



Attitudes regarding the disposal of expired/unused medication

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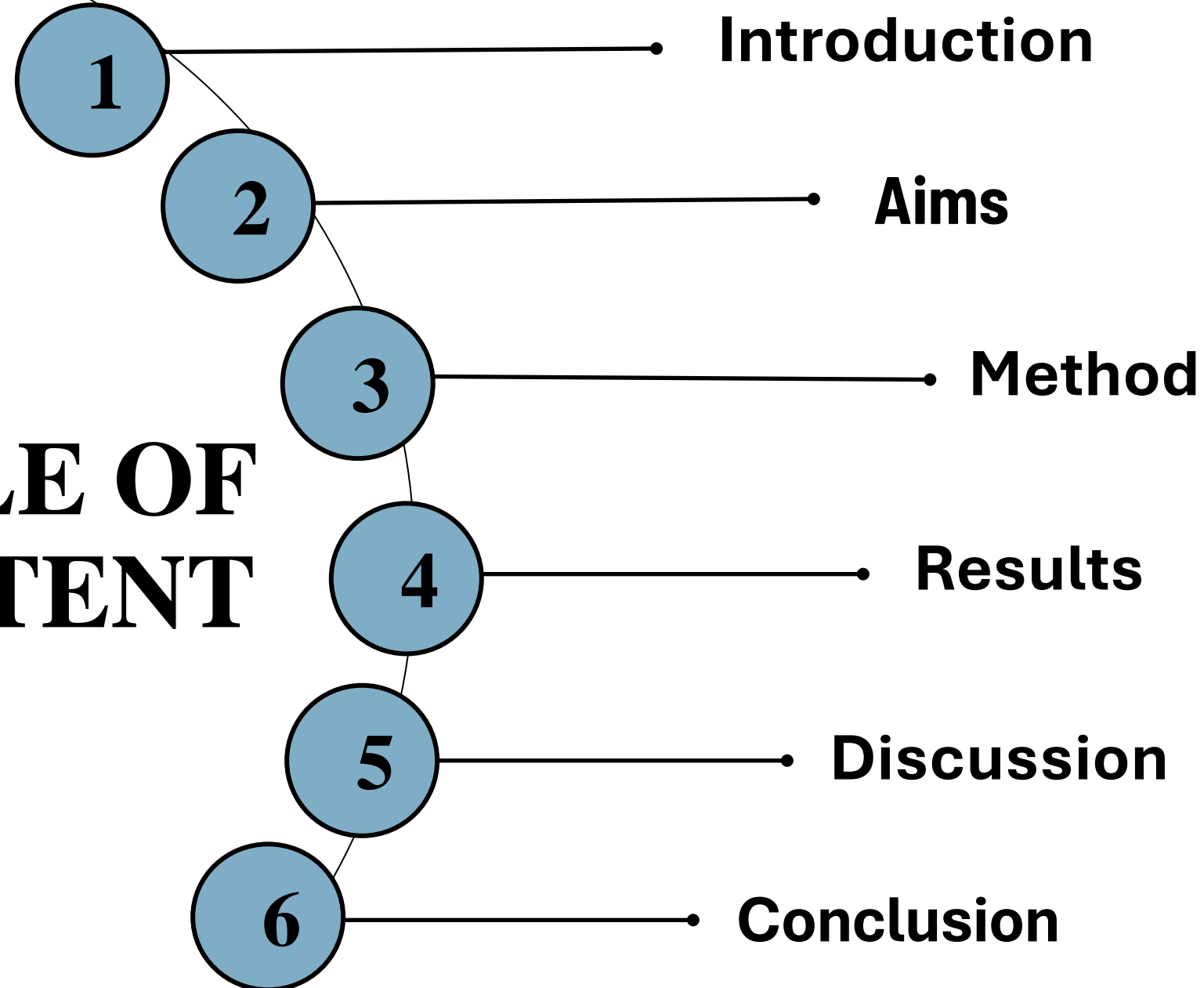
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Introduction

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- ❖ pharmacies are managed by the government and provide medication free of charge for a variety of patients including in-patients, outpatients and specialized clinics.
- ❖ There are approximately 400 private community pharmacies in T&T facilitating medication access.
- ❖ While medication may be easily accessible, not all medication is consumed.





