

21st Century Transplantation: A rational utopia?

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Abstract

In his Utopia, Thomas More describes a generous conception of medicine. The current reality of organ transplants, with the drama of organ shortages, waiting lists, and patient mortality, requires a conceptual review. For the success of this request, the need of parts of the human body, live or after death is essential. Without organ donation, there are no transplants. The importance of non-enrichment at any level through organ and tissue transplants has been pointed out, significantly, by monotheistic churches and the World Health Organization (WHO). The value recently given to non-cognitive factors, as well as individual behaviour in community actions, when searching for social benefits has also been discussed. This essay proposes ways to change the present critical reality. Our analysis considers education and economic aspects to be of greater significance for changing social donation behaviour.

Keywords: Organ Shortage, Donation and Society, Organ Donation Inhibition Barriers, 21st Century Transplantation.

Introduction

Before discussing the alternatives that could overcome the organ-shortage social drama, it is worth mentioning the ideas and proposals that have been generated over the centuries. They could be of interest in planning the end of the current social tragedy of dying while waiting for a transplant that society often refuses to provide.

On his imaginary 16th-century utopian island, Thomas More proposes a welfare system structured according to common sense, equality and justice, with free hospitals even offering euthanasia. This rational society is not easily adapted to our reality, where power factors and social injustices continue to rule the world. It is necessary to accept that social security and public health are mainly consequences of entities and state economies. Paradoxically, in More's conception five centuries ago, each person received what they needed without any payment or reward [1].

In this perfect society, all citizens enjoyed equal access to an excellent medical service in which the three pillars of medicine – quality, availability and accessibility – had been maximised [2]. This social possibility might influence today people's behaviour regarding their donation decision at the time of death [3].

To generate new attitudes, the opinion of different monotheistic

churches regarding transplantation is also important. Leaders of monotheistic religions - Catholic, Christianity, Islam, Judaism, Buddhism - encourage their faithful to assume the most positive behaviour towards transplantation – as a charitable act that saves or improves lives. They consider organ donation an act of charity, of believer's altruism but also a "commanded obligation" that saves human lives [4-7]. It is worth noting that all religions highlight altruism and philanthropy regarding transplantation.

In addition, principle 5 in WHO's guidelines concerning transplantation economics states:

- The need to cover legitimate costs of procurement and of ensuring the safety, quality and efficacy of human cell and tissue products and organs for transplantation is also accepted as long as the human body and its parts as such are not a source of financial gain.
- Access to the highest attainable standard of health is a fundamental right, not something to be purchased in exchange for body parts [8].

As a determining philosophy in current medical conduct regarding organ transplants, idealists, religious leaders, and official institutions have declared or advised its independence from economic requirements as an essential characteristic of medicine.

The words of Governor J Proctor Knott, addressed to the Kentucky School of Medicine graduating class of 1890 are indicative of this medical conduct:

“No other calling... demands a more absolute self-negation than the one you have chosen. No other vocation requires a more constant exercise of the higher faculties of the human mind, or a more earnest devotion of the purer and nobler attributes of the human soul”... [9]. These concepts and guidelines regarding transplantation by the monotheistic churches as well as WHO show a significant identification with the conceptions of gratitude for the social security and health of society proposed in the 16th century by Thomas More.

Concerning the economic aspects of organ transplants, it is indicative to compare the costs of kidney grafting in a range of countries:

- USA: (avg. €230,000)
- UK: (€78,000)
- Germany: (from €75,000)
- Canada: (€42,572)
- Turkey: (avg. €32,000)
- France: (from €13,835.44 to €20,050.67)
- India: (from €9,800).

In contrast to the wide range of costs, the kidney graft survival rate is similar in these countries; in fact, it should be underscored that the lower long-term survival rate is observed in the United States [10-13].

