

## Association of number of donated organs per brain death donor and the etiology of brain death

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**Background:** Organ donation from brain death (BD) cases is the main mode of organ donation in Iran. An important index in organ donation is the organ per donor (OPD) number. OPD can be assessed versus several parameters, such as etiology of BD. This original research aimed to investigate the association of OPD and the most prevalent BD causes in Iran, including trauma, convulsion, cranial bleeding, cerebrovascular accidents, drug toxicity, falling, hanging, post-cardiopulmonary resuscitation (post-CPR), and brain tumor.

**Methods:** This registry-based study retrospectively recruited the data of successful organ donation cases in our organ procurement unit (OPU) through years 2005–2022. OPD and age of donors were investigated among different BD etiologies and in two genders using descriptive and analytical data processes.

**Results:** A total number of 2,299 BD cases with a mean age of 37.96 years (16.56) were included in this study. The average OPD was 2.60 (1.23) in our donors. The greatest OPD of 2.94 in trauma group was remarkably higher than the lowest OPD of 2.36 in post-CPR group ( $P=0.01$ ). Moreover, the mean OPD in female donors was 2.67 (1.18), that was larger compared to OPD in male donors with a mean value of 2.561.26 ( $P=0.04$ ). No significant difference in the age of female and male donors was found (38.52 years [16.71] vs. 37.65 years [16.48], respectively;  $P=0.23$ ). The youngest BD causative group was convulsion with a mean age of 21.80 years (14.65). The age difference with the oldest BD causative group of cerebrovascular with a mean age of 50.16 years (10.49) was statistically significant ( $P=0.01$ ).

**Conclusions:** This study described the findings of OPD and BD etiologies during 18 years of medical record in our OPU. The OPD significantly depended on the BD etiology and the gender. Our findings can help coordinators to provide better organ-preservation care. Further research is recommended to refine the protocols of such care in specific BD causes.

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