

Community Awareness of Home Sharps Containers: A Descriptive Survey

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Abstract

The techniques for discarding sharps used by individuals at home have been poorly documented. This has resulted in the dangerous disposal of sharps in the community, which raises concerns for public health and environmental health. The aim of this study is to assess patients' awareness about the appropriate way of discarding injection products at home as a health-promotion tool. A cross-sectional descriptive study was conducted using a 15-questions survey, which was distributed electronically between January 26 and February 16, 2020. A total of 578 participants completed the questionnaire, and 61.1% of the respondents indicated that they throw away their sharps directly into the public trash. It appears that 37.5% of the respondents have inadequate information about the proper way of disposing of the injection sharps, which indicates a lack of communication between the individuals and their healthcare providers. Furthermore, 33% of them experience at least one needlestick injury yearly. According to these data, there is a lack of awareness about the proper disposal of sharps. Medical waste is easily underestimated by individuals, which can lead to a negative impact on the community.

Keywords

Sharps containers; Awareness; Saudi Arabia; Needle stick injury

Introduction

Many patients are living with chronic diseases that require self-administration of injectable medications at home. For example, insulin is one of the top 10 medications used in Saudi Arabia according to data from 2010-2015^[1]. Patient education about the proper ways of disposing of sharps after using the injectable medication is as important as education about injection techniques. In Saudi Arabia, the sharps-disposal system in healthcare institutions is well managed, but at home, unsafe methods are used.

Improper sharps disposal at home can negatively affect the community and raises concern about an increased risk of needlestick injuries (NSIs). NSIs could lead to blood-borne infections such as hepatitis B (HBV), hepatitis C (HCV), and human immunodeficiency

virus (HIV)^[2-4]. The Centers for Disease Control (CDC) reported an outbreak of HBV due to improper blood-glucose monitoring practice at home^[5].

The U.S. Food and Drug Administration (FDA) provides instructions about the proper disposal of needles for injectable medications by placing them in a sharps container directly after using them. They also recommend that patients ask healthcare providers, including pharmacists, about locations where to obtain sharp containers and how to dispose of used ones safely. As an alternative, FDA suggested the use of heavy-duty plastic household containers instead of directly throwing away needles in public trash cans^[6].

There are several publications on techniques for discarding sharps in healthcare institutions, but there

is a lack of documentation about the techniques used by individuals at home. This could result in dangerous disposal of sharps in the community, which raises a concern for the public and environmental health. Thus, the aim of this study is to assess the awareness of community individuals about the appropriate way of discarding of injection products at home while emphasizing the use of sharp containers, which should be a mandatory procedure.

Method

A cross-sectional study was conducted in the period of January 26 to February 16, 2020. The study involved people who currently live in Jeddah City, where the population is estimated as 3,456,259 according to the General Authority for Statistics in the Kingdom of Saudi Arabia as of 2010. The estimated target sample was 600 participants, which was calculated according to a confidence interval of 95% and confidence level of 4. Consent was obtained from the participants before they agreed to answer the questionnaire.

A semi-structured questionnaire was designed using 15 questions, including one regarding consent to participate and three addressing demographics. The other 11 questions were multiple-choice questions about general perception regarding previous experience with injectable products and awareness about the appropriate way of discarding of injection products.

The survey questions were developed based on similar published studies regarding the disposal of injectable diabetic medications in two countries^[7,8]. Several questions were rephrased and adapted, and new items were created to accommodate all types of injectable medications used at home. A preliminary questionnaire was critiqued and validated by an assistant professor in the pharmacy practice department who specializes in medication safety. A clinical pharmacist reviewed the questions and suggested revising the knowledge items from a true-or-false format to multiple-choice questions instead. Thus, we used a 5-point Likert scale for a few questions.

The survey was distributed to the public in Arabic through a frequently used smartphone application, WhatsApp (WhatsApp Inc.), as well as Google forms (Google Inc.). All survey questions were mandatory to answer, and compensation was not provided for completing the survey. The survey began with

electronic consent, which was mandatory before respondents could proceed^[9].

Our inclusion criteria were patients using injectable medications at home and age of 18 years or above. The primary outcome was defined as people's awareness about the appropriate way of discarding of injection products and how they perceive it. The secondary outcome was the previous use of safe containers and how the population disposes of sharp products. The electronic form data were entered and analyzed using IBM SPSS Statistics for Windows, Version 25 (IBM Corp., Armonk, NY USA), and a quantitative analysis was performed.

