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Discharge of in-disuse medications by Itapetininga population, São Paulo State, Brazil

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Abstract: The aim of the current article is to evaluate the ways of disposing medications in disuse adopted by the population in Itapetininga City, São Paulo State, Brazil. Cross-sectional study carried out with 182 subjects who attended health facilities. It was performed through a questionnaire about the disposal of medication kept in "home pharmacies". In total, 2.7% of the 182 respondents properly disposed medication (delivery to health facilities) - 5.5% accounted for the correct discard of it, but, yet, it was associated with some inappropriate behavior. There was no leftover medication in 14.8% of "home pharmacies" likely because of delivery at correct medication amount and of adherence to treatment - 77% of the ducts could cause environmental damage. In total, 65% of the 182 respondents kept medication in disuse for further use and 10% of them used to donate medication to neighbors, friends and relatives - these behaviors are considered inappropriate due to likely self-medication and storage issues. In conclusion, there is the need of environmental and health education for both the population and health professionals.

Keywords: Reverse logistics; health services waste; solid waste; drug disposal; environment and education.

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Introduction

Concern with the right management of medications to treat and cure diseases is so relevant that procedures for their proper disposal stay in the background, and it contributes to their main disposal in household waste and/or in sewage networks, after they are flashed down in the toilet or discharged in the sink (PEREIRA et al., 2019; PINTO et al., 2014).

Medicalization and the growing pharmaceutical market have contributed to household medication accumulation or to "home pharmacies". One can take into account a whole bunch of possibilities to explain such an accumulation, be them intentional or not, namely: (1) discharging what was more than the necessary for the treatment; (2) changing medical prescriptions; (3) free samples eventually gotten by patients in medical practices; (4) lack of adhesion to treatment; (5) disease healing; (6) lack of attention at disposal time; (7) impossibility of fractionating blisters; (8) unnecessary purchasing by users and (9) patient's death (DANTAS; SILVA; FONSECA, 2018; MEDEIROS; MOREIRA; LOPES, 2014). Medication leftovers can lead to its inappropriate disposal, to losing the expiring-date deadline, to self-medication, among other factors that pose risk for people's health and for the environment (MEDEIROS; MOREIRA; LOPES, 2014).

Unawareness about proper discharge concerns not just the general population, but also health professionals. Such a reality is worrisome, since these professionals could help multiplying knowledge in their communities (BANDEIRA et al., 2019).

In case medication is disposed in household waste, it may go to dumps, controlled landfills and/or sanitary landfills, because, based on the National System of Information about Sanitation (SNIS), these are the solid waste processing units in Brazil (BRASIL, 2019). Dumps and controlled landfills are processing units where deposited waste is exposed to the environment, it has straight contact with the soil, which is not sealed, as well as there is no slurry drainage or drainage of gases formed by deposited substances; not mentioning the fact that they do not stop daily waste coverage (BRASIL, 2019; MEDEIROS; MOREIRA; LOPES, 2014; VAN ELK, 2007). If sanitary landfills do not have a good soil sealing structure, they are not different from the risk posed by other processing units (MEDEIROS; MOREIRA; LOPES, 2014). If medication is discarded along with household waste, it will get mixed to slurry from other waste types, reach the soil and, subsequently, groundwater reserves; thus, it will pollute the environment (MEDEIROS; MOREIRA; LOPES, 2014). Besides, medication discarded in household waste can pose risk for garbage scavengers and end up in children's hands, as highlighted by WHO (WORLD HEALTH ORGANIZATION, 1999).

Medication disposal in the sink or toilet is the pathway through which it gets to the sewage network, also known as wastewater. It passes through several purification stages, but the conventional treatment is not enough to rule out the medication, and its metabolites, from wastewater; furthermore, it can contaminate humans and animals (KINRYS et al., 2018; PAÍGA et al., 2019; SANTOS et al., 2020).

Medications must be destined to class I sanitary landfills – dangerous or co-processed products - in order to be properly discarded or, yet, incinerated (BRASIL, 2020).

As for incineration, WHO suggests high temperatures (above 1,200 °C) to destroy the pharmacological compounds in proper facilities with adequate control of gas emissions (PEREIRA et al., 2019; WORLD HEALTH ORGANIZATION, 1999). With respect to wastewater, it is necessary adopting procedures capable of ruling out the medication, and its metabolites, from it, based on methods such as Ultrafiltration, Reverse Osmosis, among others (MEDEIROS; MOREIRA; LOPES, 2014).