- ❖ For example, there may be non-adherence to drug regimen, changes in drug dosage or drug treatment; or it may have passed its expiry date. Studies conducted in the USA suggest that a substantial proportion of the population, washing it down the sink and disposal in household trash are as possible causes of the contamination.
- ❖ Pharmaceutical contamination of the environment is associated with increased incidences of cancer and the development of antibiotic-resistant bacteria. (Hart M. The New Trinidad and Tobago. London and Glasgow: Collins, 1965).
- ❖ The primary method of medicine disposal utilized by the public facilities in T&T is incineration .
- ❖ Estimated the value of expired drugs in T&T disposed of through authorized public sector schemes to be 1.8% of the overall pharmaceutical budget annually.

Aims

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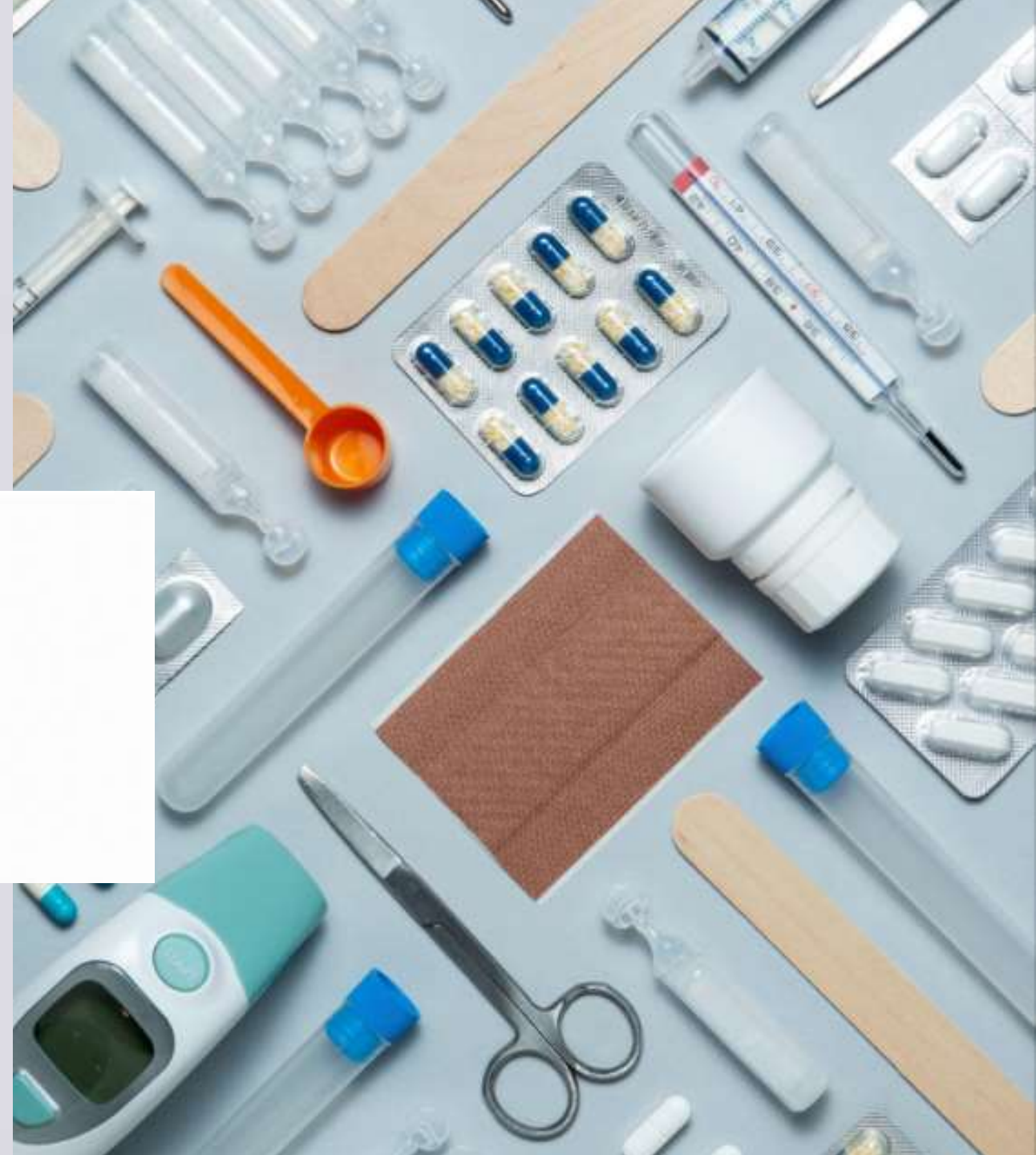


- ❖ The purpose of this study was to evaluate patients' willingness to take part in a medication takeback program as well as their knowledge and comprehension of proper medication disposal techniques.



