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MANAGEMENT OF THE CORNEA GRAFTS IN THE TISSUE AND HUMAN CELLS BANK OF THE REPUBLIC OF MOLDOVA DURING THE YEARS 2013-2019

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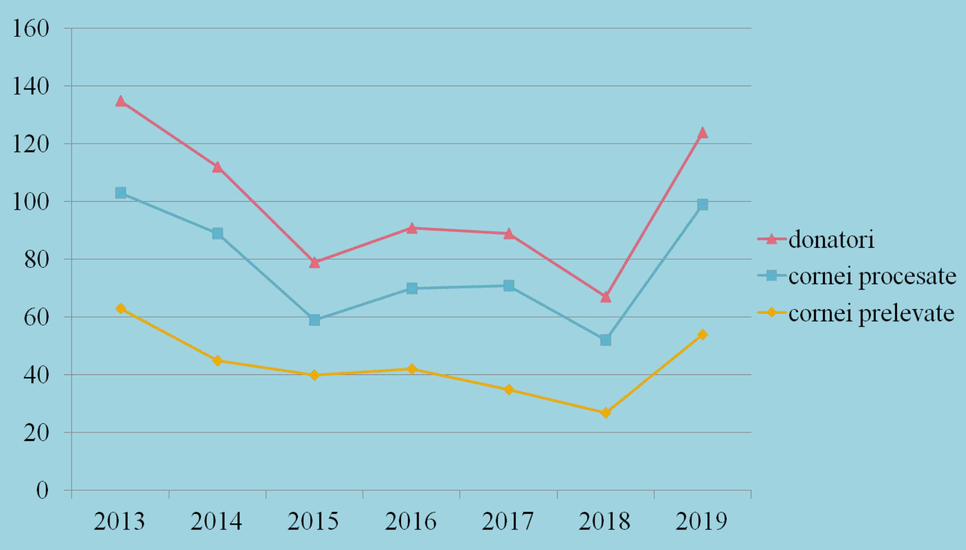
- **Introduction:** Tissue Bank serves with corneal grafts a population of 4 million people, which offers over 40 corneas per year for transplant in the Republic of Moldova. The high quality of the cornea due to international standards (based on both the standards of the American Eye Bank Association and the European Eye Bank Association) described in all areas of operation, including donor selection and screening, corneal collection, storage, testing, evaluation and transport to transplant centers. A standard protocol is the National Corneal Transplant Protocol of 2019, which includes maintaining a comprehensive database, supported by ophthalmic surgeons in the Republic of Moldova, in which potential data are collected on all aspects of corneal donation and transplantation. The authors previously published data on the indications for the corneal transplantation and in this study we analyzed this database to evaluate the source and management of donor corneal tissue in the Republic of Moldova.

- **Purpose:** Evaluation of the cornea transplant application rate in the Republic of Moldova the period of years 2013 - 2020.
- **Material and methods:** Prospective study, electronic database of Tissue Bank for the period of 7 years 2013 - 2019 were analyzed for each year in terms of the donor number, the indications for the sampling, cause of death, interval from death to corneal preservation, storage methods, endothelial evaluation, bacteriological contamination and distribution.



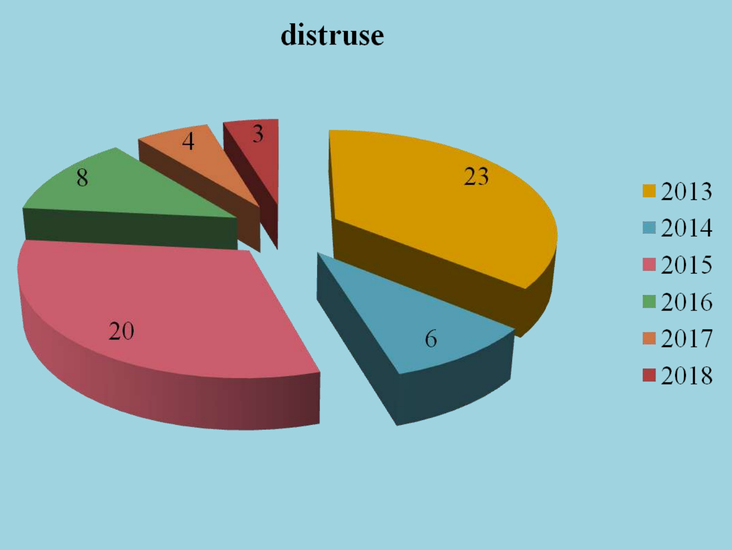


Figure 1. Distribution of donors, corneas taken and processed for the years 2013-2019.

Figure 2. The number of corneas destroyed during the years 2013-2019

- **Results:** During the study period, 306 corneas were taken from 153 donors (69,8% male, 30,2% female), with a mean age of donors 59,4 years (18,3 years SD) and between 18 and 91 years old. Donors were from forensic medicine (23,5%), public hospitals (67,6%) and multi-organ donors (7.1%). The most common causes of the donor deaths were the cardiovascular disease, trauma and the cerebrovascular diseases. The average storage time increased from 3,5 to 11,8 days, from when the culture medium replaced hypothermic storage. Invalidation of the corneas was in 22,8% of cases, of which were determined by serological infections (HBsAg - positive, HCV positive, HIV / AIDS) - 15%, and biological contamination occurred in 7,8% of all donor corneas. The most common bacterial and fungal isolates were coagulase-negative staphylococci and Candida spp., respectively. A significant decrease in the contamination rate was identified during the study years. Overall, 77,2% of the corneal tissue taken was used for corneal transplantation (74,8% for penetrating keratoplasty, 2,1% for lamellar keratoplasty and 1.3% for unspecified transplants) and 22,8% were destroyed. The most common reasons for tissue settlement were biological contamination, serology, and endothelial cell integrity assessment.

Figure 3. Incubator for store cornea.

Figure 4. Examination of the corneas in the Human Tissue Bank

- **Conclusions:** 1. The analysis of the Tisue Bank database provides valuable information about corneal transplantation in the Republic of Moldova. 2. The rate of corneal utilization increased during each year of the study, reflecting improvements in all areas of Tissue Bank operation, in particular, corneal storage and decreased microbiological contamination. 3. The Human Tissue and Cell Bank, founded is the main supplier of the corneas graft for the transplantation in the Republic of Moldova.
- **Keywords:** corneal transplant, eye bank, donor number, donor tissue, corneal storage, biological contamination