

Expired Drugs- Awareness and Practices of Outdoor Patients

Aleesha Gul ¹, Shanza Nazish ¹, Sania Sabir¹, Hadiqa Nazish ², Talia Masood¹

1. Third year, Rawalpindi Medical College, Rawalpindi;2.D-pharmacy Quaid-i-Azam University, Islamabad

Abstract

Background: To assess awareness and practices of patients presenting in outpatient departments of a tertiary care health facility of Rawalpindi regarding expired medicines and to explore the reasons for lack of awareness or poor practices.

Methods: This cross sectional study was conducted in 2014 at Holy Family Hospital Rawalpindi and included 100 patients with minor ailments. Data was collected through interview technique using structured questionnaire. All the data was entered and descriptive analysis was performed using SPSS 17.

Results: All the study participants were aware of expiry dates. Amongst all participants, 85% always got expiry dates of medicines checked either by themselves or others while more than 10% did not check due to various reasons amongst which laziness and lack of time were the most commonly specified. Only 18% of study participants properly and safely disposed off stored medicines. Where 56.60% of participants checked expiry dates of prolonged stored medicines just before using them, only 35.5% checked them monthly. Allergy was most commonly anticipated adverse effect of expired medicines by the participants.

Conclusion: Even though the awareness regarding the expired medicines was found to be adequate, but still the practices regarding checking expiry dates and the safe disposal of expired medicines was not very encouraging.

Keywords: Prescription Drugs, Disposal, Awareness,

Introduction

Considering the harmful effects, risks and cost of morbidity associated with use of expired drugs, there is a dire need of exploring the awareness and practices of patients in Pakistan. Expiry date of drug means "The date placed on the container of a drug product designating the time during which a batch of a product is expected to remain within the approved shelf life specification if stored under defined conditions and after which it may not be used" .¹

Adverse effects of expired drugs are loss of efficacy, safety, potency and formation of harmful products. ² The grievous implication is that usage of expired antibiotics knowingly or unknowingly, not only can lead to antibiotic resistance in vivo but more likely can also lead to degradation of their active ingredients into components that can be seriously hazardous and can be fatal. ² Liquid medications are usually mixed with preservatives; thus, when the expiration date is breached, the preservatives can no longer work properly, and the chemical compositions of the drugs begin to break down. Occasionally dangerous by-products are formed that can be hazardous to body organs that can get impaired and body loses the ability to filter toxins and various chemical metabolites from the system, leading to serious health hazards.² These by-products can even be carcinogenic, which if extrapolated as additional clinical failure, can lead to mortality; therefore, strict compliance with expiry dates ought not to be ignored.² Expired medication may not adequately treat minor conditions (for example, minor headache, cold), or serious conditions (for example, diabetes or heart disease) because of reduced efficacy.³ As a consequence, inadequate relief from sickness could eventually lead to longer sick days, increased absences from work/school, and lost productivity at work/school.³

There are many international, national and local studies which tried to explore the awareness, attitudes and practices of people regarding expired medicines. An Indian study showed that less than 72% people don't check expiry date while purchasing or taking medicines.⁴ Another study also provided evidence regarding 17% people's negligence regarding checking of expiry date.⁵ A Nigerian study revealed that majority of participants (93.3%) were well aware regarding expired drugs.⁶ Ahmed A et al revealed that 20% people were unaware of hazardous effect of expired medicines whereas Singh DD proved that 84% people usually checked dates before using medicines.^{7,8} There is also an evidence that Fanconi syndrome was caused by expired tetracycline in 1963 in U.S.^{9,10} . Vaccines, insulin, biological products and oral nitroglycerin could also be subject to quick degradation once the expiration date is reached.^{8,9,11}

Expired drugs can also become a source of unintentional poisoning and abuse so there should be an adequate system for their disposal.¹² Keeping the medications after their expiration dates may cause them to start taking in moisture, which in turn can induce microbial contamination.² Although no significant deaths recorded in any study due to use of expired drugs but most of the national and international articles directly or indirectly reveals their adverse effects .

