Review
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A Study of Some Leading Organ Transplant Models in Health Care Systems

Sağlık Sistemlerinin Önde Gelen Bazı Organ Nakli Modelleri Açısından İncelenmesi

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Özet

Organ yetmezlikli hastalarda en etkili tedavi yöntemi organ naklidir. Organ nakli olmayı bekleyen çok sayıda hasta olmasına rağmen, organ temininde yaşanan yetersizlikler dünya genelinde kronikleşen bir sağlık sorunudur. Organ teminine çözüm bulmak amacıyla ülkeler sağlık sistemlerinde düzenlemeler yapmış ve bunun sonucunda bazı organ nakli modelleri oluşmuştur. Bu çalışma ile İspanya, ABD, Avrupa Birliği, İran ve Türkiye'de uygulanmakta olan bazı organ nakli modelleri incelenecektir.

Anahtar Kelimeler

Organ; Organ Nakli; Organ Nakli Modelleri; Sağlık Sistemleri

Abstract

The most effective treatment method for patients with organ failure is an organ transplant. Although numerous patients are waiting to get organ transplants, the inadequacy in the supply of organs has become a chronic health problem around the whole world. Countries have made various regulations in their health systems that increase the supply of organs and, as a result, various organ transplantation models have been established. Organ transplantation models applied in Spain, the USA, the European Union, Iran, and Turkey have been examined in this study.

Keywords

Organ; Organ Transplant; Organ Transplant Models; Health Systems

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Introduction

Organ transplants are the most efficient method of treatment for patients with organ failure, offering them a chance to live and enhancing their quality of life [1-3]. While the number of patients waiting for organ transplants continues to increase there are still significant shortcomings in organ supply [4]. The current number of patients on the waiting list in the United States is 118,661 [U.S. Department of Health & Human Services, National Survey of Organ Donation Attitudes and Behaviors 2012], the number of patients on the Eurotransplant list, which represents 8 European Union countries, totals 14,560, while the numbers for Spain are 7,290, 1,319 for Iran, and 28,249 in Turkey [5,6].

Health systems vary from country to country and therefore so do the health applications. There are many determinant factors involved, such as economic resources, population, the law, technology, infrastructure, geographical conditions, social and cultural characteristics, etc. The transplant systems of organs and tissue also vary according to the health systems of the countries.

Spain (ONT)

Spain has the highest rate of organ donation following brain death among countries. In this aspect it is the locomotive of the world. In Spain, organ and tissue transplants are realized by the national transplant organization, ONT, established in 1989 (Organizacion Nacional de Transplantes) and affiliated with the Ministry of Health [7,8].

The relevant law covering organ transplants was published in 1979. According to this law, if not otherwise stipulated, the organs of brain-dead individuals can be harvested. In other words, if citizens have not stipulated otherwise it is deemed that they have accepted the donation of their organs. This opt-out system is an important difference of the organ transplant organization in Spain, referred to as the Spanish model. However, in practice, usually the relatives of donors are asked for permission. Nevertheless due to the culture of the society and the sufficient awareness of citizens, even seeking permission does not have a negative impact on organ donation. The notification of brain death is rapid; the fact that the organ transplant coordinators are educated in their field fortifies the system [9-12]. The rate for cadaveric organ donations has continued to increase over previous years and was established as 34.4 per million population in 2013 [13].

The United States of America (UNOS)

The organ and tissue transplant organization of the United States of America was established in 1977 and is currently operated by the organ network UNOS (United Network for Organ Sharing) which began operation in 1984 [14,15].

UNOS operates in affiliation with the U.S. Department of Health and Human Services. It serves in 11 geographical areas with 58 organ supply centers. Patients who are considered for transplantation are presented to the transplant center council by the patient's doctor and if found appropriate, the patient is registered on the waiting list [16, 17]. The cadaveric organ donation rate is 26.3 per million population [13].

European Union Countries (Eurotransplant)

Eurotransplant has been established by 8 European countries: Austria, Belgium, Croatia, Germany, Hungary, Luxembourg, the Netherlands, and Slovenia. This international cooperation covers organ donations, tissue typing laboratories, and hospitals. The organization was established in 1967 by Jon J. van Rood and is headquartered in the Netherlands [18].

The organization of organ and tissue transplants is carried out by Eurotransplant in the member countries. The objective is to transplant organs to the most appropriate patients within a framework of medical and ethical values. Thus, it is targeted to enhance the results of the process and transplants [19]. The highest rate per million population from cadaveric donations in this organization is in Croatia with 33.7 while the lowest is 7.3 in Luxembourg. The average rate for Eurotransplant is 14.9 per million population [Eurotransplant International Foundation, Annual Report 2014].

