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4-2012

# Survey of Community Pharmacy Customers' Medication Storage and Disposal Methods

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## Recommended Citation

Biddinger R, Farleman L, Janssen A, Martin M, Smith AM, Wamsley C, Frame TR. Survey of Community Pharmacy Customers' Medication Storage and Disposal Methods. Cedarville University Research and Scholarship Symposium. Poster Presentation. Cedarville University Dixon Ministry Center; Cedarville, OH, April 2012.

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# Survey of Community Pharmacy Customers' Medication Storage and Disposal Methods

Ryan Biddinger, Laura Farleman, Alex Janssen, Mallory Martin, Anna Smith, Chelsea Wamsley, and Tracy Frame, Pharm.D.

## Background

Many people store medications in bathrooms, which provide a moist, humid environment that speeds up the breakdown process of medications.<sup>1</sup> The proper way to store medicines is in a cool, dry place out of the reach of children.<sup>1</sup> Every year medications are also disposed of improperly presenting a risk to both humans and the environment. About one-third of all sold medications are unused.<sup>2</sup> The most common ways patients dispose of medications in the United States are flushing down the toilet or sink, and throwing them away. Because of this pharmaceuticals have been found in groundwater, and drinking water proving hazardous to both humans and ecosystems.<sup>3</sup>

In Congress today, both the *Drug Free Water Act* and the *Safe Drug Disposal Act* have been proposed to limit the disposal of pharmaceuticals in sewage systems, and provide the means of controlled substance disposal through take-back programs.<sup>4</sup>

In February 2007 the White House Office of National Drug Control Policy (ONDCP) established guidelines for the disposal of prescription medications.<sup>5</sup> ONDCP guidelines are: take unused, unneeded or expired medications out of the original container, mix with an undesirable substance (such as coffee grounds), securely seal in impermeable containers, such as sealable bags, and throw into the trash. ONDCP recommends only flushing if the label or patient information specifies to do so. Taking advantage of community pharmaceutical take-back programs is highly encouraged.<sup>5</sup>

**Objectives:** To determine whether patient education regarding medication storage and disposal is necessary in the greater Dayton area by measuring the number of patients with expired or unwanted medication and assessing patient knowledge and current practice of storage and disposal of medications.

