Introduction

The main job of kidneys is to filter blood to remove waste and maintain electrolytes, and additionally turn this waste into urine.

One of the main diseases that one can develop is called Chronic Kidney Disease (CKD) which is a progressive disease where the kidney becomes damaged over time. This eventually leads to kidney failure. 15% of US adults are estimated to have CKD, and this disease is especially prevalent in adults above 65 years.

The two main treatments for advanced stage kidney failure, which is also called end-stage renal disease (ESRD), include dialysis (treatment to replicate kidney functions using a blood filtering machine) and an organ transplant.

Organ donations for transplants can come from deceased donors (including brain-dead donors) and from living donors, as it is possible to live with just one kidney.

The best treatment for ESRD is an organ transplant, as kidney dialysis requires patients to stay in the hospital for long periods of time and is more expensive. However, as seen by the red arrows on Figure 1, Japan currently has the greatest number of patients per 100,000 people undergoing dialysis in the OECD countries, but the least amount of kidney transplants per 100,000 people.

Aim

Japan has the oldest population in the world (Figure 2). This means that more of its population is susceptible to developing ESRD and there is more need for treatments.

Aim: To take a closer look at data on kidney transplants in Japan to understand how aging populations impact treatment availability and government assistance.

Methods and Materials

1. Historical Analysis

Results

Preliminary analysis suggested that the number of kidney and liver transplants performed using living versus deceased donors varied greatly in between the US and Japan. (Figure 3)

- While most of the transplants performed in Japan use organs from living donors, most of the transplants performed in the US use organs from deceased donors.

However, in considering this ratio, it is also important to think about the surgeries in respect to the population of the country. This resulted in the creation of Figure 4, which shows the distribution for 16 countries, of the number of kidney transplants performed using a kidney donated from a living/deceased donor per million people. While the number of kidney transplants performed using a living donor per million people was not extremely different between the US and Japan, the number of kidney transplants performed using a deceased donor per million people were extremely different.

- Most of the transplants performed in Japan are from living donors, because they have a vast deficit in organ donations from deceased donors.

Additionally, analysis of the living donors revealed that the relationships between the living donor and patient were vastly different between Japan and the US.

- Most of the living organ donors were parents or the spouse in Japan, while most of the living organ donors were distant in the US.

Discussion

The Japanese Government has been working to address this deficiency in deceased donors with more effort since 2008, when the Declaration of Istanbul was developed by representatives from 78 countries (including Japan).

The Declaration of Istanbul

- Suggested that governments take action to increase the number of deceased donors to maximize their potential and decrease the burden of living donors.

- Pursued "self-sufficiency" - "Meeting the transplant needs of a country by use of donation and transplant services provided within the country, and organs donated by its residents, or by equitably sharing resources with other countries or jurisdictions."

In order to pursue "self-sufficiency," the strategy of the Japanese government is to put effort into educating younger generations about organ transplants and trying to get more young people to sign up to donate their organs.

Conclusions

The centralized platform for organ transplants in Japan — the Japan Organ Transplant Network (JOT) — has been putting effort into the Green Ribbon Campaign which is an effort to get more people to think about organ transplantation.

They work with the Japanese Ministry of Health, Labour, and Welfare to produce a pamphlet that is distributed at all middle schools around the country. As can be seen in Figure 6, the emphasis is placed on the idea of having more people declare whether they would be willing to donate their organs, regardless of whether the want to and do not want to donate.

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