

Organ transplantation and donation and its relationship to the national economy in the Kingdom of Saudi Arabia

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Abstract

This study examined the economic and social effects of organ donation and transplantation programs in Saudi Arabia through a quantitative and descriptive-analytical research. A structured questionnaire was used in gathering data of 526 healthcare and administration professionals. The results obtained showed a high level of consensus between the respondents that organ donation programs help in reducing the cost of healthcare, enhance patient productivity, lower financial

pressure, and boost the economy of countries. Government support, awareness campaigns, developing infrastructure and investing in research were found as the major forces of success and sustainability of the program. The participants stressed that the targeted education and cooperation with local and religious leaders could help to improve the donor registration and participation. The study also emphasized the opportunities of such programs to capture medical tourism, upscale health care facilities, and

support economic objectives of Vision 2030. It is suggested to hold awareness campaigns continuously, provide ethical incentives to donors, modernize the transplantation centers, and help to keep governmental support sustained. The study indicates that the organ transplantation programs are not only vital in individual health but also as long-range investments in the development of the nation, which explains the significance of combined medical, social, and economic interventions to make the Saudi Arabia country a leader in healthcare innovation.

Keywords: Organ Donation, Organ Transplantation, National Economy, Healthcare Efficiency.

* Introduction

Organ transplantation and donation represent one of the most critical and life-saving components of modern healthcare systems, with implications that extend beyond clinical outcomes to social welfare, workforce productivity, and national economic stability. In the Kingdom of Saudi Arabia, the growing prevalence of chronic diseases such as kidney failure, liver disease, and cardiovascular conditions has increased the demand for organ transplantation, placing pressure on healthcare resources and long-term

public spending. Organ transplantation not only restores health and prolongs life but also enables recipients to reintegrate into society as economically active individuals, thereby reducing dependency on long-term medical care and social support systems. From a macroeconomic perspective, effective organ donation systems can alleviate the financial burden associated with lifelong treatments such as dialysis, improve labor market participation, and enhance overall human capital development. Understanding organ donation as both a public health and economic issue is therefore essential for achieving sustainable healthcare and economic diversification goals in Saudi Arabia.

The decision to donate organs is strongly influenced by human behavior, values, and perceptions of risk and benefit, making behavioral and motivational theories highly relevant to this field of study. Research on pro-social and pro-environmental behavior demonstrates that individuals are more likely to engage in actions that benefit society when they perceive moral responsibility, social approval, and personal efficacy (Shafiei & Maleksaeidi, 2020). Similarly, organ donation relies on public awareness,

trust in institutions, and belief in the positive societal impact of donation. Studies have shown that when individuals recognize the broader social and collective benefits of their actions, they are more willing to engage in behaviors that contribute to societal wellbeing, even when there is no immediate personal gain (Zawadzki et al., 2020). In this context, promoting organ donation can be understood as fostering a culture of shared responsibility that ultimately supports national health outcomes and economic resilience.

Human capital development is a central pillar of Saudi Arabia's national economic vision, and healthcare systems play a decisive role in maintaining a productive population. Chronic illness without access to transplantation often results in reduced work capacity, increased absenteeism, and early withdrawal from the labor force. Organ transplantation, by contrast, can restore functional ability and psychological wellbeing, enabling individuals to return to employment and contribute to economic output. Research emphasizes that when people feel valued and supported by social systems, their health, engagement, and societal participation improve significantly (Prilleltensky & Prilleltensky, 2024).

This perspective highlights how organ transplantation is not merely a medical intervention but a societal investment that strengthens workforce stability and reduces long-term economic losses associated with disability and premature mortality.

Healthcare professionals are a critical component in the success of organ donation and transplantation programs, as their attitudes, competencies, and quality of care directly influence patient outcomes and public trust. Evidence from healthcare and education research suggests that professional beliefs, training, and perceived value significantly affect performance quality and service effectiveness (Bowman et al., 2022). In the transplantation context, skilled and motivated healthcare workers are essential for donor identification, ethical communication with families, and post-transplant care. Furthermore, the professional quality of life of clinical staff has been shown to influence caring behaviors, patient safety, and system efficiency, particularly in high-stress environments such as transplant units (Inocian et al., 2025). Investing in the wellbeing and development of healthcare professionals therefore has indirect economic benefits by improving transplant success rates,

reducing complications, and optimizing the use of costly medical resources.

In light of these interconnected dimensions, examining organ transplantation and donation through an economic lens offers valuable insights for policymakers in the Kingdom of Saudi Arabia. The relationship between public attitudes, healthcare workforce capacity, patient wellbeing, and national productivity underscores the need for integrated strategies that combine ethical awareness, professional development, and economic planning. By strengthening organ donation systems, Saudi Arabia can improve population health outcomes while simultaneously reducing long-term healthcare expenditures and enhancing economic participation. This study seeks to explore this relationship in depth, positioning organ transplantation not only as a humanitarian and medical necessity but also as a strategic contributor to national economic sustainability and social wellbeing.