Background

Medicine developed rapidly over the centuries, which is how the 20th century came to be characterised by scientific advances capable of generating real changes in the control of prevalent diseases. Progress in preventive medicine has saved an incalculable number of lives. The discovery of sulpha drugs and the constant evolution of antibiotics have conquered otherwise severe life-threatening infections. Furthermore, cancer is being progressively and efficiently controlled. Metabolic and cardiovascular diseases, in turn, have more positive outcomes through evolved medication and judicious controls, personal behaviour rules, and diet and physical culture regimes. Moreover, W. Kolff, who developed the artificial kidney in the 1940s, created the possibility of indefinitely maintaining life despite end-stage renal failure [14].

This analysis of the advancement of the art of healing suggests that in the 20th century, two different medicines were defined. To achieve the essential goal of saving lives:

a) On the one hand, we have ‘classical’ medicine, which uses all available resources:

- medical teams
- health establishments
- experimental research
- the pharmaceutical industry
- preventive medicine
- The economic resources of the state and its policies of social application.

b) Concomitantly, organ and tissue transplants were prodigiously developed in the 20th century.

A basic concept in medicine is that of “do no harm”. The sanctity of the human body, keeping it intact even at the moment of death

if possible, is mandatory. In other words, with society as the central protagonist, the unique 21st century possibility to prevent the death of one person by using the body parts of another, alive or dead is essential, but unfortunately, today it is controversial.

Despite the scientific breakthroughs, there is a serious organ shortage reality, responsible for thousands of deaths on the never-ending “waiting lists”. Resolving the causes of this distressing outcome, which could affect anyone, should be a global undertaking for health decision makers.

One of the causes of organ shortage is the evoking of death as an inhibition towards organ donation, which is fundamentally cultivated by the following ideas:

- The integrity of the human body, both in life and death [15].
- Misunderstandings of the religious concepts related to the life/death dualism.
- Lack of knowledge of the social and individual benefits of organ donation.

Clarifying these issues needs to be a basic strategy in new educational programs for better social understanding [16]. Society’s participation on a global scale is the leading requirement for the success of organ and tissue transplants.

Public and university education has been deficient in creating a society that fully adheres to organ donation after death. There has never been a revision of education programs in this regard. Undoubtedly, this task should be a priority for decision makers to ensure the health and protection of the people [17, 18].

In the search for a solution to this medical-social crisis, the main proposals have been:

A) Completed:

- Legal changes: Presumed consent to donation replacing informed consent [19].
- Changes in the donor medical acceptance criteria [20].
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B) Not concretised

- Improve medical-social education on organ donation [21, 22].
- Economic incentives for organ donation [23, 24].

Regrettably, transplant programs worldwide have been severely complicated by the Covid 19 virus pandemic of 2019-2020, and so far no specific therapeutic solutions have been found. Organ transplants from living donors have had to be rescheduled, and transplants from deceased donors in patients whose case is urgent are performed with the maximum pre-postoperative controls [25].

Concerning the previously detailed legal modifications, they limit the concept of individual autonomy to a certain extent. Furthermore, with adjustments to the acceptance criteria of potential donors, the principle of “primun non nocere” (first do no harm) would not be respected. Nevertheless, these conditions are justified in the face of the great need to save or prolong the lives of those who would otherwise lose it [26, 27].

Unfortunately, the medico-legal modifications have not alleviated

ed the organ shortage. On the contrary, according to reports, the number of patients dying while waiting for treatment has risen, increasing from 18,876 in 2012/13 to 29,553 in 2017/18 [28].

A significant number of patients on transplant waiting lists will die or be removed from the list at a later date, usually because they will be unfit for the procedure. Hence, while 62% of patients awaiting a heart will receive one within a year, 12% will die and a further 7% will be removed from the waiting list in the same year.

The situation is worse for lungs, where 27% of patients will either die or be removed from the waiting list in the first year of listing and only 31% will receive a transplant. Only half of the patients listed for a lung transplant will be successful [29].

However, despite the acceptance of withdrawing life support when it is considered futile to prevent the suffering of patients, a strong argument based on autonomy that would allow people who want to donate their organs to opt for euthanasia conflicts with the dead donor rules and could lead to legal action against doctors [30]. These notions, reflective of Thomas More's ideas, are very controversial. However, advancements could be attained by making in-depth changes to organ transplant education.