Decree n. 10.388, which provides on the reversed logistics system for expired household medication, or for medication no longer taken by users, was approved in June 2020 to regulate "home pharmacy" medication discharge. This system will be implemented in a gradual fashion; it will take from 1 to 2 years to be actually operational in states' capitals and in municipalities holding more than 100 thousand inhabitants. Drugstores and pharmacies will be fixed collection points – it is necessary having 1 collection point for every 10 thousand inhabitants in municipalities holding a population larger than 100 thousand people. Costs with proper environmental medication discharge are mandatorily on the backs of medication manufacturers and importers (BRASIL, 2020).

So far, the public and private powers are not concerned with the disposal of household medication, and it accounts for medication accumulation due to lack of guidelines for both the general population and health professionals, as well as to lack of places available for medication disposal (DANTAS; SILVA; FONSECA, 2018).

Medication advertisements, and the easiness to acquire it, contribute to self-medication (ARRAIS et al., 2016), in other words, the use of a given medication without medical prescription or orientation by a health professional – it can be acquired by patients to treat symptoms and/or diseases detected by the patient itself, or, yet, it can be leftovers from previous treatments. Self-medication can also happen through donation by neighbors or family members, including medications that demand formal medical prescription, among them one finds antibiotics and controlled medications (MORTAZAVI et al., 2017; PONS et al., 2017).

Self-medication can pose risk to human health, such as adverse reactions and/or effects, drug interaction, resistance to medications and likely intoxications (MORTAZAVI et al., 2017; PONS et al., 2017). However, this is a discussible conduct, because over-the-counter medicines (OCMs) can be considered an act 0f self-caregiving (MORTAZAVI et al., 2017). Self-medication practices and lack of orientation to consumers contribute to inappropriate use of medications. The World Health Organization (WHO) points out that approximately 50% of the population uses inadequate medications that, in their turn, account for more than 30% of intoxications in the country, according to data by the National Agency of Sanitary Surveillance (BRASIL, 2022a; BRASIL, 2022b).

The aim of the current article was to assess the disposal of medication in disuse by the population in Itapetinga City, São Paulo State, Brazil.

Method

Quantitative, cross-sectional, exploratory study carried out in Itapetininga City, São Paulo State, Brazil, from October 2019 to January 2020, with 182 individuals who attend to private and public healthcare facilities. Option was made for carrying out the research with this profile of respondents since they are people who acquire or get medication in these places; in other words, they are more likely to know about the disposal of "home pharmacy" medication.

Inclusion criteria encompassed: to be in the age group over 18 years, from both sexes, and attend to healthcare facilities who agreed on filling out and on signing the Free Consent Form, and who know how medication disposal is done in their homes.

Sample size – of the random simple type – was calculated based on the number of Itapetininga inhabitants in the age group over 18 years (approximately 100 thousand inhabitants, infinite sample) (INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA, 2021), on proper disposal estimates (by 4.4%) (BUENO; WEBER; OLIVEIRA, 2009; PINTO et al., 2014; PONS et al., 2017) and on 3% sampling error at 95% confidence level - it resulted in 180 respondents.

Itapetininga County counts on 18 Basic Healthcare Units, also known as UBS, on two Emergency Caregiving Units (PA) and on one Healthcare Provision Post (PAS), one Regional Hospital, one Specialized Component for Pharmaceutical Assistance (CEAF) and fifty-three drugstores/pharmacies (PREFEITURA MUNICIPAL DE ITAPETININGA, 2017). It was possible listing one CEAF, two PAs and PASs among these facilities; the five UBSs and the four drugstores/pharmacies – the bigger ones in each region and in the downtown area (except for those in the Northern Zone, where there were no drugstores or pharmacies available) – were intentionally chosen. The selected facilities authorized the survey to be performed in their physical space, since the questionnaires were applied by convenience, just to users or consumers who entered in these locations. Date and appointments were chosen through raffle, in each data-collection point, based on the work sampling technique – there were 42 appointment ranges available for respondents. On average, 12 individuals who met the inclusion criteria were surveyed within the raffled schedules.

The questionnaire applied to respondents encompassed eight closed questions; two of them also had the option for open answer, i.e., "other options" and "other ways". Items approached data such as age, sex, schooling, occupation, family profile (family constitution, number of kids, adolescents, adults and elderly), amount of medication in the "home pharmacy" (all pharmacological families, regardless of the product's pharmaceutical form and delivery), conduct adopted for medications that were not in use and their disposal, whenever necessary, and, finally, respondent's opinion about the relevance of guidelines for medication disposal.

