

Quality and economic value of returned unused oral targeted anticancer medication from patients and measures to reduce medication waste

Thorunn K. Gudmundsdottir^{1,2,3}, Hera Johannsdottir¹, Anna I. Gunnarsdottir^{1,2}, Hrefna Magnúsdottir³

¹Faculty of Pharmaceutical Sciences University of Iceland, ²Pharmaceutical Services Landspítali University Hospital, ³Cancer Center Landspítali University Hospital

Introduction

The use of oral targeted anticancer medication has been increasing in the last years and decades. Medication waste is an escalating problem worldwide with harm to the environment and nature, and waste of resources. Medication waste can be counteracted to a great extent, for example when prescribing and dispensing medicines, educations and with redispensing of unused medications¹.

Material and method

This single center multifaceted study was divided into four parts:

1. A retrospective data collection was done for a period of one year in 2020, including the use and economic value of treatments for adult cancer patients with targeted oral anticancer medication; protein kinase inhibitors (PKI) and lenalidomide, thalidomide and pomalidomide (LTP).
2. A prospective data collection was done over a three month period from January to March 2021, for the quantity and quality of unused returned PKI and LTP medications, reasons for their return and the economic value of the medications calculated.
3. A standardized questionnaire was sent to the appropriate cancer outpatients and all healthcare professionals at Landspítali hospital to examine their attitudes towards medication waste, return of medications, redispensing and willingness to use unused medication returned to the pharmacy by another patient and activities to reduce medication waste.
4. Procedures to reduce medication waste and suggestions for redispensing of unused medication were proposed by the researcher.

Results

1. A total of **453 treatments** with PKI and LTP medications were issued in 2020 for **283 individual cancer patients**. The total economic value of the medication dispensed in 2020 was **608 million ISK (4.3 million EUR)**.
2. A total of **2,193 prescription units** of returned medication was collected and the total economic value of **24 million ISK (170.000 EUR)** calculated. Around **71% of the returned medication was reusable according to specific quality criteria**, which could have saved up to **75% of the economic resources**. The most common reasons for return of medication was discontinuation of treatment due to **adverse effects and progress of cancer**.
3. The attitude of patients and healthcare professionals and willingness to redispense and use returned unused medication was very positive under the condition its quality was guaranteed (Figure 1 and 2).
4. The vast majority of healthcare professionals suggested that improvements were needed in procedures in order to be able to reduce medication waste (Figure 3).

Conclusions

1. The economic value of medicinal treatment with PKI and LTP for cancer patients is very high.
2. The quality of most returned unused medication, by patients who discontinue treatment, is satisfactory and suitable for redispensing.
3. The results of this study suggests that the perspectives of patients and healthcare professionals are very positive and supportive for the implementation of procedures to minimise medication waste, through redispensing of unused returned medication.
4. There are opportunities to collaborate with health authorities, and relevant institutions and entities, to evaluate procedures and work on proposals to review and amend regulations, to make redispensing and reuse of returned medications possible.