Method

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1. Objective: The study aimed to assess participants' knowledge and practices regarding medication disposal.

2. Ethical Approval: Ethical clearance was obtained from the Ethics Committee, and approval was granted from multiple regional health authorities.

3. Questionnaire Development: A questionnaire comprising 26 questions across four sections was developed based on literature review and modified survey questions. It underwent refinement based on feedback from a pilot study.





4. Sampling and Data Collection: The study targeted individuals aged 18 and older visiting outpatient pharmacies. A sample size of 384 was determined, and data were collected over 12 weeks from August 2 to November 2, 2019.

5. Data Collection Method: Final-year pharmacy students distributed and collected the questionnaires, approaching every fifth patient entering the pharmacy area.

Results

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1. Survey Overview: A survey was conducted across four Regional Health Authorities (RHAs) in Trinidad, with 547 respondents, predominantly female (67.6%), aged 18-35 (41.1%), and with tertiary education (53.2%).

2. Unused Medication Types: Over-the-counter medications were commonly unused/expired, with antibiotics being kept by 24.9% of respondents.

3. Disposal Methods: Most respondents (86.1%) disposed of medications in household garbage, with a minority burning them (2.2%) or pouring them down the sink (13.3%).

4. Concerns: Concerns about accidental ingestion by children were expressed by 34.7% of respondents, while 46.6% were concerned about contaminating the water supply/environment.

5. Source of Information: The internet (19.4%) was the main source of information on medication disposal, followed by pharmacists (14.1%).

6. Willingness to Participate: 82% of respondents were willing to participate in a medication takeback program, with 67.5% preferring private pharmacies as drop-off locations.

7. Awareness of Risks: 70.4% believed that unused/expired medications can be considered waste, and 47.2% were aware of the environmental risks associated with improper antibiotic disposal.

8. Education and Awareness: The study emphasizes the need for improved education on proper medication disposal practices, especially concerning environmental impact and antimicrobial resistance.