The following forms of medication disposal were taken as correct: (1) take it back to the medical unit, (2) take it back to the pharmacy or drugstore and (3) take it back to Sanitation Surveillance, since these locations could give the proper destiny to medication, as provided in Decree n. 10.388/2020 and in Ordinance n. 16 from 1999, in its article 9.

Conducts that could somehow damage the environment were taken as incorrect, namely: discharge in household waste, sink or toilet, or other ways (open question).

The conduct of keeping medication for further use and donation to neighbors, friends and relatives was also taken as inappropriate, given the risk of self-medication and of losing medication storage quality and care traceability - also seen as inadequate.

Data collection was carried out after the study was approved by the Research Ethics Committee, under number CAAE 21900919.9.0000.5373.

Statistics were performed in R 3.6.2 software, at 95% confidence level. Pearson's chi-square test (x2) was used to assess association between categorical variables 'sex' and 'occupation' in the health/education field, and disposal form harmful to the environment. The test to associate the median recorded for variables 'schooling' and 'amount of medication in home pharmacy' with outcome variable 'inappropriate disposal' was carried out through Mann-Whitney test, because these quantitative variables did not present normal distribution (Shapiro-Wilk test).

Results and discussion

In total, 196 people were approached, 11 of them did not want to answer the questionnaire and 3 did not know how 'home pharmacy' medications were disposed; it totaled, the sample counted on 182 respondents – this number matched the sampling calculation. The questionnaires were applied in the four regions and in the downtown area, in one CEAF, one PASs and in two PAs, in four pharmacies/drugstores and in five UBSs. More than 9 respondents were in the Eastern Zone – by the researcher's convenience – due to lack of pharmacies and drugstores in the Northern Zone (Table 1)

Table 1 – Interviews' distribution per region and medication acquisition location by Itapetininga's population, São Paulo State, Brazil – from October 2019 to January 2020

Area	CEAF	Pharmacy/ Drugstore	PAS	UBS/PA	Total	%
Downtown		12		13	25	14
Eastern		23		14	37	20
Northern				25	25	14
Western	17	13	15	27	72	39
Southern		12		11	23	13
Total	17	60	15	90	182	100

Source: Elaborated by author, 2022.

In total, 64% of the 182 respondents belonged to the female sex; women accounted for approximately 50% of Itapetininga's population (INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA, 2021). The prevalence of the female sex in medication acquisition locations was also mentioned in the studies by Bueno, Weber and Oliveira (2009) (80.06%), Ramos et al. (2017) (64.6%) and Tribess Júnior, Bellaver and Zancanaro

(2018) (60%). Women tend to be responsible for taking care of their own health and of the family health (TEZOQUIPA; MONREAL; SANTIAGO, 2001).

Respondents' family composition has shown prevalence of adult and elderly individuals (77%) in comparison to children and adolescents. This finding meets the age composition in Itapetininga City, since it can be explained by increase in life expectancy and by the smaller number births observed over the years - a fact that corresponds to the Brazilian age pyramid (PERISSÉ; MARLI, 2019).

After the 182 respondents were analyzed, only 5 mentioned to have made the proper disposal (2.7%). The study conducted by Pereira and collaborators reported that only 2.0% of the population disposes expired medications in UBSs (PEREIRA et al., 2019). Ramos et al. (2017) highlighted that 2.6% of respondents had used a drugstore as disposal point and that 4.2% used healthcare units as disposal location. In total, 5.5% of respondents accounted for proper medication disposal, but it was also associated with some sort of inadequate conduct.

According to the literature, lack of knowledge about proper medication disposal, as well as lack of adequate disposal locations may have contributed to such a finding (RAMOS et al., 2017). Only 11 of the 53 pharmacies and drugstores in Itapetininga City/ São Paulo State collect medication for further disposal; however, they do not clear advertise this service. Collection posts are distributed in Itapetininga City as follows: five facilities in the downtown area; one facility in the Northern Zone; one in the Southern Zone, two in the Eastern Zone and two in the Western Zone. This amount is not enough to fulfil the needs of the whole population in Itapetininga – 165,526 inhabitants -, since Decree n. 10.388/2020 states that municipalities with population higher than 100 thousand inhabitants (INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA, 2021) must have, at least, one collection point for every 10 thousand inhabitants (BRASIL, 2020). It is worth mentioning that up to the moment when the aforementioned decree was enacted, pharmacies and drugstores carried out expired and in-disuse medication collection procedures. In other words, the small amount of collection points in the city can be assumingly explained by lack of incentives for these facilities to perform the reserve logistics, because costs with medication elimination are supported by the facilities themselves (MEDEIROS; MOREIRA; LOPES, 2014).

