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ONUS OF CLINICAL PHARMACIST ON ESTIMATING THE VOLUME AND IMPLICATION OF RESEARCH FINDING OF UNUSED PHARMACEUTICALS IN HOUSE HOLD

Pharmacy

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ABSTRACT

To evaluate the knowledge, attitude and practice of consumers in India about disposal of unused medicines.A structured questionnaire, including both open and closed ended questions which was designed to collect demographic information as well as information on name or generic name of the pharmaceutical product, quantity of leftover pharmaceuticals, storage conditions and disposal methods used etc and pre validated before administering to 170 consumers. According to our study 50% respondents were not aware about medication wastage and 50% percentage respondents were aware about medication wastage. From the total respondents 95% were not heard the term drug take back system and 5% were having the knowledge on the same. In our study, 49.77% of the respondents discarded or disposing the leftover, expired, unwanted, or unused medications by throwing them in the trash or garbage while 16.29% stored unused medications in households itself. And the other commonly practiced method of discarding leftover medications was flushed down in the sink or toilet (13.12%), burned (10.4%), given away to friends or charity (5.43%), returned to the pharmacy or clinics (3.61%). Majority of consumers are aware about the need for safe disposal of unused medicines. But the right attitude for practice of safe disposal of medicines is lacking. A need for increased awareness regarding safe disposal of medicines is acknowledged by majority of consumers.

KEYWORDS

practice, knowledge, medicine disposal, unused medicines

INTRODUCTION

Recently, pharmaceutical products have been detected in surface, ground and drinking waters in worldwide. This has raised concerns about potential impacts on humans and organisms in the environment, thus the need of various regulators in action on these concerns became much more required[1]. Naturally, the presence of pharmaceuticals in the environment has therefore moved public discussions on drinking water safety and research in to state and effects of active pharmaceutical ingredients and adjutants in water, soil, as well as of the related risks, undesirable effects on humans and organisms in the environment[2]. Actually, the presence of human and veterinary pharmaceuticals in the environment is a very relative and new issue, because the magnitude nor the size of the problem still is not well known or examined. There is a significant lack of knowledge of the issue, deeper research should still be done: *"it was a surprise to find pharmaceuticals in carcasses of dead livestock"*[3]. Thus, the medical waste disposal problem being threatening and at the same time still less explored, should instantly encourage for further relative data gathering, raising proper awareness and looking for improving solutions.

It is known that pharmaceuticals are produced and used in very large volumes, and their use and diversity are increasing every year[4]. Moreover, it is significant that about two thirds of the packages eliminated from household waste contain more than half or two thirds of the original content and that about half of those packages are unbroken[5]. The most popular route by which pharmaceuticals can enter the environment is by the disposal via the sink/toilet or in household waste bin that is then taken to landfill sites. These residues experienced recycling, from surface and ground waters may come back into the drinking water supply and various foods, where humans of all ages and health status can be chronically exposed, unfortunately risking to undergo unknown consequences regarding long-term health impacts.

Some international and national studies showed that most patients stored their medications improperly at home that may lead to undesirable effects or unintentional risks like improper self-medication, accidental overdose, and prescription drug abuse. These patients keep medications because they do not want to waste them, they do not know how to read and check the expiry date, or they do not know a proper and safe way to dispose them [6-10]. Safe disposal of expired, unwanted, or unused medications is of high concern, as malpractice may lead to harmful consequences. Thus, we conclude that this problem must be prevented. We conducted this study to explore the knowledge and practice toward disposal of medication among various people from different religious, educational and social background.

MATERIALS AND METHODS

Study Design

This study was a prospective observational study conducted among 170 households. It consisted of a convenience sample of members of the communities.

Study Instrument

The study instrument was a structured questionnaire, including both open and closed ended questions which is designed to collect demographic information as well as information on name or generic name of the pharmaceutical product, quantity of leftover pharmaceuticals, storage conditions and disposal methods used etc.

Data Collection

A visit was made to participating household. The participating households were randomly selected without any specific method of recruitment. During the visit, the aim of the study and research was explained to the members in the households. Their informed consent was sought and explained the confidentiality of the survey. The members were interviewed for information on storage and disposal of medicines. This section was guided by the questionnaire as well as the drugs found in each household.

Study Criteria

Inclusion Criteria

- All men and women above age group 18 years
- The subject who are willing to give consent information
- Educated adults that are able to read clearly all questions
- Pre-school teachers
- Community pharmacist

Exclusion Criteria

- The subjects who are non-cooperative
- Children
- Mentally ill persons
- Persons who are unable to communicate verbally

RESULTS AND DISCUSSION

The study was conducted in Bengaluru-560061 and 62, which is located south region of Bengaluru in Karnataka state in a time period of 6 months with a sample size of 170 households. The study was a questionnaire based study which includes two questionnaires. In the first questionnaire have the consent form and all closed end questions regarding medication wastage. And in the second questionnaire have the information regarding class of medication, dosage form, reason for existence of medicine, present disposal practice followed and storage practice of medications in the household. This kind of study is first in our settings to investigate medication storage and disposal at home, a topic of a significant importance where irrational and inappropriate uses/storage of medicine is common.

Aware of Medication Wastage

In the total population 85 houses aware about the medication wastage, that is 50% of the total population. And the 50% were not aware about the medication wastage.