## Methods

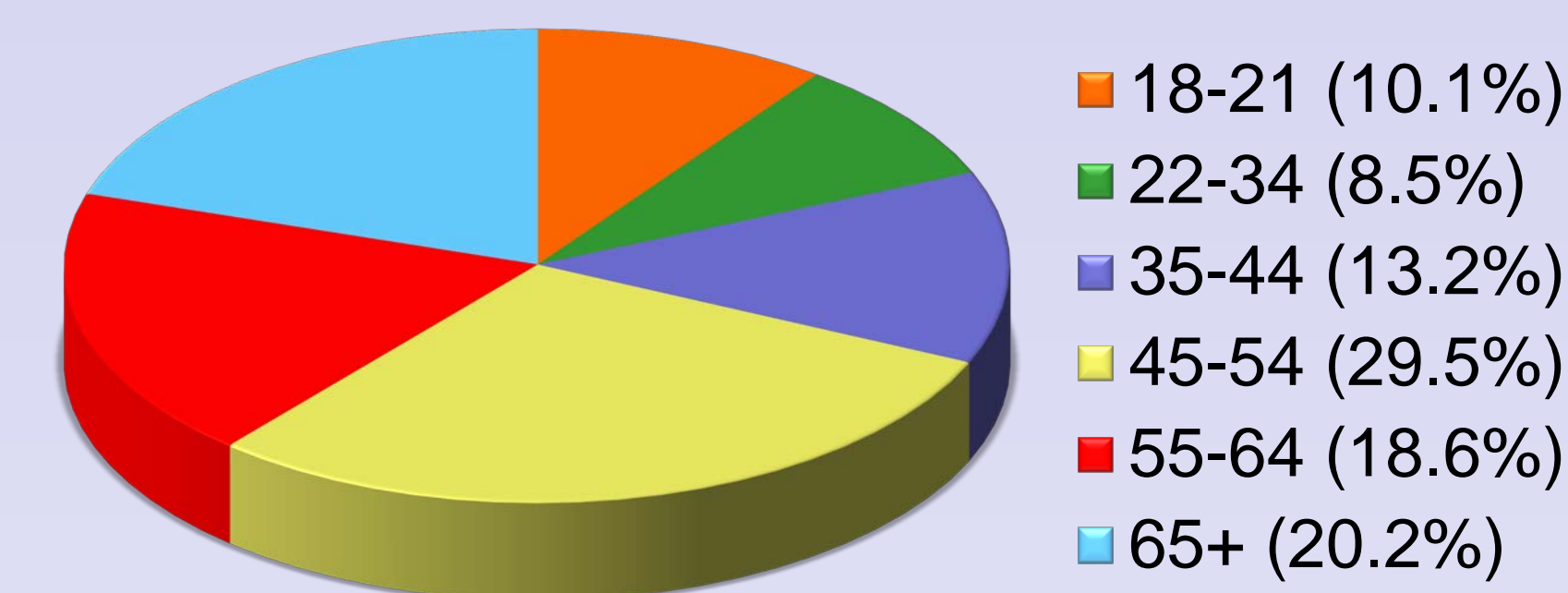
- A 15-question survey was created to examine possible correlations in patients.
- Survey asked questions pertaining to:
  - Demographics such as age, race, gender, marital status, and level of education.
  - Indication of knowledge for proper medication storage and disposal, using the following questions:
    - Has anyone ever told you the best place to store medications?
    - Has anyone ever told you the right way to get rid of expired, unused, or unwanted medications?
  - Current practice of medication storage and disposal, using the following questions:
