

Medication take-back programs in Qatar: Parental perceptions

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ABSTRACT

Purpose: To identify parental perception of a take-back program for medications. **Materials and Methods:** A cross-sectional study using a questionnaire was conducted at Hamad Medical Corporation, the only tertiary pediatric hospital in the State of Qatar at the time of the study. Qatar is a rapidly developing country with limited national data on the awareness of medication misuse among adults living with children at home and on the safety practices regarding medication disposal. **Results:** 305 questionnaires were completed (response rate = 90%). More than 80% of parents were in between 20 and 39 years of age, 70% of them were females, and 80% were college graduates. Approximately 90% of participants have immediate relatives who were taking medications for chronic diseases. Almost 60% of parents stated that they keep unused medications at home, whereas 10% were not aware of the fate of the left over medications. Approximately 95% of the parents dispose the expired medications. In terms of the mode of disposing the medications, 66% of caregivers dispose the medication bottle or package in the trash can, whereas 14% remove the medications from the bottles or packages and throw them in the trash, and 15% put them through the drain. When asked if participants read disposal measures in the medication pamphlet, only 10% answered “always,” whereas 26% answered “sometimes.” Participants were asked if they have heard of any medications take-back programs, 75% answered no, whereas 14% were not sure. However, almost 60% of them will use the take-back program if available and 18% were not sure. **Conclusion:** Parents residing in the State of Qatar have deficiencies in knowledge about medication disposal. Parent’s attitudes and perceptions are considered indispensable targets for community health intervention. Our next step is to share our data with the ministry of health to spread awareness about the proper disposal of medicines and take-back programs in Qatar.

Keywords: Children, disposal, medication, pediatric, Qatar, storage

Introduction

Unused medications consist of contaminated, expired, spilt sera, vaccines, and drugs that are no longer needed and need to be

disposed of properly.^[1] The fate of unused medications has been a concern globally. The reason could be the lack of proper programs to take back those medications. In many parts of the world, medication waste has been a burden on the healthcare system and the economy.^[2]

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Grandparents’ medications comprise 10%–20% of accidental pediatric intoxications in the United States. Storing medication in child-resistant containers does not totally avert a child from gaining access to the drug.^[3]

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While certain countries have medication take-back programs, a large proportion of the global population is not familiar with the proper ways to dispose of unused remedies.^[4] For example, in Canada and Australia, there has been the National Return and Disposal of Unwanted Medicines Project, which is completely sustained by the administration and pharmaceutical industry.^[5] Medication take-back programs are also publically known in Sweden and Great Britain.^[6] In the US, the Drug Enforcement Administration (DEA) has offered some permanent medication collection sites at different pharmacies, hospitals, and even law enforcement facilities.^[7]

Even in the countries that have medication take programs, there are barriers to their use. A survey conducted in Serbia showed that 80% of surveyed respondents were very likely to participate in medication take-back programs.^[8]

Many families keep their unused medications at home for many reasons, including the lack of knowledge of how to dispose them, the unwillingness to waste them, or they just do not check the expiration dates.^[9–11] If trained physicians and pharmacists can help massively with educating patients and spreading awareness on the safe disposal of prescribed medications and, thus, can reduce the potential for harm that comes from storing expired or unwanted medications at home.^[7] This is also evident by the results of a cross-sectional observational study conducted in Virginia that found a statistically significant difference ($P < 0.001$) in the disposal methods of opioids of the patients who were counseled by their healthcare providers compared to those who were not counseled.^[12]

Although flushing unused medications down the sewer or throwing them in the trash are globally prevalent medication disposal practices, they can lead to detrimental hazards especially if these leftover remedies reach the drinking water stream.^[4] The hazardous effects of throwing medications also depend on the solid waste management of each country, whether the trash is burned or collected in open dumps.^[4] The most vulnerable population would be infants, children, and pregnant women.^[13]

Costanzo *et al.*^[14] studied the concentration of three antibiotics (ciprofloxacin, norfloxacin, and cephalexin) in the sewage water in Australia. The study has shown not only significant concentration of those antibiotics but also bacteria resistant to many antibiotics including ciprofloxacin, tetracycline, and trimethoprim/sulphamethoxazole.

