

# The Tips for Improving Disposal of Your Unused Pills and Potions Safely (TIDY-UPS) Study



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## Introduction

Medications are the commonest intervention in healthcare,<sup>1</sup> yet not all medications obtained are consumed, whether through nonadherence,<sup>2</sup> overprescribing or excessive supply.<sup>3</sup> Up to £300m (€354m) is wasted annually on medicines in the National Health Service in the UK alone.<sup>4</sup> Additionally, toxic heavy metals and chemicals leaching from medicinal waste occurs in ill-designed landfills, absorbing into the food chain to be consumed by people and contaminating water.<sup>5,6,7</sup>

An *ad hoc* system takes place in Ireland whereby some pharmacies offer medication disposal services while others do not.<sup>8</sup> The Pharmaceutical Society of Ireland recommends patients to return unused medications to the pharmacy.<sup>9</sup> However, pharmacies have no obligation to offer such service, the costs of which lie with pharmacy owners. There is an absence of a state funded system to support disposal costs. The TIDY-UPS Study aims to explore household medicinal waste practices in Ireland by investigating consumer awareness, attitudes and behaviours, and identifying target behaviour change opportunities using a behavioural change model.

## Methods

An anonymous electronic self-administered questionnaire survey was used. A previously developed theoretically grounded questionnaire on this topic<sup>10</sup> was adapted to the Irish context and piloted with a Public and Patient Involvement (PPI) panel, linking with the TCD National PPI Network Office. A PPI panel of diverse age was formed who validated research questions and contributed to survey design. To embody diversity, inclusion and accessibility within available resources, the survey was in plain English, translated into Spanish (Castilian), adapted for people with visual impairment and to suit various mobile devices to maximise participation.

The survey contained sections regarding household medicine use; storage and disposal; awareness of appropriate medicinal waste disposal methods; interest, contribution to and management of medication wastage; safety and environmental impact and demographic information. Responses were gathered using Likert scale, rating scale, multiple choice and ranking questions.

### Data Collection

In line with the citizen science approach, the survey was distributed online to the Irish public using social media, charities, patient/carer advocacy groups and personal and professional networks. Inclusion-criteria: 1) reside in the Republic; 2) aged 18 years or older; 3) can provide informed consent. Eligible participants self-administered the survey online. Remote recruitment and administration methods are adherent to COVID-19 public health guidance and are environmentally friendly.

A participant recruitment poster was designed, approved and printed. The posters were displayed in many public places. Four pharmacies in each of the 26 counties in the Republic of Ireland were chosen at random and sent two posters to display. This aimed to increase reach for a more representative sample of the Irish public.

### Strengths and Limitations

Anonymous responses will protect participants from identification whilst reducing social desirability bias. PPI, citizen science and accessibility maximise consumer involvement. Nevertheless, participation is inevitably limited to consumers of sufficient English or Spanish competency with digital and internet literacy.