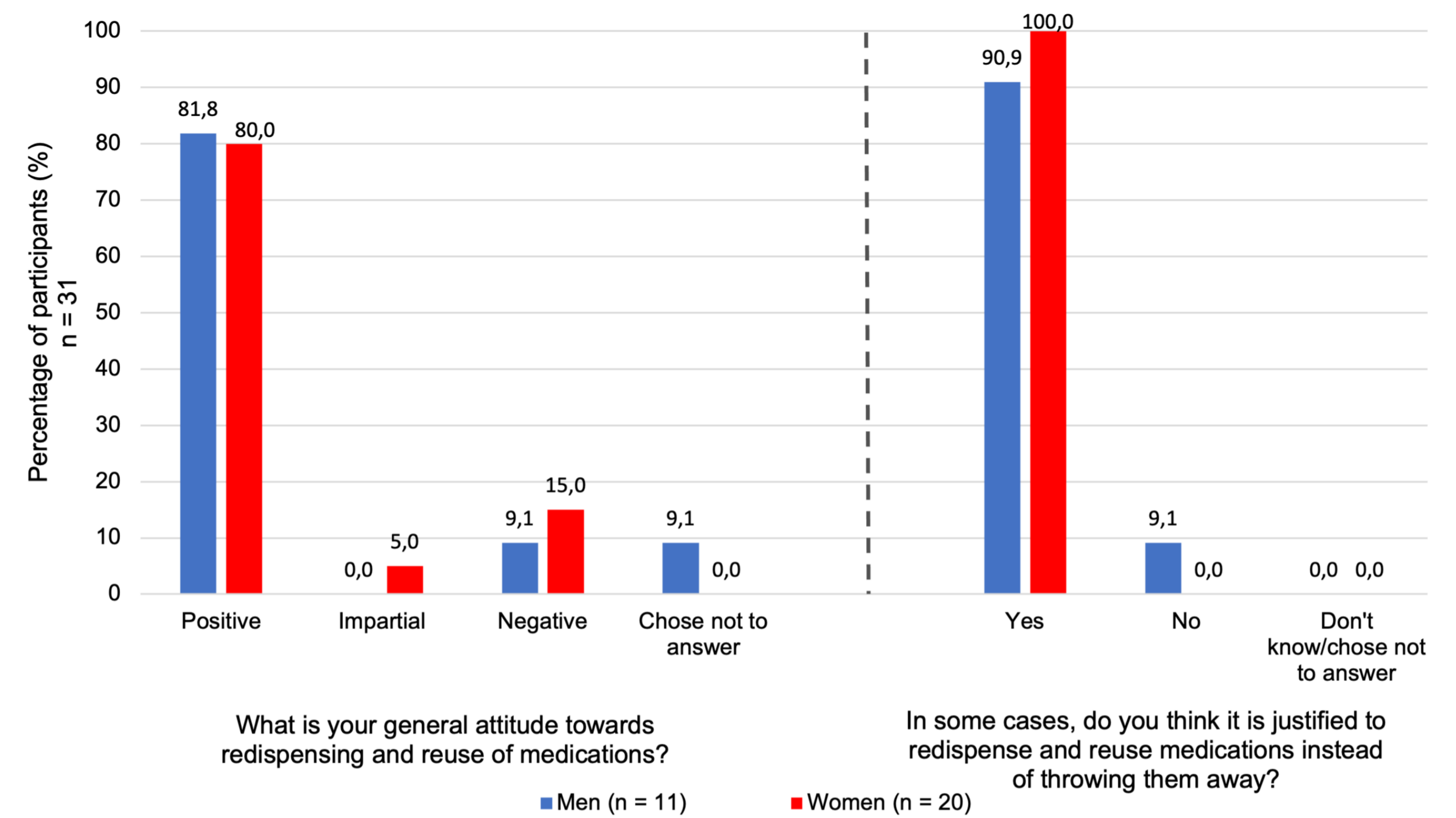


Figure 1. Patients (on oral anticancer medications with PKI or LTP) attitude towards redispensing and reuse of medications. 31 patient answered the questions.