Kolpin *et al.*^[15] analyzed the pharmaceuticals, hormones, and other organic wastewater contaminants in US streams from 1999 to 2000. The study showed that there is a substantial level of materials, commonly found in medications, in 80% of water samples.

Other studies were conducted on drinking water and unfortunately the levels of those compounds were appreciable.^[16–18]

In the State of Qatar, national guidelines that are designed to control safe disposal of unused medicines are not known to the public. To embolden appropriate and safe disposal of medicines by the public, delineating the level of knowledge and attitude of community toward disposal of unused pharmaceuticals would be a crucial step. Those results will be shared with the ministry of public health with an ultimate goal to conduct awareness among the public to properly dispose unused medications.

Study Design, Period, Setting, and Participants

A cross-sectional perspective study via a questionnaire was conducted at Hamad Medical Corporation, the only tertiary care, and teaching hospital in the State of Qatar at the time of the study. Our target population included parents who had a child or children aged >1 year and <14 years. The plan was to recruit 300 participants as a convenient sample. The study was conducted between February 10, 2019 and January 31, 2020, and included all children aged >1 year and <14 years who came to the outpatient clinics for well-child and sick visits. We also included children who were admitted to the inpatient general pediatric ward. A total of 305 questionnaires were completed (response rate = 90%).

We have used an anonymous modified interview-based assessment of parental knowledge, acceptability, and preferences of proper disposal and take-back programs of medications. The content of the questionnaire was adopted from several studies^[19–23] and modified them to meet our patient population culture.

The Medical Research Center at Hamad Medical Corporation validated the questionnaire that was composed of a total of 23 items. These sections addressed parents and children demographics, medication sharing habits, parental knowledge, and attitude toward medication take-back program. Participants were enrolled through direct personal contact during arrival and departure times in the outpatient general pediatric clinics and inpatient pediatric wards. One caregiver for each household with a child aged 1–14 years was eligible to participate. Verbal informed consent was obtained at the time of the interview and an information sheet that explained the research was handed to every participant. All materials were available in Arabic and English. We have informed participants as to why the information was being collected and how it would be used. Before completing the questionnaire, we have counseled parents that their participation was voluntary and that their answers were confidential and anonymous.

Caregivers did not receive any type of compensation for participating in the study. This study was approved by Hamad Medical Corporation–Medical Research Center and IRB with reference number MRC-01-18-143.

Statistical Analysis

Qualitative and quantitative data values are shown as frequencies along with percentages and mean ± standard deviation, and median and range. Descriptive statistics are used to summarize demographic and all other characteristics of the parents. Associations between two or more qualitative or categorical variables are assessed using the Chi-square test. Pictorial presentations are utilized to simplify the presentation of results. A two-sided *P* value < 0.05 is considered to be statistically significant. All statistical analyses were conducted using the statistical package SPSS, version 19.0 (IBM Corporation, Armonk, NY, USA).

Results

In total, 305 questionnaires were completed (response rate = 90%). More than 80% of parents were in between 20 and 39 years of age, 70% of them were females, and 80% were college graduates. Almost 90% of participants have immediate relatives who were taking medications for chronic diseases. Table 1 displays the rest of demographic characteristics of the participants.

Almost 60% of parents stated that they keep unused medications at home, whereas 10% were not aware of the fate of the leftover medications. Table 2 shows some parental conceptions and practices of medications.

Approximately 95% of the parents dispose of the expired medications. In terms of the mode of disposing of the medications [Figure 1], 66% of caregivers dispose of the medication bottle or package in the trash can, whereas 14% remove the medications from the bottles or packages and throw them in the trash, and 15% put them through the drain.