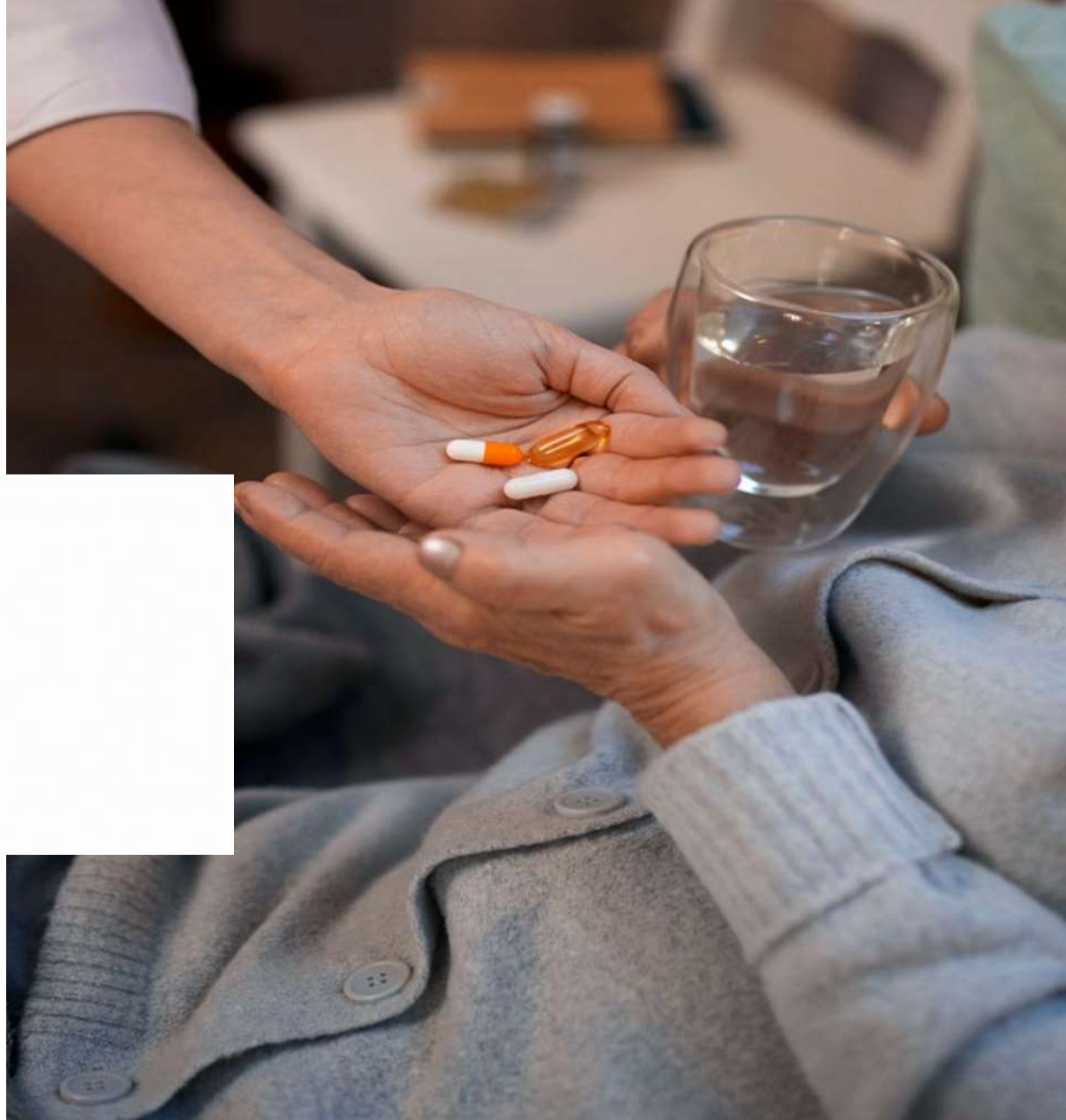


Table 1 Types of unused/expired medication in the household of Trinidadian patients (n = 547)

Medication type	Number of participants(%)
Paracetamol	225 (41.1)
Vitamins	248 (45.3)
Antibiotics	136 (24.9)
Painkillers	203 (37.1)
Cough syrup	198 (36.2)
Antacids	91 (16.6)
Diabetes	26 (4.8)
Cardiac	31 (5.7)
High blood pressure	38 (6.9)
Antidepressants	2 (0.4)
None	106 (19.4)

Discussion

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❖ In the discussion, the study delved into the methods of disposing of unused medications among the participants. It was revealed that the vast majority disposed of their unused medications by tossing them into household garbage bins. The primary concern regarding improper medication disposal was the risk of accidental overdose in children, with minimal consideration given to its impact on humans, animals, and the environment.





Most patients were found to possess unused over-the-counter medications and antibiotics. Additionally, the internet emerged as the primary source of information on proper medication disposal. Furthermore, there was a willingness among participants to engage in a medication take-back program, with nearly one-third willing to bear the cost of the service and expressing a preference for private community pharmacies as drop-off points.

- ❖ US FDA Guidelines for Safe Medication Disposal Proposed guidelines for safe disposal of unused medications.
- ❖ Flushing list for drugs with potential for abuse and fatal ingesting: fentanyl, diazepam. They can be flushed down the toilet.
- ❖ Guidelines for non-flushing drugs: proper disposal in garbage.
- ❖ Lack of research on the environmental impact of improper medication disposal.
- ❖ Further research needed to understand pharmacist knowledge and environmental contamination.

(Makki M, *et al.*,2019).