    - How often do you check the expiration date on your medications?
    - Where do you store your medications?
    - How do you dispose of expired medications?
    - If there was a local medication drive to properly get rid of medications, would you bring your unused, unwanted, or expired medications to it?
- Patient surveys were handed out at 3 pharmacies in the Dayton area
- The surveys were analyzed for correlations using the program IBM SPSS v. 19.0

## Results

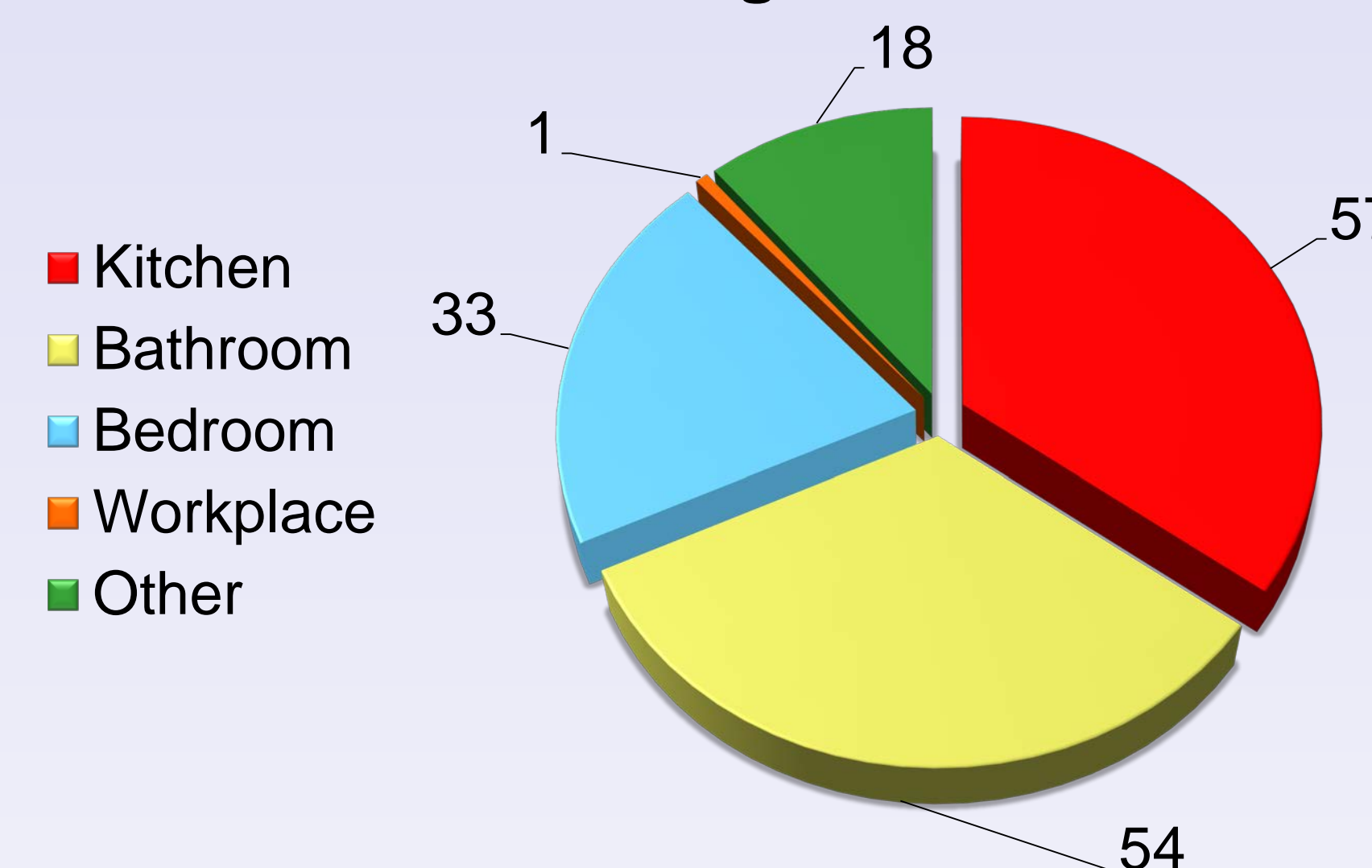
### Demographic Information:

- A total of 129 customers completed the survey
  - Gender
    - 29 were male
    - 90 were female
  - Race
    - 91% were white
    - 6.2% were African American
    - 0.8% were either Hispanic, American Indian or Alaskan Native, or other ethnic groups
- The various ages of the participants are represented in **Figure 1 (RIGHT)**.

### Age of Participants



### Medication Storage Location



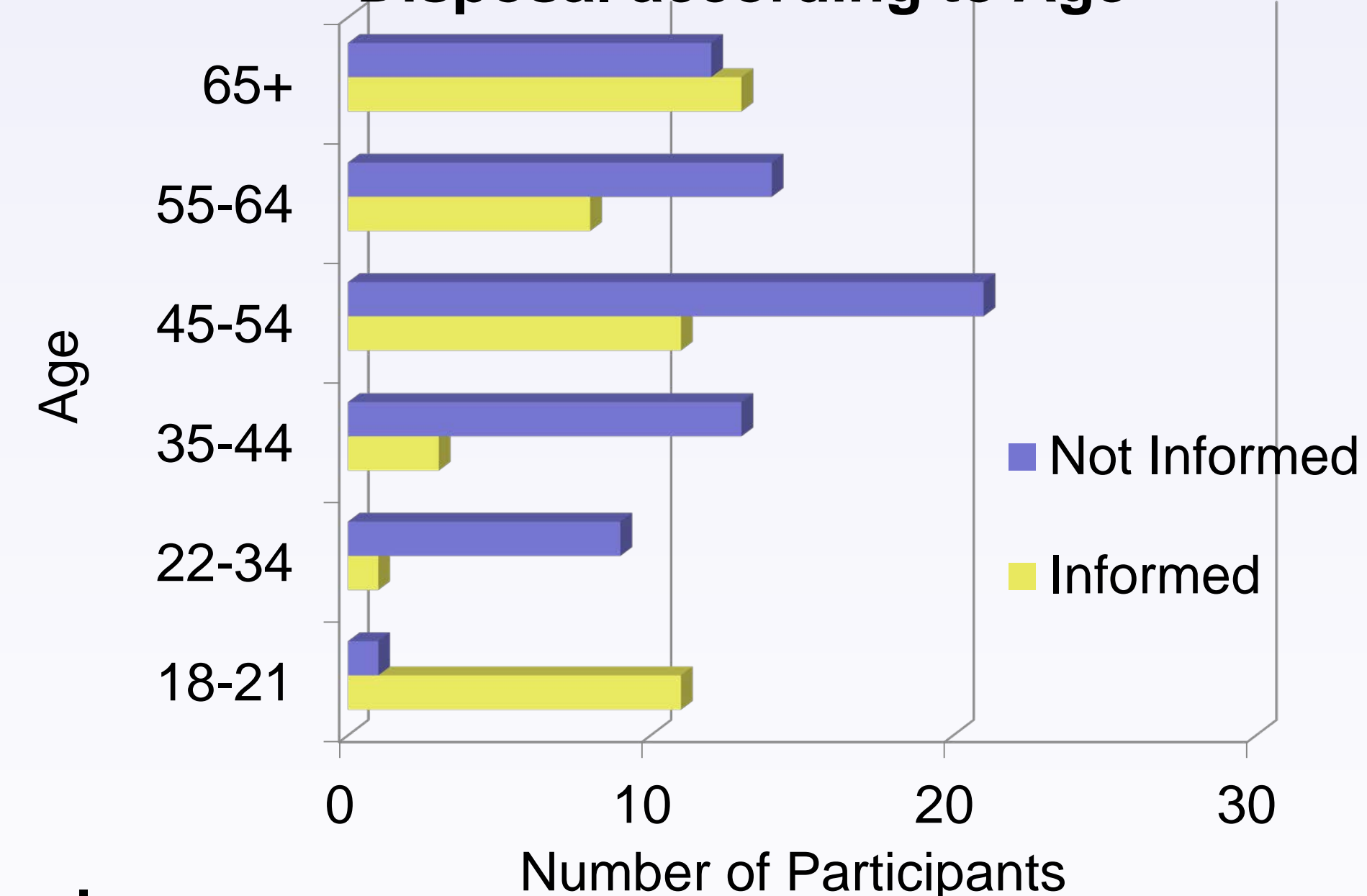
**Figure 2 (LEFT):**

- Figure 2 shows that 54 of the 129 participants do store their medications in the bathroom which is one of the most unfavorable locations for storage because of the warm, humid environment.
- Some participants stored medications in more than one area.