When asked if participants read disposal measures in the medication pamphlet, only 10% answered “always,” whereas 26% answered “sometimes.”

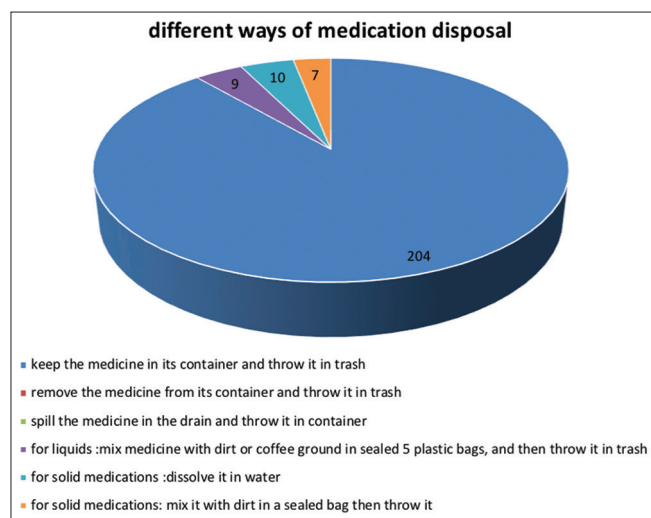


Figure 1: Parental modes of depositing unused medications

Participants were asked [Figure 2] if they have heard of any medications take-back programs, 75% answered no, whereas 14% were not sure. However, almost 60% of them would use the take-back program if available and 18% were not sure.

It is worth mentioning that being a healthcare worker or being a parent of a child younger than 7 years of age was associated with better knowledge about medication take-back programs (*P* = 0.04). The remaining associations among sociodemographic factors and questions related to parental knowledge and attitudes of proper disposal of unused medications and medication take-back programs were not statistically significant (*P* > 0.05).

Table 1: Demographics of study population

Total (n=305)	n (%)
Gender	
Male	134 (44)
Female	164 (54)
Age	
less than 20 years	8 (3)
20-29 years	79 (26)
30-39 years	163 (53)
Above 40 years	55 (18)
Marital Status	
Married	292 (96)
Divorced	7 (2)
Widowed	3 (1)
Education level	
Less than high school	16 (5)
High school	29 (10)
Some college	10 (3)
College graduate	180 (59)
Post Graduate	69 (23)
Healthcare Worker	
Yes	70 (23)
No	233 (76)

Table 2: Parental conceptions and practices of medications

Total (n=305)	n (%)
Ingesting adult medications can harm children	
Yes	258 (85)
No	18 (6)
Unsure	22 (7)
Small amounts of adult medications can harm children	
Yes	239 (78)
No	26 (9)
Unsure	33 (11)
Share medications with other family members	
Always	138 (45)
Sometimes	141 (46)
Rarely	22 (7)
Never	4 (1)

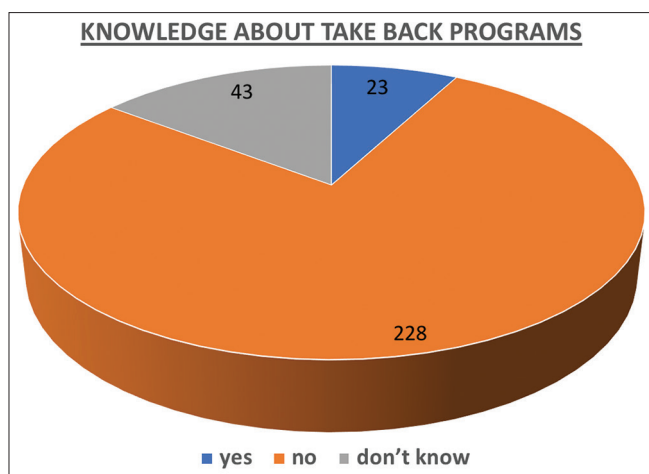


Figure 2: Parental knowledge about medication take-back programs (numbers reflects "n")