*** Research Problem**

Despite significant advancements in healthcare infrastructure and medical technology in the Kingdom of Saudi Arabia, the gap between the growing demand for organ transplantation and

the limited supply of donated organs remains a persistent and complex challenge. This imbalance has led to prolonged waiting lists, increased morbidity, and higher mortality rates among patients with end-stage organ failure. From an economic perspective, the shortage of organ donations contributes to escalating healthcare expenditures, particularly due to the long-term costs of alternative treatments such as dialysis, repeated hospitalizations, and supportive care. These costs place sustained pressure on national healthcare budgets and divert resources from other developmental priorities, raising concerns about the long-term economic efficiency and sustainability of the healthcare system.

In addition to clinical and financial challenges, the organ donation system in Saudi Arabia faces social, ethical, and behavioral barriers that limit public participation. Cultural perceptions, ethical concerns, lack of awareness, and varying levels of trust in healthcare institutions influence individuals' willingness to donate organs. These behavioral factors have broader economic implications, as low donation rates hinder the potential recovery of patients who could otherwise return to productive

economic activity. The absence of integrated research that links organ donation behaviors, healthcare outcomes, and macroeconomic impacts creates a critical knowledge gap. Addressing this gap is essential for informing evidence-based policies that align public health objectives with national economic goals under Saudi Arabia's long-term development strategies.

*** Research Objectives**

- 1- To analyze the current status of organ transplantation and donation systems in the Kingdom of Saudi Arabia.
- 2- To explore the social, ethical, and behavioral factors influencing organ donation decisions in the Saudi context.
- 3- To propose policy-oriented recommendations that enhance organ donation rates while supporting national economic sustainability.

*** Research Questions**

- 1- What is the current status of organ transplantation and donation systems in the Kingdom of Saudi Arabia?
- 2- Which social, ethical, and behavioral factors most significantly influence organ donation decisions in the Kingdom of Saudi Arabia?
- 3- How can national policies be optimized to strengthen organ donation systems and support economic development goals?

*** Significance of the Study**

This study is significant because it integrates medical, social, and economic perspectives to examine organ transplantation and donation as a strategic national issue rather than solely a clinical concern. By highlighting the economic implications of organ donation systems, the research provides policymakers with evidence to support more efficient allocation of healthcare resources, improved public health outcomes, and enhanced workforce productivity. The findings are expected to contribute to academic literature, inform ethical and behavioral interventions, and support Saudi Arabia's broader vision of sustainable development and human capital investment.

*** Definition of Terms**

Organ Donation: Organ donation refers to the voluntary and ethical act of allowing organs or tissues to be removed from a living or deceased individual for transplantation into another person to restore health or save life. Ethical frameworks governing organ donation emphasize fairness, consent, and social responsibility, ensuring that allocation policies align with moral and legal standards (Alnaim et al., 2024). Organ donation can be viewed

as a form of prosocial behavior that contributes to collective wellbeing and societal resilience.

Organ Transplantation: Organ transplantation is a specialized medical procedure in which a healthy organ replaces a failing or damaged one, enabling patients to regain functional capacity and quality of life. Beyond its clinical dimension, transplantation represents a long-term investment in human capital by reducing chronic care costs and enabling recipients to resume social and economic participation. Ethical and professional standards guide transplantation practices to ensure equity, safety, and sustainability within healthcare systems (Alnaim et al., 2024).

Prosocial Behavior: Prosocial behavior refers to voluntary actions intended to benefit others or society as a whole, often driven by moral values, social norms, and ethical reflection. Research demonstrates that such behaviors are influenced by moral awareness and collective responsibility, particularly in institutional and societal contexts (Afsar & Umrani, 2020). Organ donation exemplifies prosocial behavior, as it involves personal sacrifice or consent for the benefit of unknown recipients and broader societal health.

Healthcare Workforce: The healthcare workforce encompasses trained professionals who provide medical, nursing, and allied health services and whose performance directly affects healthcare quality and system efficiency. Professionalization and ethical commitment are central to caring professions, shaping service delivery, patient trust, and institutional effectiveness (Abbott & Meerabeau, 2020). In the context of organ transplantation, the competence and wellbeing of healthcare professionals are critical to donor management, transplantation success, and economic efficiency.

Economic Sustainability in Healthcare: Economic sustainability in healthcare refers to the ability of a health system to meet population needs while maintaining financial viability over time. Sustainable systems balance costs, outcomes, and societal benefits by investing in interventions that reduce long-term expenditure and enhance wellbeing. Studies on willingness to invest in socially beneficial outcomes highlight how collective value perceptions influence sustainable choices (Gomes et al., 2023; Alcock et al., 2020), positioning organ donation and transplantation as economically rational strategies that

support long-term national development.