## Results

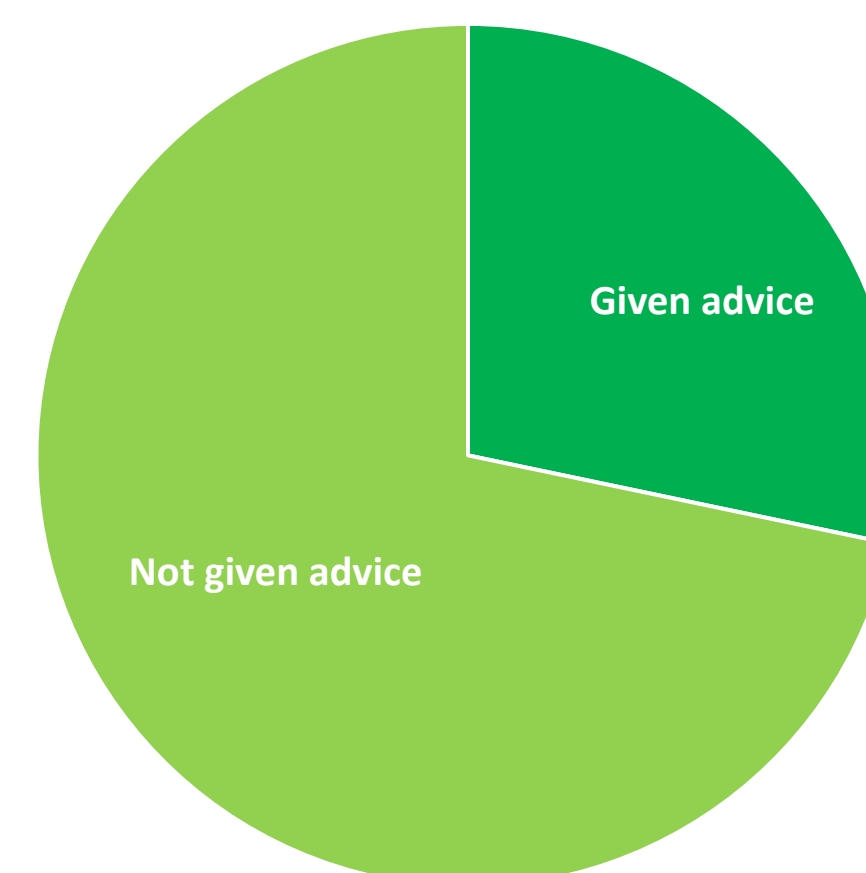
### Study Demographics

521 participants completed the TIDY-UPS survey. All participants provided consent. 74.9% (n=293) of participants were female, 23.8% (n=93) of participants were male and 1.3% (n=5) identified with 'other'.

Of the study participants, 80% (n=303) reported being White Irish, with 9% (n=35) Any other White Background, 4% (n=15) Asian or Asian Irish, 4% (n=14) Black or Black Irish, 2% (n=9) Any other, including Mixed Background, 0.3% (n=1) Any other Asian Background and 0.3% (n=1) being reported. The mean age of study participants was 37 years.

The majority (64%, n=242) of participants were lived in Dublin followed by Meath with 6% (n=24) of respondents living there. Responses were received from all 26 counties of the ROI excluding Monaghan (n=0). The study population included a variety of education levels. 0.5% (n=2) had primary school education, 18% (n=70) had secondary school education, 52% (n=202) had third level education and 29% (n=114) had a higher degree (Masters or Doctorate).

The majority 63% (n=244) were employed, 3% (n=12) were unemployed and 34% (n=133) chose 'Other, retired, student, carer'. To understand participant's exposure to the healthcare field, they reported if they or a close family member working in a health-related job before (e.g. doctor, nurse, pharmacist, dentist). 64% (n=249) responded that they/a close family member had worked in a health related job before. Some 12% (n=44) represented carers taking care of medication for another person.