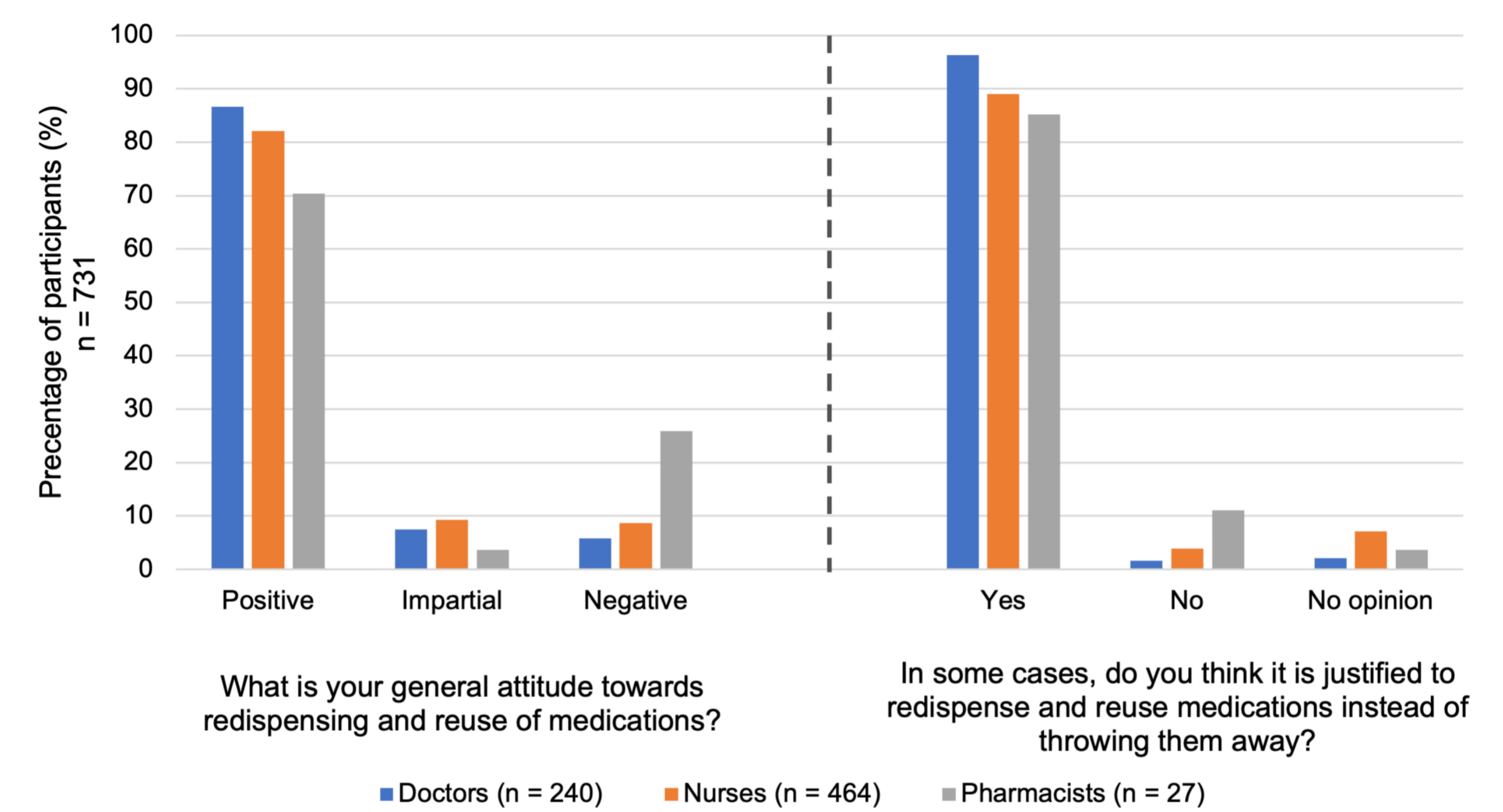


Figure 2. Healthcare professionals' attitude towards redispensing and reuse of medications. 731 practitioners answered the questions.

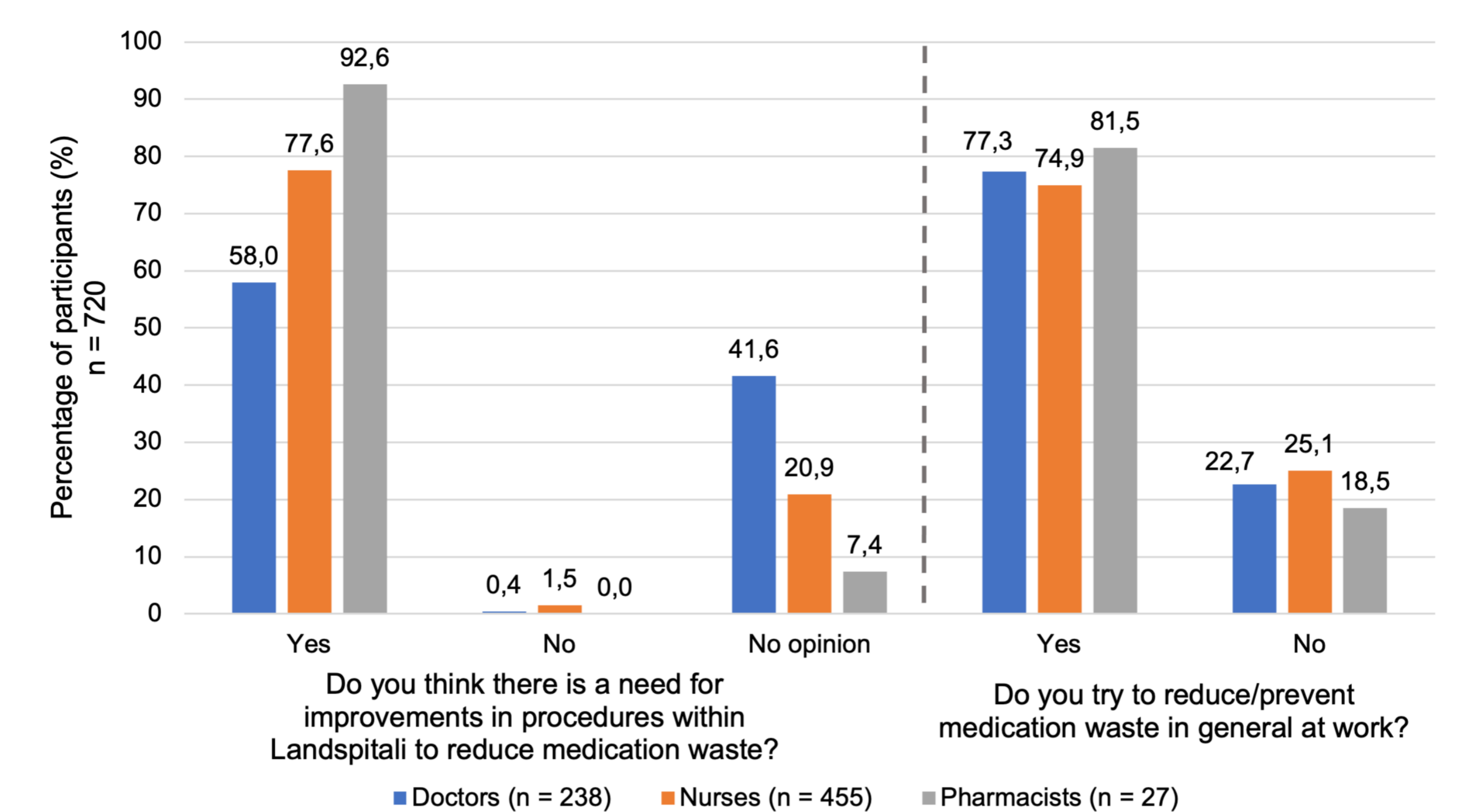


Figure 3. Healthcare professional's attitude towards the need of improvements in procedures to reduce medication waste and if they try to reduce/prevent medication waste in general at work. 720 participants answered the questions.