Results

From all the invitations that were sent, 578 participants completed the questionnaire, and most of them were female (83.7%). Furthermore, nearly half of the respondents were from Jeddah (56.2%), and 12.6% were from Riyadh. Two-thirds of the respondents (76.6%) were 18-44 years old, and half of them were under 25 years old (53.28%), as shown in Table 1.

Nearly all the participants used home medication injections (97.7%), but 13 participants did not use them, so they were excluded from the study. The most common injectable used was subcutaneous injection (59.2%), while intramuscular injection was used by 25.6% (Table 1). The most common medications used were subcutaneous insulin injections, which was used

Table 1. Demographic data

Item	Number (578)	Percentage
Gender		
Female	484	83.7%
Male	94	12.3%
Age		
18-25 years	308	53.3%
26-44 years	135	23.3%
45-65 years	117	20.3%
Older than 65 years	18	3.1%
City		
Jeddah	325	26.2%
Riyadh	74	12.8%
Makkah	57	9.9%
Other	122	21.1%
Type of home medication injections		
Subcutaneous injection	342	59.2%
Intramuscular injection	148	25.6%
Intravenous injection	94	16.3%
Not using any injection medications	13	2.2%

by 452 (80%) individuals, followed by anticoagulant injections at 9.2% (52 participants), as shown in Figure 1.

More than one-third of the participants (37.5%) who used home injectable medications had never been educated about discarding their injectable medications, while one-quarter of them were consistently educated by their health care providers. Three-quarters of the participants (74.5%) reported that they knew about sharps containers, but only 13.4% used them, while approximately 25% of the respondents did not know about them. Two-thirds of the participants did not use sharp containers at all, while 10% consistently used them (Table 2).

Among the respondents who used the home medication injections, 345 (61.1%) of them threw away sharps directly into the public trash, 62 (10.9%) respondents used plastic bags, and 100 (17.7%) used

water bottles. Only 74 (13.1%) individuals used sharps containers as a way of disposal. We asked our population about how they dispose of their sharps containers' after they are filled, and 252 (44.1%) individuals did not know, 197 (34.4%) individuals threw them away directly into the community trash, and 94 (16.4%) individuals delivered them to healthcare institutions.

Most home medication injection users 343 (60%) thought that sharps containers are essential, while one-third of them did not know if they are necessary. Only 40% of them would always recommend the use of sharps containers to their family and friends, while 15% would not recommend them at all (Table 3). Finally, two-thirds of respondents had not had any NSIs, while 20 had them annually, and 10% had them monthly (Figure 2). Most of our respondents (76.8%) had no idea about where they can obtain sharps containers.

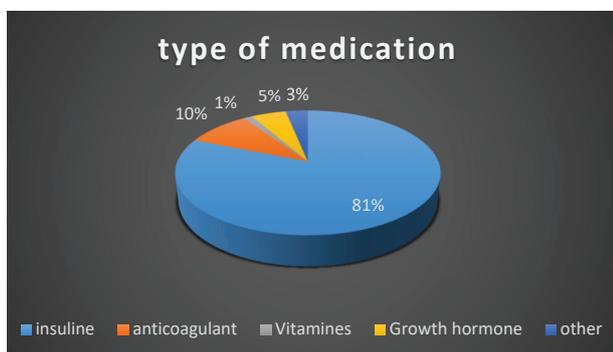


Figure 1. Type of medication.

Table 2. Previous use of sharps containers

Item	Number (565)	Percentage
Did any health care provider educate you about the discarding of injectable medications?		
Not at all	216	37.5%
Always	117	20.7%
Often	76	13.5%
Sometimes	96	17%
Rare	64	11.3%
Did you know what the sharps containers are?		
Yes	423	74.9%
No	142	25.1%
Did you use sharps containers?		
Not at all	382	67.6%
Always	61	10.8%
Often	31	5.5%
Sometimes	37	6.5%
Rare	56	9.6%

Table 3. Disposal of sharps containers

Item	Number	Percentage
Way of throwing way medical sharps materials		
Directly into the public trash	345	61.1%
Into plastic bags	64	10.9%
Into water bottles	100	17.7%
Into medical sharps containers	74	13.1%
Other	10	1.8%
Attitude toward the importance of sharps containers		
Very important	343	60.7%
Not important at all	49	8.7%
Do not know	173	30.6%
Would you recommend the use of sharps containers		
Not at all	88	15.5%
Always	231	40.9%
Often	82	14.5%
Sometimes	84	14.9%
Rare	80	14.2%

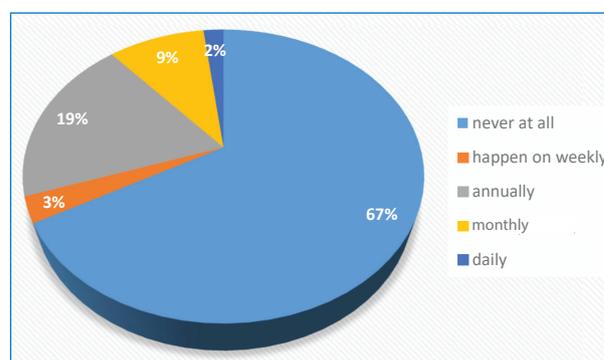


Figure 2. The incidence of needle stick injury.