Iran

The organ transplant system applied in Iran is the most controversial system in terms of ethics and organization. The first kidney transplant was carried out in 1967. The transplants performed in this country from 1967 to 1988 have continued at an inadequate level and many patients on the waiting list have been lost. As a result, the application of a system called the Iranian model was started in 1988 [20-22].

Patients with end-stage renal failure without relatives who are suitable donors are directed to the state-controlled Dialysis and Transplant Patient Association (DATPA) by their doctors. Due to the challenge in organ supply, the Iranian government has requested that those who want to may apply to this association to sell their organs. The necessary tests and checks for the patients and donors are carried out by university hospitals and registered on a central system. Subsequently the most appropriate recipients and donors are matched. Organ donors receive money from the state under the title award as well as medication support and lifelong health coverage. The system operates under various rules. The first rule is that the recipient and donor do not know each other. The second is that the person benefiting from the system must be an Iranian citizen [21-23].

The relevant legislation to ensure cadaveric organ donations was ratified by the Iranian parliament in 2000 and cadaveric transplants started. However, due to religious and cultural reasons the level of cadaveric transplants is not adequate [24].

The Iranian model ensured that there were no patients waiting for kidneys by the end of 1999. By the end of 2012 a total of 34,166 kidney transplants had been carried out, including 4436 from cadavers. Debates are caused from an ethical perspective regarding the fact that trade in organs is carried out under the strict control of the state and by the state. Iran has 302 dialysis units, 25 transplant centers, and 80 DATPA offices and it carries out the most organ transplants in the Middle East [20,25].

Turkey

In Turkey, organ and tissue transplant activities are planned and carried out under the control of the R.T. Ministry of Health. In the year 2000 the 'Organ and Tissue Transplant Services Department Directorate' and 'National Organ and Tissue Transplant Coordination System (UKS)' were established within the General Directorate of Treatment Services of the Ministry of Health, initially to coordinate organ transplant activities through a central system. The overall operation of this system had been carried out over the telephone and by facsimile and printed forms by the National Coordination Center (UKM) within the UKS by doctors and nurses working 24/7. A computer-based and internet-supported central system was developed in 2007

and subsequently revised in 2011. Thus the monitoring of the distribution of all organs and transplant centers, patients, and donors has been transferred into an electronic setting [26,27].
The objective in establishing the National Organ and Tissue Transplant Coordination System was to ensure necessary coordination and supervision among organizations and agencies throughout the country involved in organ and tissue transplant services and to ensure that donated organs and tissues are distributed fairly to the most appropriate patient within the shortest time, in compliance with scientific rules and an understanding of medical ethics [Turkish Ministry of Health, Regulation of organ and tissue transplantation services 2012].
Nine Regional Coordination Centers (BKM) were established to ensure the efficient and rapid operation of the system aligned with the geographical, technical, and economic conditions of the country. The centers are located in the provinces of Izmir, Istanbul, Antalya, Samsun, Adana, Bursa, Erzurum, Ankara, and Diyarbakır; they coordinate the organ transplant activities of affiliated provinces [28].

Discussion

There are 105 organ and tissue transplant centers in the country. In 2015 1,969 brain deaths were determined, but the organs of only 472 donors could be harvested. The organ donation rate is approximately 6.1 per million population. The main obstacle for organ transplantation is the legislative requirement to acquire the permission of the family for organ donation. Since 2011, a total of 15,729 kidney, 405 heart, 5,919 liver, 130 lung, 20 small intestine, 9 heart valve, 57 pancreas, and 12,404 corneal transplants have been carried out while the current waiting list for transplants consists of 22,461 patients waiting for kidneys, 662 patients for heart transplants, 2,251 liver patients, 53 prospective lung recipients, 2 patients waiting for small intestines, 3 heart valve recipients, 2,533 patients waiting for corneas, and 271 pancreatic patients [19]. Additionally, while about 75% of organ transplants in Turkey are undertaken with the organs of healthy individuals, more than 80% of organ transplants in European countries are undertaken with the organs of cadavers. Turkey is a country where the highest number of organ transplants from healthy individuals occurs [29,30]. Although there has been a successful increase in transplantation activities in Turkey, when these numbers are compared with the numbers of waiting patients, the activities are evaluated as inadequate.
In conclusion, organ transplant models with varying characteristics are utilized. Each model has its advantages and disadvantages and differing ethical dimensions, making is difficult to determine the best model. The common objective of all models is to provide the most appropriate organs to patients with organ failure and to ensure them a quality life. It is recommended that health policymakers and administrators organize programs that enhance the knowledge and awareness levels of communities regarding issues related to organ transplantation. A comparison with other models should be undertaken and activities that could improve the models should be executed.

Competing interests

The authors declare that they have no competing interests.

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