With respect to the proposals not yet acted upon – the highly controversial institution of economic incentives for donation and the unquestionable necessity for an in-depth review of socio-university educational programs – they are issues that need to be solved in the 21st century [31].

Are conceptual changes in transplantation medicine progress rational?

The only option for transplantation is to obtain, essentially after death, organs or tissues from the human body. However, the inexorable increase in patients waiting, hoping for the organ that will probably never arrive, and in patient mortality is unacceptable.

The purpose of this essay, partly inspired by Thomas Moore's advanced ideas on the medical protection of society, is to discuss a change in social attitudes to organ donation through education and economics.

Education: In search of valuable education strategies, transplantation should be seen as a clear expression of social medicine based on the fundamental and inexorable need of an organ from living or deceased persons for its practice [32]. The reality is that without the direct participation of society, transplantation will probably never be completely successful. A new social education theory of the interrelationships between interpersonal communications has emerged, where the intention of a complex advance in health and safety problems requires an essential collaboration between people.

However, for this to be achieved, society must receive, through education, clearly defined knowledge of what organ donation means for everybody [33]. This theory analyses people's participation in a new activity. This is significant when the topic of discussion includes death, a subject most people avoid. It requires a social un-

derstanding of this new and promising aspect of medicine which generates strong reactions and can be strongly resisted by society [34].

Several surveys have shown people are open to donating their organs or those of a family member after death; however, many of them do not remember this commitment at the crucial time and the "gift" of life, the classic slogan promoting donation, is never given [32, 35]. To achieve social change, educational programs must lead people to accept that organ donation, particularly after death, is a valid health insurance that can benefit everybody. Without full society participation, the success of organ transplantation can only be an unreal dream.

The change in people's behaviour, especially among young people, needs to be based primarily on understanding that organ donation after death represents an insurance policy for them and their health. Patients die needing organs that society refuses to offer. The paradoxical reality is that the public is denying itself the possibility of life.

The reasons for this enigma might be:

- The persistence of the "cult" of the integrity of the dead body
- The myths surrounding transplant medicine.

An attempt should be made to erase the ancient concept of the integrity of the body after death and teach people that, when they are no longer of any use to us, our bodies can be a source of health for others.

The "ick" factor, a negative reaction towards donation, is also a strong non-cognitive barrier [36]. O'Carroll et al. suggest that cognitive-rational factors, such as knowledge, cannot differentiate donors from non-donors, but the detection of the "ick" factor did it significantly [37].

Strong individual donation inhibitions, motivated by non-cognitive barriers, when faced with the death of a beloved have not been considered in educational strategies concerning organ donation directed at society or in university curricula [38, 39].

Solidarity has been considered an essential requirement for donation. However, the organ shortage crisis shows the relative efficiency of the currently valid educational plans, structured in this principles. This evidences the need to review this moral value employed in social education towards donation.

In the face of death, making a decision to donate organs is difficult. This is why recent studies of non-cognitive factors as the main barriers to donation indicate the need for their inclusion in new global education programs on transplantation [40].

Modifications in education programs on organ donation should evaluate the concepts concerning community groups pursuing social objectives proposed in the 1960s by Olson. The author suggested that when a large group seeks community benefit, individual members will not fully contribute if the group does not attach importance to personal actions. Private interest is the greatest stimulus for specific action. This hypothesis considers that individuals

could speculate that if a group action were successful, the benefits would be available to all regardless of their contribution [41, 42]. Considering these concepts, the insufficient social response resulting from the ubiquitous slogan “Donating is a gift of life” could indicate a rejection of the concept of giving part of oneself or a loved one to a stranger. Linking social solidarity with Olson’s theories could result in more appropriate and acceptable slogans: “Donating organs is sharing life and security” and “We may all need a transplant in our lifetime” [39].

Organ transplantation represents changing death into life. Certainly, this message should be sustained by educational strategies. Given people’s sensitivity and the misunderstandings that this concept may produce, a slogan such as “After death, the body is a unique source of health” might be more acceptable to society [43].