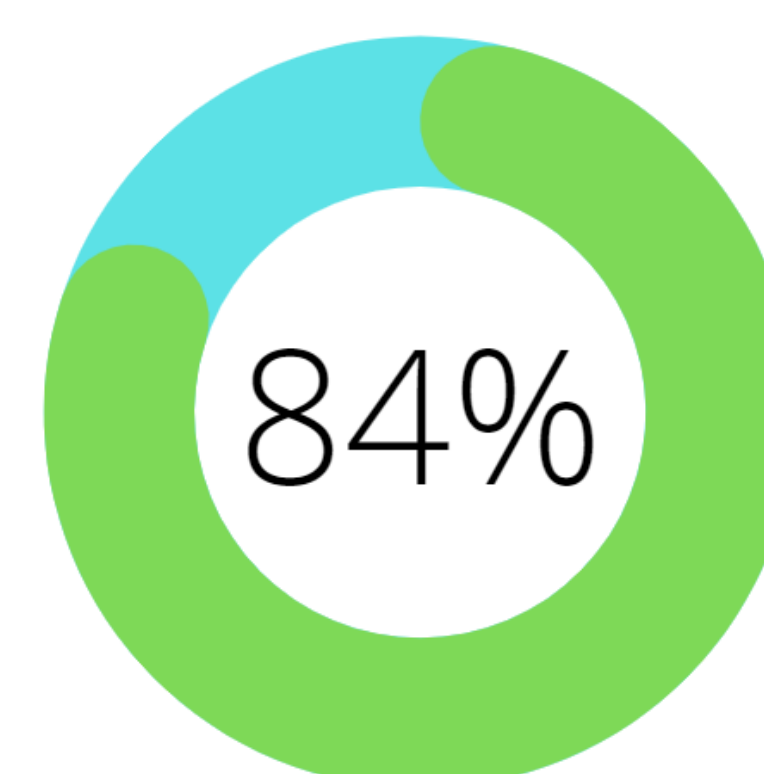
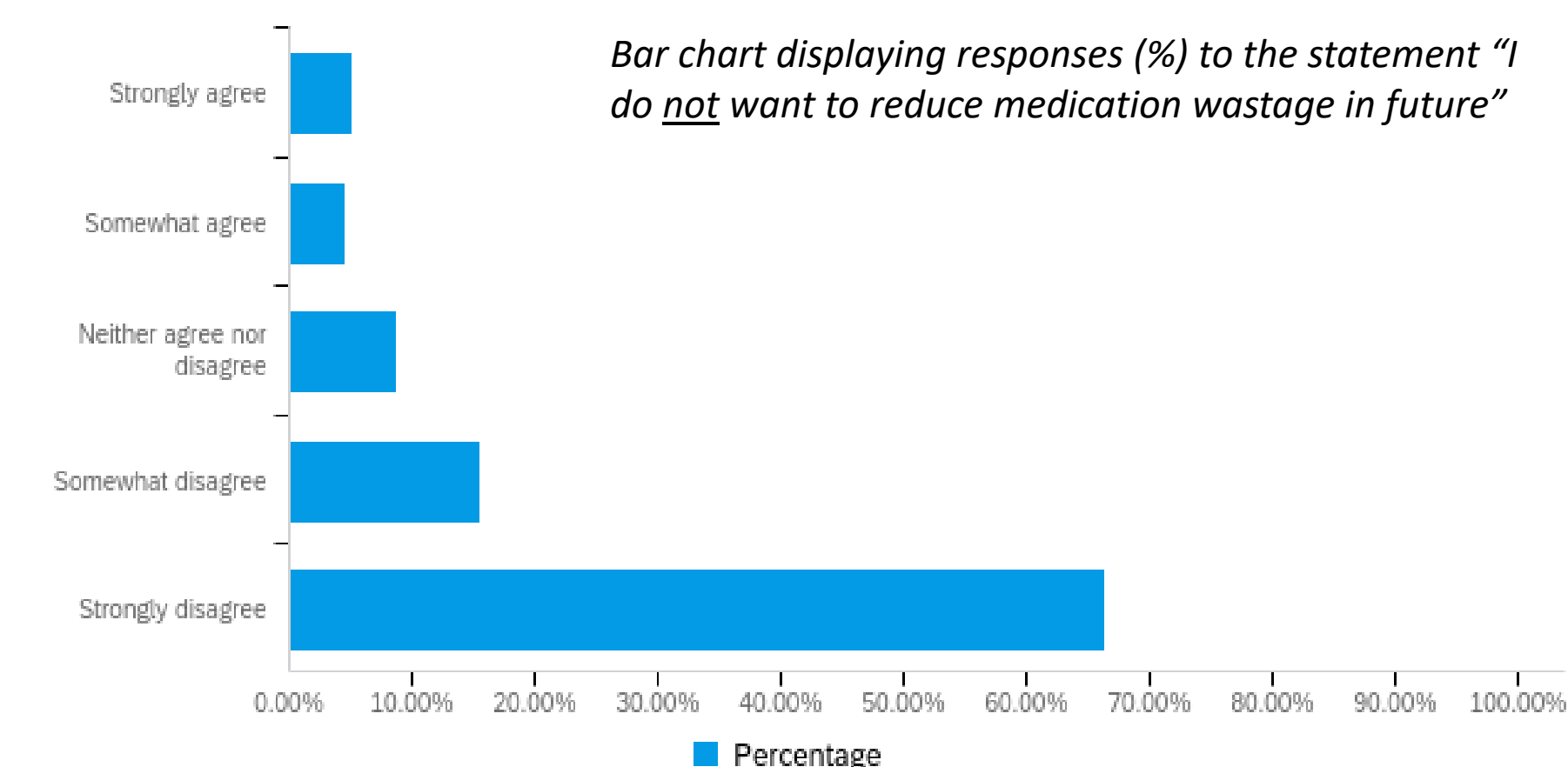