Table 2 shows the incorrect or inadequate conducts applied to medication in disuse, and explanations for such a consideration.

Table 2 – Incorrect or inadequate conducts applied by the population in Itapetininga City, São Paulo State, Brazil, to medication in disuse, and its respective justification – from October 2019 to January 2020

CONDUCT	Responses	% *
Environmental Risk		
Discarded in household waste	84	46
Discarded in the sink/toilet	42	23
Discarded either in household waste or in the sink/ toilet	3	2
Discarded in some other ways (Plastic recycling, bared, burnt, in plants, in the cesspool, ground and through in civil construction gravel, frozen)	11	6
Total	140	77
Self-medication or lack of traceability		
Stored for further use.	118	65
Donated to neighbors/friends/relatives	19	10
Total	137	75

Source: Elaborated by the author, 2022.

* Rates exceeding 100%, because these conducts are exclusive.

Household waste was the most mentioned disposal form (46%); this datum meets the one observed in other research carried out in Brazil (56.87% and 62%) (BUENO; WEBER; OLIVEIRA, 2009; PINTO et al., 2014). Medication eliminated through this pathway can end up in dumps, controlled landfills and in sanitary landfills. Based on the National System in Information about Sanitation (BRASIL, 2019), dumps remain the largest processing units in the country, and this is a worrisome fact, because medications can pose environmental contamination risks, as well as represent a threat to recycling scavengers (WORLD HEALTH ORGANIZATION, 1999).

The second disposal way most often mentioned was the sink and the toilet (23%); this result is similar to that reported by Ramos et al. (2017) (20.3%) and Pinto et al. (2014) (19%). Studies carried out in the last years in Brazil, and in other countries, such as Portugal, Spain, Saudi Arabia, Greece, United States and Italy, report medication detection in wastewater. These studies found levels at magnitudes ranging from ng/L to μg/L, such as the case of paracetamol, diclofenac, hydroxy-ibuprofen, naproxen, azithromycin, clarithromycin, ciprofloxacin, sulfamethoxazole/trimethoprim, propranolol, carbamazepine, sertraline, fluoxetine, atenolol, hydrochlorothiazide, salicylic acid, metformin, norfluoxetine, cephalexin, amoxicillin, ampicillin, erythromycin, ibuprofen, furosemide,

valsartan, citalopram, metoprolol, ketoprofen, estradiol, doxycycline, atorvastatin, prednisone, fluconazole, loratadine, ranitidine and norfloxacin (ARSAND et al., 2020; CELIC et al., 2019; KOSTICH; BATT; LAZORCHAK, 2014; PAÍGA et al., 2019; PALLI et al., 2019; PAPAGEORGIOU et al., 2019; SANTOS et al., 2020; SHRAIM et al., 2017).

In total, 2% of the ones that described inappropriate disposal followed the household waste disposal, or the sink/toilet one.

The last disposal pathway mentioned in the study (6%) was "other ways" - Similar findings were cited by Bueno, Weber and Oliveira (2009). Individuals have justified the 'other ways' disposal as the way to protect recycling scavengers and the environment, since medications would not get exposed to the soil, or to the sewage network, if alternative disposal forms were adopted. Respondents were concerned about this issue, but they did not know the consequences of discarding medication in inappropriate locations.

There is growing concern with the disposal of pharmaceutical products in the environment, because they can have several damaging effects on ecosystems, as well as contribute to the emergence of bacteria resistant to antibiotics (PAÍGA et al., 2019). The study carried out in Porto Alegre City, Brazil, is an example of it; this study aimed at analyzing water samples and found bacteria with the gene to resist the following antibiotics: azithromycin, cephalexin, ciprofloxacin and sulfamethoxazole/trimethoprim (ARSAND et al., 2020). Medicines to treat human depression, like fluoxetine and sertraline, can present the potential to affect the aquatic biota (RICHMOND et al., 2016). According to a study performed in Texas, United States, these medications, and their metabolites, were found in fish liver, brain and tissues (BROOKS et al., 2005). Furthermore, the study carried out by Conners et al. (2009) evidenced that these same medications have changed tadpoles' development and caused growth reduction and metamorphosis' acceleration in them. Medications such as metoprolol, citalopram, venlafaxine, azithromycin and carbamazepine were found in mussels and fish, in the study performed by Álvarez-Muñoz et al. (2015).