Patients and Methods

This descriptive cross sectional study was conducted in outpatient department of Holy Family Hospital Rawalpindi from June to August 2014 after receiving approval from Institutional Research Forum of Rawalpindi Medical College. Using WHO sample size calculator, keeping expected proportion of awareness 80%⁷ confidence interval of 95% and margin of error 8%, the minimally required sample size was calculated to be 97 hence 100 patients in total were included in this study. A total of 100 patients who presented to outdoor patient department with minor ailments, irrespective of gender and type of illness were selected using the outpatient registration list of HFH of that day as sampling framework, systemic random sampling technique was adopted. Every ninth patient fulfilling the required criteria was included till the sample size of 100 was attained. Elderly patients, children under 15 years of age, people with learning or physical disability or otherwise compromised in responding to questions, patients in critical or painful conditions or presenting for undergoing any surgical/medical procedures or advised admission due to any serious morbidity were excluded. A pretested structured questionnaire was designed to gather information regarding different variables and informed verbal consent was taken from each before interviewing. All the responses were recorded in questionnaires that were later entered and analyzed by using Statistical Package of Social Science (version 17). Frequencies and percentages were calculated to represent categorical data whereas means along with percentages were calculated for continuous variables.

Results

The total number of participants was 100. Amongst all study participants, 48% were males while 52% were females. The mean age of the study participants was 35.64 years (\pm 12.75 years), the youngest being 18 years of age while the eldest was 70 years old. Majority of the study participants (82%) had received

formal education while only 18% had not received any formal education at all. When the participants were inquired if they used any medicine when they got ill and needed treatment, with special reference to recall their experiences in previous three months, majority (89%) mentioned they did while 11% mentioned not using any medicine. Amongst those taking medicines, when inquired about the type of medicines they usually take, 89% took them on advice of Allopathic doctors, 2% used both homeopathic and Allopathic while 1% exclusively used homeopathic and 1% used herbal medicines only but 7% participants took their medicines without consulting any health care provider i.e. through self-medication.

Regarding being aware of the fact that medicines manufactured can be used only for a limited period of time after which they should not be used, all the participants (100%) replied affirmatively. All study participants were aware of the fact that the specific time period till when a medicine can be used, is mentioned on the packs of the medicines as 'expiry dates'. Amongst all 100 participants, 85% participants always checked the expiry date of medicines before purchasing or taking either themselves or through accompanying persons, 2% checked it only often, 1% requested the chemist to check the expiry dates, but 12% of the participants neither checked the expiry dates either themselves or with assistance of any other person and the reasons specified by them are displayed in figure1. When people were asked about the period after which they checked the expiry date of stored medicines majority (56.60%) checked it only before use (Figure 2).When people are inquired about disposal of drugs 80% of them told that they threw them as such, 10% threw them after crushing, 6% flushed them away, 2% burnt them and 2% did nothing with them.

Out of 100 participants 93% were well aware about adverse effects of expired drugs, 3% thought that there are no adverse effects while 4% mentioned they had no ideas about it. Amongst 100 patients 4% had at least once seen/experienced any bad incidence associated with intake of expired drugs or medicines while 96% replied negatively. When these 4% people were asked whether that incidence contributed in improvement of their practices regarding checking of expiry date of drugs 3% respond positively. According to patients only the tablets (45%), syrup (23%), injection (23%), topical ointments (5%) and capsule (5%) caused adverse effects if used after their expiration dates. When study participants were asked to identify the best and most effective medium to create

awareness in general population, regarding expiry date of medicines, majority 73% suggested that print and electronic media was most effective and convenient. Laziness was mentioned as the commonest reason for not checking the expiry dates of medicines (Figure 2)

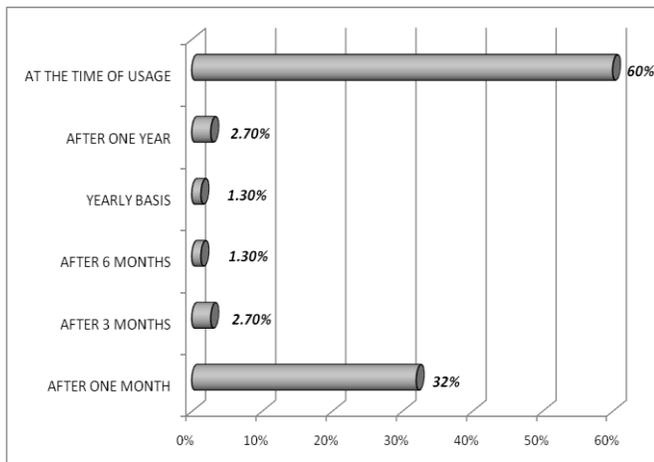


Figure 2. Bar chart exhibiting the distribution of how frequently the study participants checked their stored medicines expiry dates (n=100)