Most (71%) of those who used one or more medications regularly said they had never been given advice from a pharmacist, doctor or another healthcare worker on what to do with unused medication.

The most commonly answered methods of disposing expired medication were to "Throw them away with the household rubbish" (54%), Give them to a pharmacy (35%), Keep them for possible future use (16%) and Put them down the toilet or sink (13%). Disposal methods of unused medications were similar with respect to gender, except "Put them down the toilet or sink" which was selected by 15% of female participants and only 7.5% of male participants.

### Management of medication wastage

Some 80% of participants disagreed with the statement "I do not want to reduce medication wastage in future". A significant association between gender (SE<0.1) was shown with 70% of female participants strongly disagreeing but only 51% of male participants strongly disagreeing.

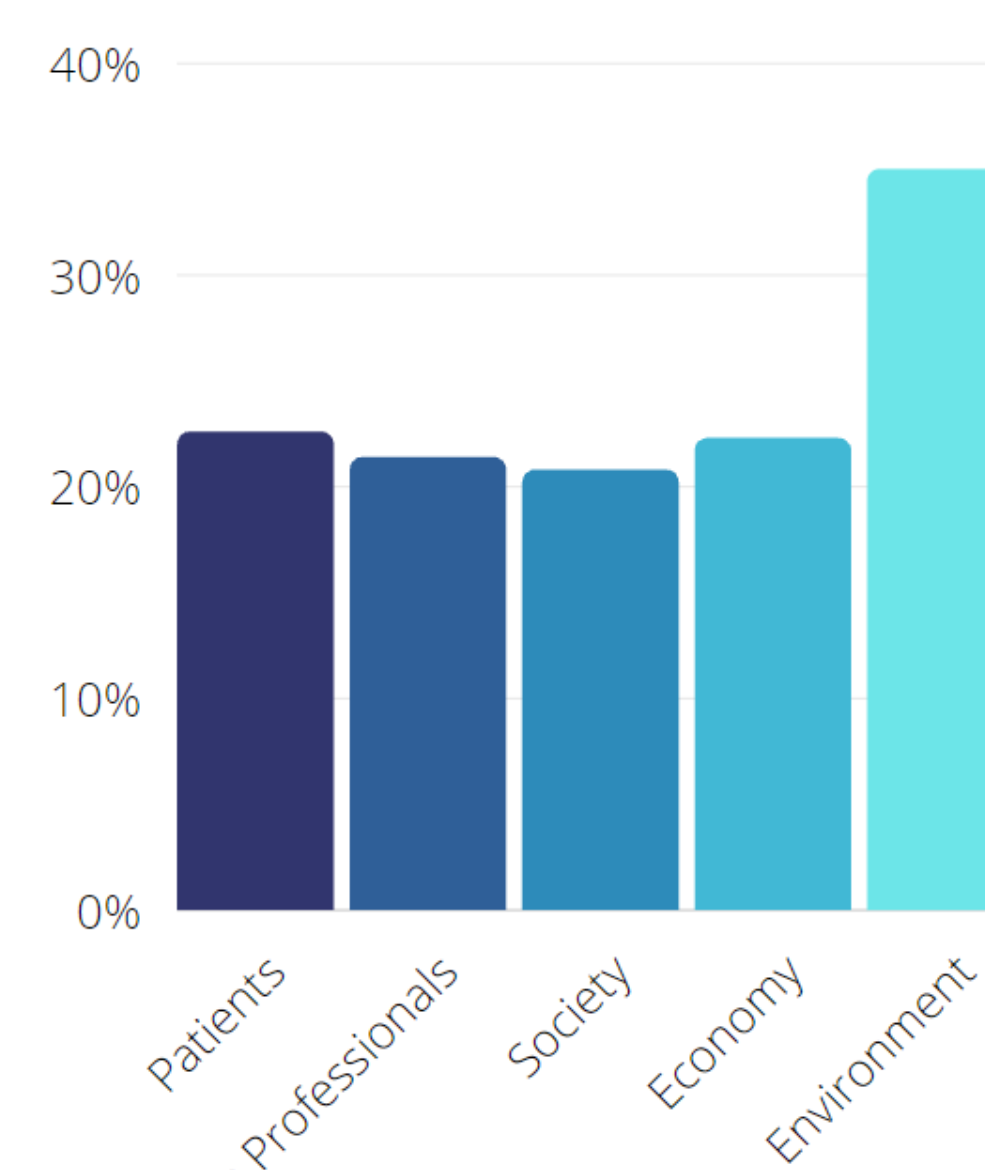


### Contribution to medication wastage

84% of the study population agree that the state could do more to reduce medication wastage in Ireland. 63% of participants agree "I feel that I could do more to reduce medication wastage in Ireland".

Of those who were or had a close family member who worked in a health-related job before, 70% agreed Healthcare Professionals (HCP) could do more to reduce medication wastage in Ireland.

However 59% of those related to or working in health-related job said they did **not feel confident** in their ability to reduce medication waste.