Conclusion

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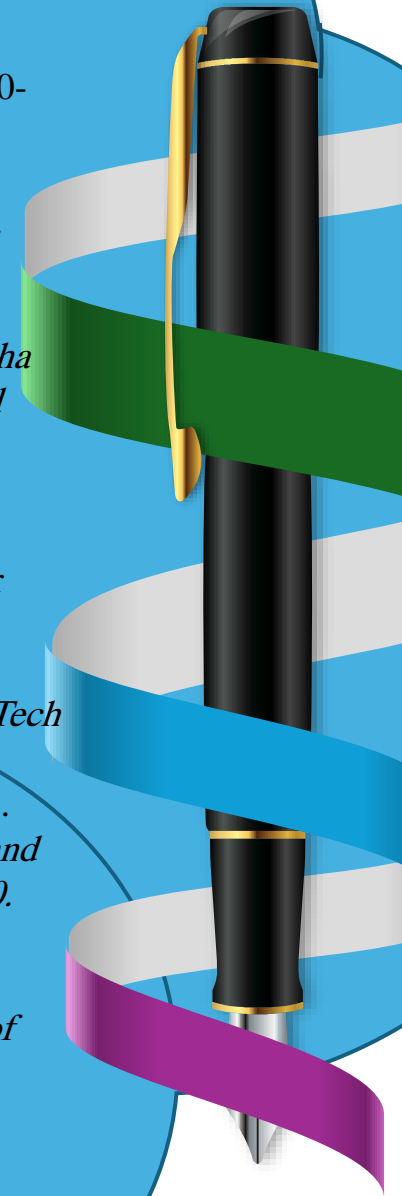
Health bodies should institute public education campaigns on improper medication disposal.

Pharmacists can lead initiatives for safe disposal of unwanted household medications.

Pharmacists can engage in patient education and promote programs to curb bad practices.

Reference

- Donn J, Mendoza M, Pritchard J. AP: Drugs Found in Drinking Water. 2008. http://www.usatoday.com/news/nation/2008-03-10-drugs-tap-water_N.htm (17 March 2020, date last accessed). *Donn J, Mendoza M, Pritchard J. AP: Drugs Found in Drinking Water. 2008. http://www.usatoday.com/news/nation/2008-03-10-drugs-tap-water_N.htm (17 March 2020, date last accessed)*
- Hart M. The New Trinidad and Tobago. London and Glasgow: Collins, 1965, 13. Reprint 1972. *The New Trinidad and Tobago. London and Glasgow: Collins, 1965, 13. Reprint 1972.*
- Manocha S, Suranagi UD, Sah RK et al. Current disposal practices of un- used and expired medicines among general public in Delhi and National Capital Region, I. C. D. S. 2020; 15: 13–9. <https://doi.org/10.174/1574886314666191008095344>. *Manocha S, Suranagi UD, Sah RK et al. Current disposal practices of un- used and expired medicines among general public in Delhi and National Capital Region, India. Curr Drug Saf 2020; 15: 13–9. https://doi.org/10.174/1574886314666191008095344.*
- Manocha S, Suranagi UD, Sah RK et al. Current disposal practices of un- used and expired medicines among general public in Delhi and National Capital Region,)
- Kolpin DW, Furlong ET, Meyer MT et al. Response to comment on “Pharmaceuticals, hormones, and other organic wastewater contaminants in U.S. streams, 1999–2000: a national reconnaissance”. *J Environ Sci Tech* 2002; 36: 4007–8. <https://doi.org/10.1021/es020136s>. *Kolpin DW, Furlong ET, Meyer MT et al. Response to comment on “Pharmaceuticals, hormones, and other organic wastewater contaminants in U.S. streams, 1999–2000: a national reconnaissance”. J Environ Sci Tech 2002; 36: 4007–8. https://doi.org/10.1021/es020136s.*
- KusturicaMP, SaboA, TomicZ et al. Storage and disposal of unused medications: knowledge, behavior, and attitudes among S. people. *I. J. C. P.* 2012; 34: 604–10. <https://doi.org/10.1007/s11096-012-9652-0>. *KusturicaMP, SaboA, TomicZ et al. Storage and disposal of unused medications: knowledge, behavior, and attitudes among Serbian people. Int J Clin Pharm 2012; 34: 604–10. https://doi.org/10.1007/s11096-012-9652-0.*
- Vellinga A, Cormican S, D. J. et al. P. practice regarding disposal of unused medicines in I. S. T. E. F. 2014; 478: 98–102. <https://doi.org/10.1016/j.scitotenv.2014.01.085>. *Vellinga A, Cormican S, Driscoll J et al. Public practice regarding disposal of unused medicines in Ireland. SciTotal Environ 2014; 478: 98–102. https://doi.org/10.1016/j.scitotenv.2014.01.085.*



Thank you

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