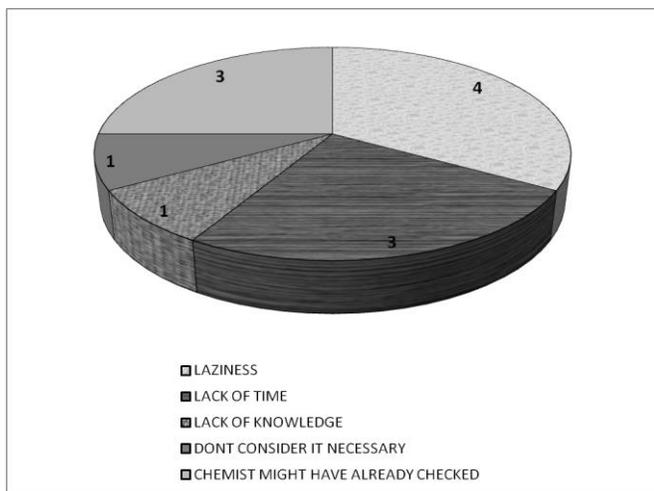


Figure 2. A pie chart displaying the distribution of various reasons mentioned by 12 study participants for not checking the expiry dates while purchasing medicines

Discussion

The current study revealed encouraging results regarding awareness and practices regarding expiry date of medicines used by the patients visiting a tertiary health care facility in Rawalpindi. According to our study 85% people always checked the expiry date of drugs, this proportion being comparatively higher

than determined by Pankaj Jain et al in northern India where only 28% respondents practically checked any expiry dates.⁴ This remarkable difference shows the better attitudes and practices of our population as comparatively. Studies conducted in Nigeria and Karachi favoured the results of current study as their large proportions of respondents were also aware of the expiry dates along with their potential adverse effects, proportions being 93.3% and 80% respectively.^{6,7}

This study also highlighted other issues which are needed to be addressed like disposal of drugs and self-medication. According to our study majority (80%) threw expired medicines/drugs as such and only smaller proportion either crushed, burnt or flushed them and this is remarkably different than the findings of a study conducted in a developing country like United States of America where 54% respondents disposed off medications in the garbage, 35.4% flushed medications down the toilet or sink, 7.2% did not dispose of medications, and 2% related they used all medications before expiration and 1.4% returned medications to a pharmacy.¹³ Our study has showed that a very small percentage (7%) practiced self medication contrary to highly prevalent practice in India (50%) and western China (40%)^{14,15}.

Current study showed that 89% people took medicines on advice of Allopathic doctors which is in consistency with the findings of previously conducted study.¹⁶ Another study in Karachi revealed that 74% participants used allopathic medicines while only 12% used homeopathic therapy according that is far less than our respondents using homeopathic medicine ie 1% only.⁷ Another study carried out in western Nepal also showed that 71% of respondents used Allopathic medicines. One of the reasons behind this high proportion of respondents following allopathic medicine compared to other modes of treatment in most studies might have an exaggerated effect existed due to the fact that most of the study settings were public health care facilities exclusively providing allopathic treatment and those following homeopathy or herbal medicine might not be visiting these facilities quite frequently.

In most developing countries, stiff legislations or penalties either do not exist or if existent, they are not religiously implemented possibly because of lack of evidence to support that expired medications are hazardous. Analytical laboratories to detect substandard drugs are generally uncommon in developing countries where therapeutic failure is usually the only indication of expired or substandard

drugs² Hence Uniform guidelines need to be created for the safe disposal of expired medications. Effective communication and established protocols will promote appropriate disposal practices. A media campaign should be introduced for general population providing them quality health education and information on how to effectively and timely check the expiry dates and also safe disposal of medicines, to avoid any hazardous incidents.

Conclusion

Level of awareness of people about expiry date of the medicines is adequate, but still there is need to educate people through proper health education sources, regarding expiry date of drugs to improve their attitudes and practices regarding safe disposal of expired medicines.

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