



Organ Donation Decision in Taiwan: Challenging and Overcoming with 3D Printing



P450

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Introduction

- Asia is the most populous area, but organ donation is lower than others.
- More than 10,000 people were on the transplant waiting list, but the organ donation rate was only 4.43 pmp in Taiwan.
- Confucianism and religious traditions are the factors influencing the decision-making process of organ donation in Eastern countries, including the concept of the “complete corpse” after death (Yang & Miller, 2015).
- Although there are two hospitals have mentioned using 3D-printed organs for specific cases to decrease the concern of “complete corpse”, it is still not a standard procedure.

Deceased Organ Donation Rates in 2022 (pmp)



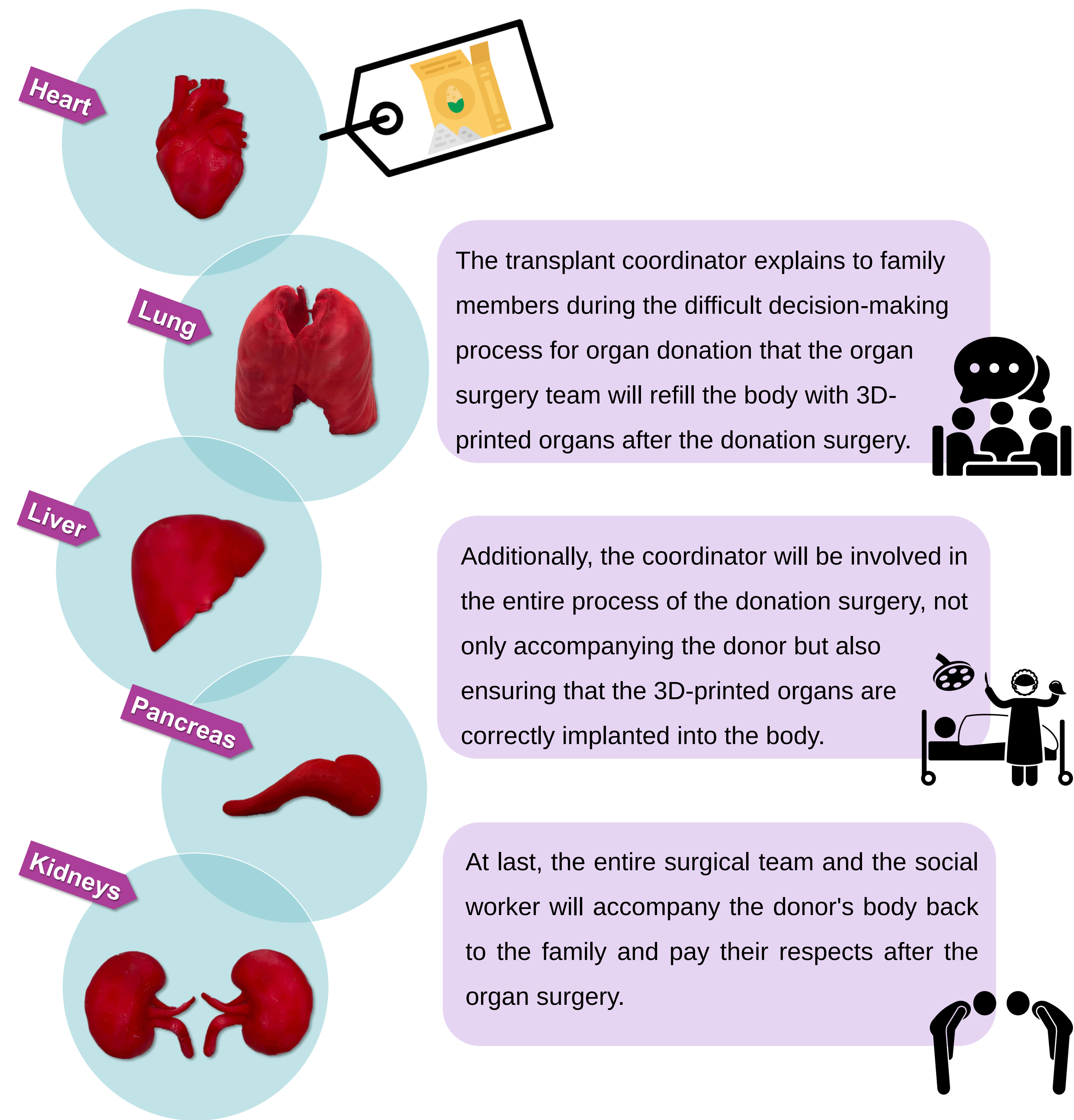
The figure above displays deceased organ donation rates in 2022. The top 2 deceased organ donation rates (per million population, pmp) are the Spain (46.03 pmp), and United States (44.5 pmp). Taken from International Registry for Organ Donation and Transplantation (IORDaT) and Taiwan Organ Registry and Sharing Center, 2023.

Aim

- The purpose of the study is to check the 3D-printed organs can fulfill the “complete corpse” concept and increase the willing to do the organ donation.

Method

- In the past, the surgical team put residual organs and tissues back into the body after the organ donation surgery, which could not reassure the families who held the concept of a “complete corpse” after death.
- With new technology, 3D printing could be used in organ reconstruction now (Anagnostopoulos et al., 2022).
- The set of organs, including the heart, lungs, liver, pancreas, and kidneys, was produced in Sep 2022. They were made by corn flour due to the culture of cremation in Taiwan.
- Patients' and families' feeling of being respected and supported will increase the willingness to organ donation (Vincent & Logan, 2012).



Results

- From Sep 2022 to July 2023, the 3D-printed organs have been applied to 9 cases of deceased donors.
- We found that most the family of donors released tension after hearing that 3D-printed organs would be used for cadaveric repair. The 3D-printed organs could be eased the elders' minds as well. Most of families note this regard:

“The 3D-printed organs give the impression of a more intact body, which may lead to an increased willingness for my family member to agree with the organ donation surgery.”

“I know my family (the organ donor) would not feel alone with your company, and we (the family members of donor) don't feel very scared because of your clear explanations and constant support.”

- Although it is not used for a long time, the families have given positive feedback to this repair method, which not only resolves cultural conflicts, comforts families, and increases the willingness to donate, but also gives the organ procurement team a sense of accomplishment.
- Due to this positive response, the decision to implement 3D-printed organs as a standard procedure in organ procurement has been made.

Conclusions

- The support provided by 3D-printed organs and the organ procurement team during the organ donation process, including accompanying donors in the operating room, appears to be associated with families' willingness to consider organ donation.
- This practice is followed as a standard protocol at Taipei Veterans General Hospital in Taiwan now. We will improve the protocol continuously to meet more needs of donors and families, and let it become standard protocol in organ donation in Taiwan.

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