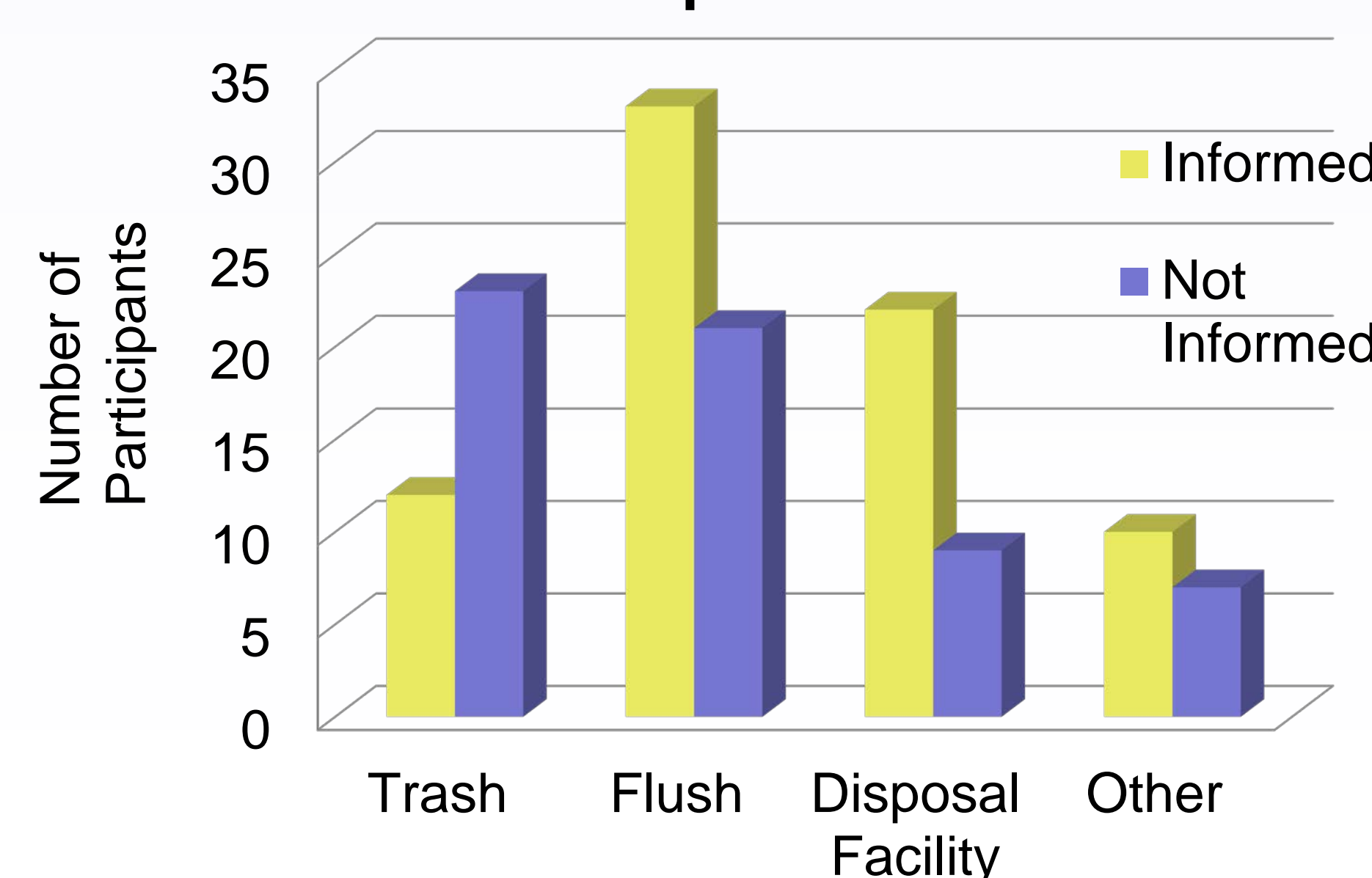
**Figure 3 (RIGHT):**

- The younger population (18-21) and the elder population (65+) were the most likely to have been informed on proper medication disposal.
- These same populations were the most likely to have unwanted or unused medicines with 84% of 18-21 year old patients and 50% of 65+ year old patients.

### Indication of Knowledge for Proper Disposal according to Age



### Indication of Knowledge for Proper Disposal and Disposal Method Used



**Figure 4 (LEFT):**

- Those who flushed medications tended to be informed regarding proper medication disposal.
- Patients who threw medications in the trash appear to be least informed about proper medication disposal.
- The most common methods of medication disposal were throwing in the trash and flushing down either the toilet or sink.

## Conclusion

According to results shown, there still are a large percentage of patients who are not informed regarding proper medication storage and disposal, with almost half of patients surveyed both improperly storing and disposing of medications. In particular, the large number of young adults and adults over 65 years of age who indicated having unused or unwanted medications in their home implies the need to further educate these specific age groups as well as the others regarding the necessity of annual maintenance and disposal of medications.

Approximately half (41.9%) of patients flushed expired, unwanted, or unused medications down the toilet/sink, and about 41.9% store medications in the bathroom. This is of *great importance* because a large portion of patients are currently storing and disposing of medications improperly. Trends were found indicating that patients tended to dispose of medications improperly even after having been informed of proper medication disposal.\* Nearly half of the patients that disposed of medications properly were not informed of the correct way to dispose of medications. There is a need to inform middle aged people of the proper way to dispose of medications due to the large amount of middle aged patients that indicated they were not informed on the correct disposal method.

Of the 129 patients surveyed, 105 (81.4%) indicated a willingness to participate in a local medication disposal drive/take-back program. This overall great public interest discovered within only three surveyed pharmacies indicates just how important it is to consider a future medication disposal drive here in the Great Dayton area, or possibly even in Cedarville. The teaching of proper disposal methods could also greatly impact the environment and give a cleaner and healthier environment.

\*Note: Concerning patients who indicated having been informed on proper storage and disposal, we did not assess whether or not the patient was actually educated on the *proper* methods.

## Acknowledgements

Thanks would like to be given to Cedarville Pharmacy in Cedarville, OH, Town Drug in Yellow Springs, OH and Madison Avenue Pharmacy in Springfield, OH for allowing surveys to be handed out in their pharmacies.

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