Concerning people’s behaviour, non-cognitive barriers, death and mutilation are virtually contradictory to the quasi-geometric progression of cremations globally evidenced in the following list:

Asia

From: Over 95% (Japan, Nepal and Thailand)

Europe

From: 36% (Norway) to 77, 05% (United Kingdom Denmark, Sweden, Netherland, Finland, and Hungary)

North America

From 53, 1 % (USA) to 68, 4% (Canada)

Australia and New Zealand:

From: 69 % (Australia) to 75 % (New Zealand)

Countries with marked religious influence:

From: 0 (Islam) to 36% (Colombia, Russia, Ireland, Argentina, Spain) [44].

This paradox concerning people’s feelings about mutilation and death indicates the need to modify education strategies. This data also highlights the importance of monotheistic faith leaders in the revision of education programs [37].

The Economy of Organ Donation and Transplantation

In this discussion of transplantation in the 21st century, we will be inspired by the concepts regarding public health in an ideal world enunciated four centuries ago by Thomas More. The basis of our proposal will be the previously stated concepts regarding the ethical, moral and socio-economic characteristics of transplantation supported by monotheistic churches as well by WHO guidelines.

Information about the costs of the most common transplant, the kidney, as well as the long-term results, in different countries is very enlightening. This economic evaluation shows significant evidence of social inequality, difficult to understand concerning this unique aspect of medicine which, for its realisation, needs the human body, alive or dead. Furthermore, it is worth highlighting that positive results in patient survival and grafts are similar [45].

Concerning the variance in organ transplant costs in different countries, it is useful, as an example to point out the average cost of major surgical procedures in the United States:

- Heart Bypass: US \$ 123000
- Spinal fusion: US \$ 110000
- Hip replacement: US \$ 40364
- Knee replacement: US \$ 35000

- Angioplasty: US \$ 28200
- Hip resurfacing: US \$ 28000 [46].

The analysis of the significant differences in the value of kidney transplantation worldwide, with the survival of patients and organs practically equal, and its comparison with the costs of complex “classical” surgical interventions in the United States, highlights the differences with the ideal social medicine described by More in Utopia.

Clear definitions of the objectives of education, social medicine and individual behaviour towards organ donation are fundamental for the development of a new positive conception of transplants, a solution to a serious global health problem: people dying while waiting for an organ that society often denies them.

To better understand this proposal, it is essential to remember an essential concept referring to organ transplantation: The paradoxical conception of transplantation is to consider that in order to save lives, the human body is essential, fundamentally at the time of death.

In other words, if society is not willing to be the protagonist of this unique medical possibility of the 21st century, keeping patients alive by using parts of someone’s body, dead or alive, this probability is just a fantasy. Lack of confidence in medical behaviour has been mentioned as a non-cognitive factor regarding the decision to donate organs from loved ones at the time of family/doctor interaction.

The significantly excessive cost of transplants in different countries, related to what we have termed “classic” medicine, has not been mentioned as a possible cause of the deficient behaviour of society towards organ donation [47, 48].

Nevertheless, taking into account that, among others, monotheistic churches and WHO clearly established the requirement of non-enrichment as an essential transplantation rule, this could be one of the reasons people do not donate organs [8].

Discussion

The progress of transplantation in the 20th century can be summarised as follows:

- Constant technical and scientific progress and
- Permanent fatal organ shortages, with inexorable death of the patients on the endless waiting lists.
- The fight against the insufficient social behaviour towards donation can be summed up by the:
- Legal modifications of donation consent, which have been controversial and not proven to be effective [49].
- Changes in the medical criteria for donors and receptors.

These medico-legal decisions represent a restriction of autonomy and of the imperative rule of full safety to be offered to patients, “*primun non nocere*” [50, 51]. Concerning changing the ideals around the organ shortage crisis, no attempt has been made to update three main criteria – education, and economic and ethical moral aspects.

Proposals for educational programs on transplantation in the 21st century

The failure of social and university education regarding transplantation over the years is evidenced by the growing waiting lists and patient mortality while on the lists. It is essential to develop the maximum intellectual, moral and affective capacity of people so they can understand this crisis and participate in a practice that will have common benefit in accordance with the cultural norms of the society to which they belong [52-55].