Discussion

The aim of this study was to evaluate the knowledge, attitudes, and disposal practices of unused medications in the State of Qatar. Most parents showed correct understanding toward medication waste. However, the majority of the participants were not aware of drug take-back system and had different views in ways of ameliorating the effect of unused medicine. Most of the participants agreed on the fact that they lack adequate knowledge of safe disposal practices. A large share of parents kept drugs at their homes during the study period. Favored habits of disposal of unused medications were throwing away in household garbage as it is. Our results concur with studies conducted in our region,^[11,19,24] in some African Nations,^[25,26] and New Zealand.^[27] A study conducted in Kuwait showed that approximately 80% of the respondents disposed of their medications in the garbage, and about 50% returned expired medications to the health centers.^[28] AlAzmi *et al.*^[24] conducted a study delineating the norms of disposing of unused medications in the Kingdom of Saudi Arabia. Data were collected from four main outpatient pharmacy services. The results were close to ours, where 73% of the participants disposed of the medications in the trash, 14% returned the medications to the initial dispenser pharmacy, 5% never disposed of them, and 3% donated them to friends or charities. In addition, participants stated that they never received any information regarding take-back programs from clinicians.

In the current study, 60% of parents had leftover, unused, or unwanted medications, which concur with a study conducted in Gujarat^[29] but slightly higher than the study conducted in Serbia (44.4%).^[30] This variance might be attributed to different educational programs and structures in different countries. This high rate of storage of unused or expired medication in the residencies should be given importance as it can cause unreasonable medication use especially that most people keep unused medications at home for future use or to share with friends/family members. It might also cause accidental childhood poisonings.

Lack of knowledge of proper disposal of medications in our participants could be ameliorated by intervention from healthcare providers and pharmacists. Thus, clinicians should be enrolled in educational programs for appropriate and safe disposal of medications and convey the message to patients. Moreover, pharmacists have a crucial role in providing proper counseling regarding safe disposal of medications.

Public education is crucial to this issue. Organizing awareness campaigns through the ministry of health and utilizing social media can have an impact on proper disposal of medications. International guidelines can be used as a lead to stipulate recommendations on safe and appropriate disposal of unused medications. For instance, in the United States, the DEA developed a national prescription drug take-back initiative. This program runs throughout the year since 2010 and organizes medication take-back events.^[31]

Guidance is needed to bridge the gap to ameliorate the lack of knowledge to proper disposal of unused medications. One suggestion would be to put tamper-resistant boxes in pharmacies that will allow patients to bring medicines back as proposed by the Nebraska Medication Education for Disposal Strategies.^[32] The State of Qatar is a very resourceful country. During the Covid-19 pandemic, the Qatari ministry of public health [MOPH] founded a hotline (16000) so that residents and citizens can request their prescriptions to be delivered to their homes.^[33] The plan was successful and the same process is feasible for take-back programs for unused medications.

Parent's attitudes and perceptions are considered indispensable targets for community health intervention. Unused medications could be dealt with by a comprehensive range of services such as parental education and community perception in collaboration with the ministry of public health.

Primary care clinicians can be the frontrunners in initiating the process and guiding families by counseling and showing the resources.

Limitation

This study should be interpreted cautiously for many reasons. This is a descriptive cross-sectional design and therefore it cannot be perfectly ascertained associated factors with attitude, knowledge, and practice of the participants. Moreover, we have used a self-administered questionnaire where recall bias of disposal practices could be an issue.

Conclusion

Parents residing in the State of Qatar have deficiencies in knowledge about medication disposal. Parent's attitudes and perceptions are considered indispensable targets for community health intervention. Our next step is to share our data with the ministry of health to spread awareness about proper disposal of medicines and take-back programs in Qatar.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Ethical approval

The medical research center and IRB of Hamad Medical Corporation approved this study (# MRC-01-18-143).

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Conflicts of interest

There are no conflicts of interest.

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