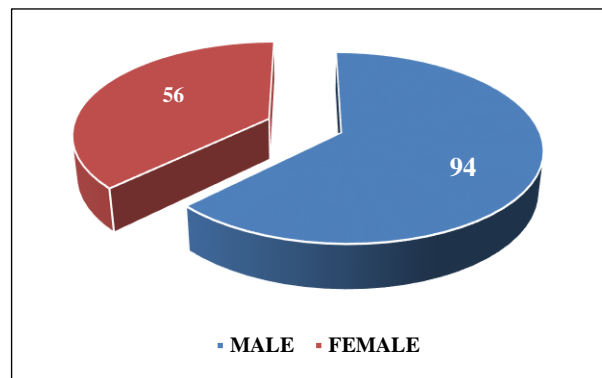


Figure 1: Total number of participants.

Participants were in age group of 15 to 65 years. NSAIDs and Antibiotics were commonly used medicines (Figure 2).

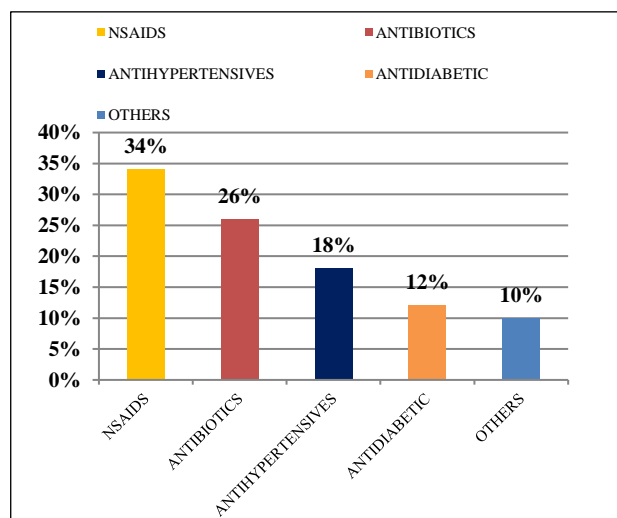


Figure 2: Commonly used drugs by study population.

Most common pattern of disposal of medicine was thrown away in household garbage. (as shown in Fig 3) and most common reason for left out medicine was free from disease (as shown in Fig 4).

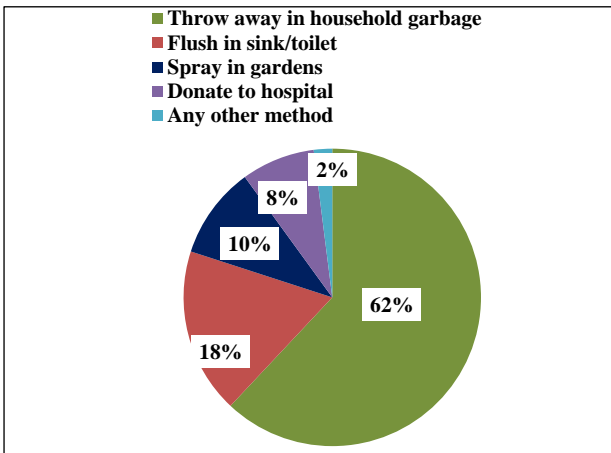


Figure 3: Disposing patterns of medicines.

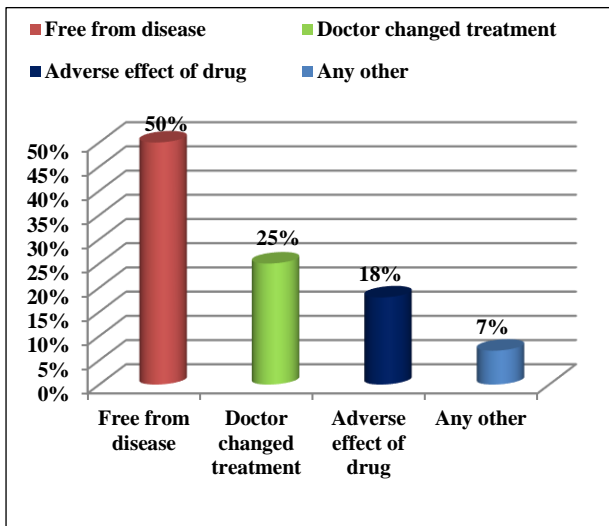


Figure 4: Reasons for left out medicines.