It is not easy to fathom the causes of negative action. A major factor might be an insufficient social response to the current education strategies. Furthermore, surveys have shown the insufficient training on a global scale of health professionals regarding organ donation. For this reason, multiple polls have been developed to analyse the potential positive influence of professional medical re-education in this regard [33, 36, 57].

Sandiumenge et al. stated that “Education on end-of-life care, donation after brain or circulatory death can positively influence the attitudes of critical care physicians, as well as families”. A comprehensible education that explains the rational and ethical-moral principles behind enabling another to survive will help clarify misperceptions and promote at all levels the social need for donation at the end of life. Moreover, the significance of the educational deficit on transplantation, particularly in medical and paramedical universities studies, has been globally noted [57-60].

As we have previously expressed, the classic conceptions of solidarity and benevolence have had a relative impact on solving the problem of organ shortages [39]. K. Tretyakov advocated that solidarity in transnational organ sharing is based on fiction of questionable utility, and suggests improving the solidarity-based regime of transnational organ sharing by prioritising the individual welfare of organ donors and recipients [61].

Olson also maintained the importance of individual behaviour in social actions aimed at achieving a common interest. These concepts certainly play a major role in the particular case of organ donation, and should be considered in a review of donation education [41].

It is also essential to consider the significance of non-cognitive barriers to donation: mutilation, fear of death, religion, and doubts regarding medical action in the revision of educational programs [56, 62-65]. The integrity of the body after death is undoubtedly an influential religious belief in the refusal to donate. Correct information about cremation acceptance by Churches should be highlighted in new social education programs. It is important for the people denying another the chance to live because of false prejudices to know that cremation of the body after death is not rejected by most religious precepts.

Fear of death is a strong inhibition to organ donation. Faced with the death of a loved one, people might have to come to terms with their own death also. Freud includes in this fear loneliness, castration, unresolved conflicts, and guilt. Fear of death “dominates us

more often than we think” [66]. Given the inhibitory force of this ancestral non-cognitive barrier to organ donation, the inclusion in educational programs of slogans should be considered, such as: “Our body after death is a unique and irreplaceable source of health”. Precise pedagogical elaboration is needed given the socio-psychological complexity of this atavistic donation brake [31].

Studies show that with regard to rational or irrational questions that may influence family members regarding organ donation, medical behaviour, particularly during the treatment of a potential donor in intensive care units, is critical [67, 68].

A different economic evaluation of organ transplantation. A utopic endeavour?

As for the economic aspects related to transplant medicine, the current inequities in access to successful organ transplantation, based on the socioeconomic status of the potential recipients, do not ensure a fair equality of opportunities and therefore they are fundamentally unfair. The structural inequalities inherent in the broader health care and social systems in which organ transplantation takes place are not impartial, but pose very real barriers to access based on the socioeconomic status of potential organ transplant candidates [69].

Evaluating justice in transplant opportunities, Von dem Knesebeck et al. showed that about two-thirds of respondents in 23 countries think it is unfair when people with higher incomes can afford better health care than people with lower incomes. Percentages vary between 42.8% in Taiwan and 84% in Slovenia. Multilevel logistic regression analyses show that women and people affected by a low socioeconomic status, poor health, insufficient insurance coverage, and foregone care are more likely to perceive income-related health care inequalities [70].

These perceptions present non-cognitive barriers to organ donation. The large difference in transplantation costs between countries has already been mentioned. Perceptions of potential unfairness, which are particularly pronounced among deprived people in poor health, can have a negative impact on people’s trust in the health care system. If these people lose trust in the health care system, this may further increase inequalities in the utilisation and quality of health care.

WHO maintains that social factors, including education, employment status, income level, gender, and ethnicity, have a marked influence on people’s health. There are wide disparities in the health status of different social groups in all countries – whether low-, middle- or high-income. The lower the socio-economic position, the higher the risk of poor health. Health inequities are systematic differences in the health status of different population groups. These inequities have significant social and economic costs for both individuals and societies [71].

Regarding the global social injustices in medical care, it is of interest to highlight the different considerations regarding the relationship between transplants and economic savings indicated in the introduction to this essay.