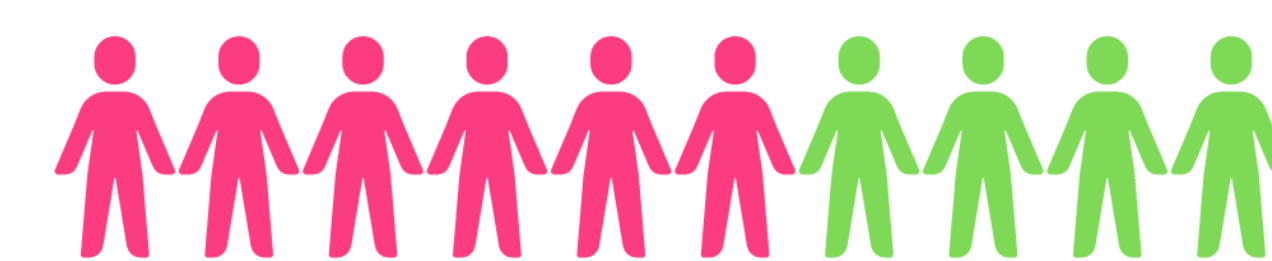


Bar chart displaying responses (%) answered as 'very interested' to the stem "I am interested in the impact of medication wastage on..."

### Interest in medication wastage

Many participants appear to favour interest in the specific impact of medication wastage on the environment compared with other parameters such as society and the economy. 35% (n=137) have said they are very interested in the impact of medication wastage in Ireland on the environment.

### Awareness of medication wastage



Of study participants, 60% said they were **not aware** of the issue of medication wastage in Ireland, including 50.5% of study participants with a higher degree. Only 12.2% of patients registered with the DPS, 10.9% with GMS, 3.7% with LTI and 15.8% with High Tech Schemes reported being fully aware of the impact of medication wastage in Ireland on patients.

## Conclusion

From the available data one may conclude there is a general lack of awareness and a degree of confusion around the topic of medication wastage in Ireland. There is a high degree of interest in the topic of medication wastage in Ireland, in particular relating to the effect it has on the environment.

Further research in the field is recommended to tackle the issue, nevertheless early data shows potential motivation for a change in behaviour should opportunity to do so become present at a greater degree.

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