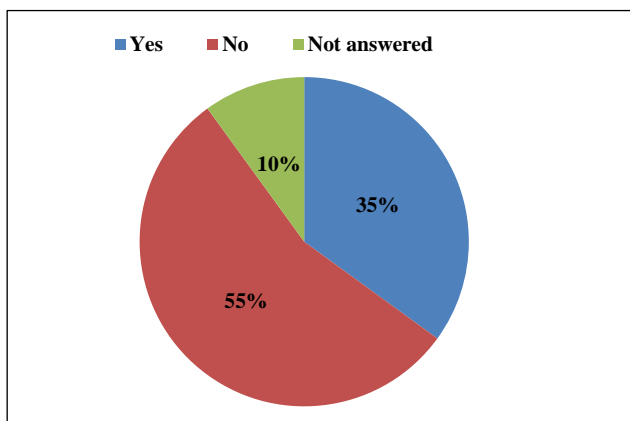


Figure 5: Knowledge of study population towards hazardous effects of improper drug disposal.

Only 35% participants have knowledge towards hazard effects of improper drug disposal. (as shown in Fig 5). Most common way of procuring medicine was purchased on prescription and surprisingly only 30% participants checked the expiry date of medicine before procuring (Figure 6).

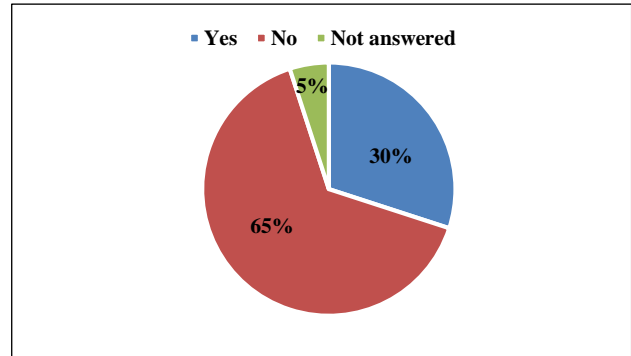


Figure 6: Percentage of patients who checked expiry date of medicine before procuring.

Among the participants 75% said that government should be responsible to create awareness for proper disposal of unused medicines.

DISCUSSION

After getting the prescribed/ over the counter medicines, patients may not use all the drugs due to side effect, dosage changes, discontinuation of the medication, or due to expiration date. Therefore, it is not a uncommon for patients to have expired/ left out medicines in homes. But when this happens, patients need clear guidance to dispose these medications safely in environment with ecofriendly measures as many of them unaware. Lack of awareness towards safe disposal method is one of the important issues that has to get elevated. A very few studies have been performed regarding this issue. A study from Saudi Arabia stated that over 80% of homes had an average of two unused/ expired medicines respectively.¹⁶ In this study, the most common method of disposing the unused or expired medicines was throwing the medicines in dustbin (household garbage) where no system exists for unused medication collection in india. These finding are matched with the study done by Radhakrishna Lagishetty where 63% of patients throw their unused medicines in dustbin and one of the important effects of this is presence of pharmaceuticals in environment/water and causing the occurrence of antibiotic resistance.¹⁷ A study at Patancheru, reported the presence of ciprofloxacin in water result in drug resistance.¹⁸ In our study NSAIDS class of drugs are most commonly used by the patients (34%) whereas the most common reason for left out medicines was incompleteness of the course due to getting relieved from the disease. These findings matched with the study done by Suvidya Sushima.¹⁹ This study also showed that more than 50% of the patients don't check expiry date on medicines before procuring

them this can be a one reason for leftout medicine at home. Majority of the participants in our study (55%) were not aware about the consequences of improper disposal of medicines. Physicians, Pharmacists have to create awareness to the patients about the consequences of improper disposal of medicines.

CONCLUSION

The present study brought out the current status and lacuna towards the disposal of medicines. It emphasises the need for proper disposal methods. Interviewees perceived that there is lack of knowledge about, awareness of, improper disposal of medicines and its consequences. They suggested a need for information, education, training and legislation. Hence, there is a much need to explore the issue. Guidelines on safe disposal of unwanted medicine are required and have to practice strictly to avoid life threatening situations in the future.

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