- The leaders of monotheistic religious faiths encourage their faithful to assume a positive behaviour towards organ donation and transplantation, remarking this shows altruism and philanthropy.
- WHO has structured guidelines about political and medical care concerning transplantation. Guiding Principle n°5, which addresses economy, says: “The need to cover legitimate costs of procurement and of ensuring the safety, quality and efficacy of human cell and tissue products and organs for transplantation, is also accepted, as long as the human body and its parts as such are not a source of financial gain”.

The analysis of these concepts and guidelines on the part of monotheistic churches and WHO shows a significant identification with the concepts of gratitude for social security and health for the whole of society proposed in the 16th century by Thomas More. In relation to the current economic aspects of organ transplants, global evaluations of the costs of kidney transplantation are significant: from an average of €230,000 in the USA to €9,800 in India [10]. Conversely, kidney graft survival is practically similar in all countries, though it should be stressed that the lower long-term kidney graft survival results have been observed in the United States [11-13].

Injustice or discrimination? Is it up to doctors and health authorities to act on the problem of organ shortage? Is this risk of life “modifiable” or should emphasis be given to acting on the causes of it? It is wealth gradients that lead to health inequality – is this avoidable? In a recent forum, D. Chokshi analysed the responsibility of health professionals and all technical-professional activity related to the social protection of health to solve the global problem of social differences and injustices in the application of medical progress [72].

An analysis of modifying social behaviour regarding donation should have as its base the premise that organ transplants are different from “everyday” medicine as they cannot be carried out without the participation of another’s, essentially dead, body. Although the literature does not imply that the mandatory non-enrichment transplantation principle impacts donation conduct negatively, that this might play a big part in the inadequate social response should not be discarded.

The search for an answer to this question should begin by looking for a logical explanation for the differences in organ transplantation costs in different countries and their relationship with comparable medical-surgical activities of “classical” medicine.

Additionally, an analysis of the political, medical, scientific, and pharmaceutical industries could establish a correlation between the costs of transplant medicine and similar practices of so-called “classical” medicine. An ideal option would be the creation of commissions of experts in the aforementioned areas to establish in their respective regions a program to adapt each type of organ or tissue transplant to the cost of the most complex intervention of “classical” medicine. For example, a liver transplant should equate to the medical costs of the most complex surgical intervention on this organ.

Regarding prolonged therapeutic treatments, the pharmaceutical industry might consider an appropriate price list for the follow-up treatments of transplants, with a reasonable but lower profit percentage than those indicated for “classical” medicine patients. Intense media diffusion of this substantial change in the socio-economics will help people see that organ transplantation is a different medicine because it requires their fundamental participation. A structural change of this magnitude may manifest a change in the non-cognitive social barrier to donation that transplantation unfairness represents.

Conclusion

Inspired by Thomas More’s utopian ideas about medicine, this essay has submitted different proposals to achieve the greatest advance in medicine, transforming death into life, by altering social behaviour through education and economics.

Transplantation is a new medicine since it needs the human body, still living or after death, to achieve its objective: to give life and hope. It would be rational to clearly define its difference from the traditional or “classical” medicine where people act but not with their body or with their lives.

Until now, medico-legal solutions to resolve organ shortages have not been efficient, so proposals in the 21st Century are focusing on education and economics.

A) Education:

Change the slogan

- “Donating is giving life” to
- “Donating is sharing”
- “We are all potential transplant receptors”
- “Donating and receiving an organ is a right and a duty”
- “Our body after death is an irreplaceable source of health”

B) Economics:

- Transplantation is a different medicine because it is not possible without the use of the human body.
- It is not ethical or moral to ignore the principles established by WHO and religions concerning the economics of the practice.
- When informed of a change in the economic reality of transplants, society may change its behaviour towards donating.

It is reasonable to assume that the global application of these or similar education and economic changes can, with an efficient media diffusion, enhance people’s understanding of their right to receive and their duty to give an organ for transplantation. The dramatic organ shortage it is in a sense a critical pandemic, but in this case it has a definite therapeutic solutions that society can solve by itself.

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