Discussion

This study examines the community awareness of using sharps containers at home. Our key finding is that 216 (37.5%) of the individuals had low awareness about the proper way to dispose of their sharps, indicating poor communication between individuals and their healthcare providers. The findings of Sharif *et al.*^[7] support ours in that they reported that information about the use of devices was received from pharmacists (103, 68.7%), but only 85 (56.7%) participants received instructions about the safe disposal of sharps. Furthermore, Musselman *et al.*^[10] showed that out of 50 respondents, 40% received education about disposing of used diabetic medication needles. Of that 40%, nurses were the source of information 60% of the time, and pharmacists were the source 25% of the time.¹⁰

Another finding is that 345 (61.1%) of our respondents threw away their sharps directly into the public trash. The results of Olowokure *et al.*^[11] support this finding. They reported that 24.3% of diabetic patients directly disposed of sharps into household waste, and sharps boxes were the least used method of sharps disposal in South Staffordshire, an English health district in the United Kingdom:

As a result of the high percentage of our respondents inappropriately throwing away their sharps materials, 2% of them were accidentally injured by needles weekly, 10% were injured monthly, and 20% were injured annually, which emphasizes the importance of community awareness about sharps containers at home. The FDA permits different methods of disposing of used sharps containers safely, such as dropping them off at doctors' offices, hospitals, or pharmacies. Free local collection sites for household hazardous waste such as household cleaners are also an option to drop off used sharps containers.

One limitation that we faced in our survey was the electronic distribution, which gave the respondents the option of not filling it out. Furthermore, special populations such as geriatrics and pediatrics who use home medication injections are not usually familiar with new technologies, meaning that they could not fill out the electronic survey. Another limitation was that we could not reach our target number of responses. The lack of research in Saudi Arabia also limited our resources of information regarding this topic.

Conclusion

There is a lack of awareness about proper ways of discarding injection needles at home among respondents, which could lead to severe issues affecting public health. As pharmacists are in contact with patients who use self-injectable medications, we recommend that they should have more contribution to improving public awareness in this regard.

Conflict of Interest

The author declared that there is no conflict of interest that is related to this study and this article.

Disclosure

The author did not receive any type of commercial support either in the form of compensation or financial support for this case report. The author has no financial interest in any of the products, devices, or drugs mentioned in this article.

Ethical Approval

The study was approved by the Ethics Committee of the KAUH in Jeddah, Kingdom of Saudi Arabia, also known as the Institutional Review Board of Hospitals.

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وعي المجتمع بحاويات الإبر الطبية الحادة في المنزل: مسح وصفي

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المستخلص. تم توثيق تقنيات التخلص من الأدوات الحادة التي يستخدمها الأفراد في المنزل بشكل سيئ مما أدى إلى التخلص الخطير من الأدوات الحادة في المجتمع مما يؤثر القلق على الصحة العامة والصحة البيئية. تهدف هذه الدراسة إلى تقييم وعي المجتمع نحو الطريقة المناسبة للتخلص من المنتجات القابلة للحقن في المنزل كأداة لتعزيز الصحة. أجريت دراسة وصفية مقطعية مستعرضة من ١٥ سؤالاً. تم توزيعه إلكترونياً في الفترة ما بين (٢٦ يناير ٢٠٢٠ - ١٦ فبراير ٢٠٢٠). أكمل ما مجموعه ٥٧٨ مشاركاً الاستبيان، وألقى ٦١,١٪ من المستجيبين أدواتهم الحادة مباشرة في سلة المهملات العامة وحوالي ٣٧,٥٪ من الأفراد لم يتلقوا تعليماً جيداً حول الطريقة المناسبة للتخلص من أدواتهم الحادة، مما يشير إلى نقص الاتصال بين الأفراد مقدمي الرعاية الصحية الخاصة بهم. أيضاً، يعاني ٣٣٪ منهم على الأقل من إصابة عصا الإبرة سنوياً. وفقاً لهذه البيانات، هناك نقص في الوعي بالطريقة الصحيحة للتخلص من الأدوات الحادة. لا يجب التقليل من أهمية النفايات الطبية بسبب تأثيرها السلبي على المجتمع.