Information Regarding Proper Disposal Practice

In total population 170 houses only 4 (2%) receives information about proper disposal practice of medicine and in 166 (98%) houses did not received any information. In a similar study out of 136 sample size, 19.1% of respondents reported ever having received any information about how to dispose medications, of those respondents reports their received information on medication disposal, television and other ideas was cited most often as the source of information followed by health professionals, local government or pharmacies.[11]

Aware about drug take back system

In total 170 houses only 5% were aware about drug take back system and 95% were not aware.

Class of Medicines:

From 170 houses total of 2458 medication were found. Most of these were antipyretic (481 medications) and it is followed by antibiotics (390 medications). Analgesics and anti-tubercular medications were found as 209 and 206 each. Anti-ulcerant and iron supplements were approximately 7% each. And which is followed by vitamins (152), antihistamine (115), antipsychotics (99), antiemetic (93), antacids (81), corticosteroids (46), antifungal (44), antineoplastics (41), antidiarrheal (35), antimalarial (33), leukotrienes (17) and cough syrup/anti tussive (16). And eye drops, ear drops, nasal sprays, anti-asthmatic inhaler and astringent were found in very small number. In a similar study more than 6000 medicines were found in respondent house(324). Most of these were antibiotics (37%). Topical antibiotics were also found in house, about 22%. Vitamins and analgesics were found about 11% each.[12]

Reasons for having medicines in houses

From the total populations of 170 houses 33.7% of reason is leftover medicine and 24.20% were regular medicine. Emergency and for similar illness 19.04% each. Other reasons are 3.96%.

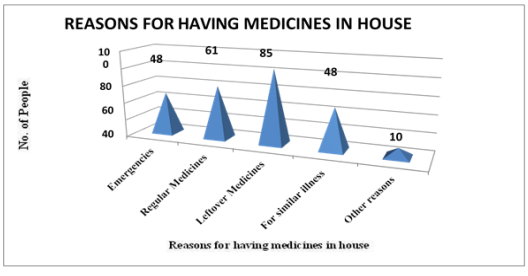

Fig. 1: Reasons for having medicines in houses

Reasons For Existence of Medicines In Houses

The most answers were medication expired. 20.7% answered as not using/doctor changed and forget to take. And is followed by conditions resolved/ symptoms improved. The reasons like over dose, experience side effects and other reasons were very small number.

Table 1 – Reasons For Existance Of Medicines In Houses

Reasons For Existence Of Medicines In Houses	No. Of People (n)	Percentage (%)
Not Using / Doctor Changed	50	20.74
Overdosing / Double Dose	11	4.56
Forgot to take	50	20.74
Experienced Side Effects	21	8.71
Conditions resolved / Symptoms improved	48	19.91
Medications Expired	52	21.57
Others	9	3.734
TOTAL	241	

Methods of Disposal

Approximately 50% of subjects following the method as throwing away in trash/garbage and 16.29% were following stored/ never disposed. Flushing down in the sink/ toilet and burning are followed by 13.12% and 10.4% respectively. Retuned to the pharmacy, charity and other methods are followed by very small number of subjects. In a similar study they found out that nearly 73% of the participants discarded leftover, expired, unused medications by throwing them in garbage or trash while 50% believed that giving leftover medications away to family, friends, or charity centres is the best method of disposal.

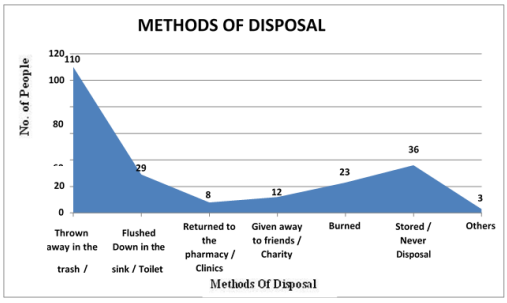

Fig. 2 Methods of Disposal

Storage Practice of Medicines

Out of 170 most of the houses stored in the living room (34.11%) and followed by kitchen (30%). The houses were stored the medicines in bed room and work area are 18.82% and 11.17% respectively. Only very small numbers of houses were stored in bath room (2.35) and store room (3.53%).

LIMITATION

There were some limitations to this study.

- Study focused on a small definite population, more fruitful result would be obtained if this project was conducted in large population therefore, we cannot generalised result to population as a whole.
- Short duration of time to perform the study
- Information provided by the respondents could not be verified or validated.
- We did not quantify the liquid pharmaceuticals.
- We did not assess the pharmaceutical waste cost.
- We did not provide awareness regarding antineoplastic agents, anti-infective agents.

CONCLUSION

In India, there is neither a uniform nor a standard system that accepts and collects the expired, unwanted or unused medications nor established recycling systems for medication disposal. Our pharmacy department has a policy for returned medication from the patients but lacks specific policies for proper and safe disposal of expired, unwanted, and unused medications. Nationwide, we lack uniform guidelines. Almost little to no information was provided to the public on the safe disposal of mediations. Creation of uniform guidelines for the safe disposal of medications and guidelines to control drug donation is urgently needed and is of high priority. If pharmacist provide information on disposal during medication counseling to the patient will develop positive disposal practice. Furthermore, providing disposal information with each dispensed medication label can play an important role in resolving this issue. Safe disposal instructions should be provided by all health care providers in routine patient education. From the result, we arrived to conclude that the awareness on storage and disposal of medications in households was less among public. Participative role of clinical pharmacist can help improve safe storage and disposal of medicines at home and ensure effectiveness of therapy.

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