Risks to public health can be caused by the direct consumption of medication found in household waste through the meat of contaminated fish or, yet, in water with medication waste. However, the long-term impact of these products on the environment and on human health still needs further studies (PAÍGA et al., 2019).

With respect to wastewater treatment to rule out medication compounds, it would be necessary adopting additional procedures like Ultrafiltration, Reverse Osmosis, Activated Carbon, among others – they are expensive, but they can be quite effective (MEDEIROS; MOREIRA; LOPES, 2014). Australia, Singapore and California are examples of places using the aforementioned methods for water purification. Water treatment stations in these locations follow guidelines and are constantly monitored based on pharmaceutical indicators such as carbamazepine and diclofenac. Quality-standard tests point out the efficacy of procedures developed to rule out pharmaceutical compounds (MIAROV; TAL; AVISAR, 2019).

It was possible observing that 65% of the assessed individuals opted for storing medication leftovers for further use. This finding was similar to that mentioned in the study by Ramos et al. (2017) (73.8%). Assumingly, the option for keeping the medications can

be linked to lack of blisters' fractioning at the moment of medication disposal in phamacies and drugstores, to self-medication and/or to difficulty in getting a new prescription.

The so-called 'home pharmacy' refers to a stock of home medications that, in case of incorrect delivery, can lead to several risk factors, such as loss of expiration date deadline and, consequently, to risks to residents' health (MEDEIROS; MOREIRA; LOPES, 2014; RAMOS et al., 2017) and to self-medication (PONS et al., 2017). Their research also showed that 10% of respondents used to donate medications to neighbors, friends and relatives – this same practice was also observed in other studies -; a fact that can pose risk to the health of the one who made the inappropriate use of a medication acquired through donation (MORTAZAVI et al., 2017; PONS et al., 2017). Yet, one must take into account the loss of product storage and care relative-quality traceability, because medication kept at home is often stored in inappropriate places, i.e., in places presenting temperature and humidity variation, such as the kitchen (BUENO; WEBER; OLIVEIRA, 2009; RAMOS et al., 2017; TRIBESS JUNIOR; BELLAVER; ZANCANARO, 2018). Such places can degrade the pharmaceutical formula and make the medication inappropriate for consumption.

Of the total of respondents, 27 (14.8%) reported not to have medication leftovers, and this number was associated with public acquisition locations in 85% of the cases (UBS, Pas, PASs, CEAFs). Such an outcome can be related to medication delivery in acquisition locations at precise amounts or to adhesion to treatment.

Schooling in the sample reached 9.5 years; it reached 9 years in Itapetininga (INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA, 2021). The way medications are discarded disregards schooling ($p=0.59$); this finding follows the literature, according to which, college graduate and technical school students have reported to discard medications in an environmentally inappropriate way, since they did not have the right knowledge about this subject (PINTO et al., 2014).

Of the total number of approached individuals, 23 (13%) were health or education professionals; of them, 18 (78%) practiced conducts that could cause environmental damage – this is approximately the same rate recorded for respondents in general. Different studies have reported that professionals from different health knowledge fields discard medications in an improper way and, when they were enquired about the knowledge and impacts this action could have, these professionals often mentioned that the aggravating issue in this subject lied on lack of guidelines and training (AMARANTE; RECH; SIEGLOCH, 2017; BANDEIRA et al., 2019).

Research data have shown that there is no significant difference in the men:women ratio when it comes to conducts that could harm the environment ($p=0.93$). There is also no significant difference when the variable is 'amount of medication in the home pharmacy' ($p=0.67$)

In total, 97% of respondents think that guidelines about medication disposal are relevant and only 3% of them had never thought about it before or did not think that guidelines were important.

Given the recorded results, it was possible observing the need of educational ac-

tions aimed at informing the population about home pharmacy composition, about the proper disposal of medications and about other adequate conducts through campaigns focused on the following educational goals:

a) Proper disposal of expired, or in-disuse, medication (send it to health units, to Sanitary Surveillance, to pharmacies or drugstores);

b) Awareness about the environmental damages caused by inappropriate medication disposal (household waste, sink or toilet, among others);

c) Informing about the risks of self-medication (intoxication and adverse medical effects);

d) Informing about the risk of losing product traceability when they are donated to neighbors, friends and relatives (storage in inappropriate places, since it can cause pharmaceutical formula degradation, a fact that turns medication inappropriate for consumption).

Besides, it is important including or reinforcing the subject in discipline matrices in courses focused on the healthcare field; it must be done through active teaching-learning methodologies and through inter-professional education. Continuing education is the proposal applicable for graduated professionals.

Guidelines must be elaborated in a simple and creative way, through cartoons, applications, websites, social media, orientation warnings about disposal at medication purchase time, among others, in order to meet the needs of each one involved in this process.

The present study has the memory bias as its limitation because some questions demanded the respondent to remember the amount of medication, as well as the way it was disposed when it was in disuse. However, participants did not seem to have had a hard time answering such questions.

Conclusions

The study showed the disposal ways applied to medication in disuse by the population in Itapetininga City, São Paulo State, Brazil; it pointed out that the inappropriate management of 'home pharmacies' can lead to several risk factors, such as loss of expiring-date deadlines, self-medication, inappropriate storage, donations and inadequate disposal. States and municipalities must adopt the guidelines provided in Decree n. 10.388/2020 to accomplish the effective reserve logistics for expired, or in-disuse, home medications. The study's novelty lies on the approach based on the environmental perspective (inappropriate disposal and reserve logistics), on health (self-medication risks and risk of lack of traceability) and on education (the need of having campaigns for the population and for health professionals, and improvements in discipline matrices).

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AMBIENTE & SOCIEDADE 25 anos 25 años 25 years

SciELO

Descarte de medicamentos em desuso pela população de Itapetininga, São Paulo, Brasil

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Resumo: O objetivo do artigo é avaliar as formas de descarte de medicamentos em desuso pela população da cidade de Itapetininga, São Paulo, Brasil. Trata-se de um estudo transversal com 182 sujeitos que frequentavam estabelecimentos de saúde, por meio de um questionário referente ao descarte dos medicamentos da "farmácia caseira". Dos 182 indivíduos pesquisados, 2,7% descartavam os medicamentos corretamente (entrega para estabelecimentos de saúde). 5,5% descartavam corretamente, porém associado a alguma conduta inadequada. Em 14,8% das "farmácias caseiras" não havia sobra de medicamentos, provavelmente devido à entrega na quantidade correta e à aderência ao tratamento. 77% das condutas podiam causar dano ambiental. Dos 182 respondentes, 65% guardavam os medicamentos em desuso para uso posterior e 10% doavam para vizinhos, amigos e parentes, condutas consideradas inadequadas pelos possíveis problemas de automedicação e de armazenamento. Conclui-se pela necessidade de educação ambiental e de saúde para a população e profissionais de saúde.

Palavras-chave: Logística reversa; resíduos de serviços de saúde; resíduos sólidos; descarte de medicamentos; Meio ambiente e educação.

São Paulo. Vol. 25, 2022

Artigo Original

AMBIENTE & SOCIEDADE 25 anos 25 años 25 years

SciELO

Eliminación de medicamentos no utilizados por la población de Itapetininga, São Paulo, Brasil

Jacqueline Pereira da Silva
Flávio Morgado

São Paulo. Vol. 25, 2022
Artículo Original

Resumen: El propósito del artículo es evaluar las formas en que los medicamentos obsoletos son desechados por la población de Itapetininga, São Paulo, Brasil. Es un estúdio transversal con 182 sujetos que acudieron a establecimientos de salud, a través de un cuestionario sobre disponibilidad de medicamentos en la "farmacia domiciliaria". De los 182 encuestados, el 2,7% descartó correctamente el medicamento (entrega a los establecimientos de salud). El 5,5% descartó correctamente, pero se asoció a alguna conducta inapropiada. En el 14,8% de las "farmacias domiciliarias" no quedaron medicamentos, probablemente por entrega en la cantidad correcta y adherencia al tratamiento. El 77% de los ductos pueden causar daño ambiental. De los 182 encuestados, el 65% guardaba medicamentos obsoletos para su uso posterior y el 10% los donaba a vecinos y familiares, considerados inapropiados por posible automedicación y problemas de almacenamiento. La conclusión es la necesidad de educación ambiental y sanitaria para la población y los profesionales de la salud.

Palabras-clave: Logística inversa; residuos de servicios sanitários; residuos sólidos; eliminación de medicamentos; medio ambiente y educación.