*** Theoretical Framework and Previous Studies**

*** Theoretical Framework**

Prosocial and Ethical Behavior

Framework: The prosocial and ethical behavior framework provides a comprehensive lens for understanding organ donation as a voluntary action rooted in moral responsibility, social solidarity, and culturally shaped values. In the Saudi context, organ donation decisions are closely intertwined with ethical considerations, religious interpretations, and collective norms that emphasize saving lives and supporting community wellbeing. Empirical evidence indicates that levels of knowledge and ethical awareness significantly influence willingness to donate, as individuals who understand the moral and social value of organ donation are more likely to perceive it as a positive and socially responsible act (Alshehri et al., 2024; AbuAlhommos et al., 2023). This framework highlights that organ donation is not merely a medical choice but a reflection of broader ethical reasoning, where individuals weigh personal beliefs, societal expectations, and perceived moral duty toward others in need. By framing donation as an act that aligns

with shared ethical principles, this perspective helps explain variations in public participation and identifies pathways for strengthening donation culture.

Public attitudes toward organ donation in Saudi Arabia further demonstrate the relevance of prosocial and ethical motivations. Studies examining awareness, attitudes, and beliefs consistently show that favourable attitudes are strongly associated with altruism, trust in healthcare systems, and confidence in ethical allocation practices (Alghamdi et al., 2023; Alhasan et al., 2023). However, misconceptions, fear of bodily harm, and uncertainty about posthumous procedures can weaken ethical motivation despite generally positive moral beliefs. The prosocial and ethical behavior framework accounts for these tensions by recognizing that moral intent alone is insufficient without supportive social narratives and institutional reassurance. Ethical clarity, transparent communication, and culturally sensitive education are therefore essential to transform positive attitudes into actual donation behavior, reinforcing the idea that ethical awareness operates within a broader social and institutional environment.

This framework is also particularly relevant when examining sensitive domains such as pediatric organ donation and deceased donation pathways. Pediatric transplantation raises profound ethical questions related to consent, vulnerability, and family decision-making, requiring high levels of moral trust and societal support (Shaheen et al., 2024). Similarly, deceased organ donation depends heavily on ethical confidence in end-of-life care, donor identification processes, and respect for dignity after death. Research on Saudi Arabia's deceased donation pathways highlights that ethical governance and family-centred communication play a decisive role in donation outcomes (Al Ghonaim et al., 2020). Within the prosocial and ethical behavior framework, these findings underscore how ethical reassurance and moral legitimacy strengthen families' willingness to consent, transforming personal loss into a socially meaningful contribution that benefits others.

At a broader level, this framework situates organ donation within regional and cultural dynamics across Muslim-majority societies, where ethical, religious, and communal values strongly shape health-related behaviors.

Comparative research shows that countries with stronger alignment between ethical discourse, religious guidance, and public trust tend to demonstrate higher organ donation and transplantation rates (Malik et al., 2025). In Saudi Arabia, identified motivators such as religious approval, moral reward, and saving lives coexist with barriers including lack of information and emotional discomfort surrounding death (Al Salem, 2020). The prosocial and ethical behavior framework integrates these factors by emphasizing that ethical motivation is socially constructed and can be strengthened through education, leadership, and policy coherence. By fostering ethical awareness and reinforcing social responsibility, this framework explains how increased organ donation can lead not only to improved health outcomes but also to greater economic stability through reduced healthcare burdens and enhanced societal productivity.

Human Capital and Workforce Productivity Lens: The human capital and workforce productivity lens positions health as a foundational component of national economic capacity, recognizing that a healthy population is essential for sustained productivity and development. Human capital theory

traditionally emphasizes education, skills, and experience, but contemporary research increasingly acknowledges health as an equally critical determinant of employee performance and organizational effectiveness (Grimshaw & Miozzo, 2021). Chronic illness undermines this capital by limiting individuals' physical and cognitive abilities, increasing absenteeism, and accelerating premature exit from the labor market. In this context, organ transplantation represents a decisive intervention that restores health and preserves accumulated human capital, allowing individuals to maintain or regain their productive roles within the economy rather than becoming long-term dependents on healthcare and social support systems.

From a workforce perspective, restored health following successful organ transplantation directly influences job performance, engagement, and employability. Studies examining employee performance through a social and organizational lens highlight that workers' physical wellbeing significantly shapes motivation, output quality, and sustained participation in employment (Zătreanu, 2024). When individuals suffer from end-stage organ failure,

their capacity to meet job demands declines, often leading to reduced working hours or withdrawal from employment altogether. Transplantation reverses many of these limitations by improving functional capacity and psychological resilience, enabling recipients to return to work and contribute meaningfully to organizational and national productivity. This reinforces the view that healthcare interventions such as transplantation are not isolated medical expenses but strategic investments in workforce performance.

The relevance of this lens becomes more pronounced when considering long-term workforce planning and generational dynamics. As labor markets increasingly rely on younger and technologically adaptable generations, maintaining the health and continuity of the working population is essential. Research on Generation Z emphasizes their expectations for sustainable work environments and long-term employability, both of which are undermined by widespread chronic health conditions (Racolța-Paina & Irini, 2021). Investments in human capital development, including health-focused interventions, are therefore integral to

future workforce resilience. Global development perspectives further underscore those national investments in human capital, particularly health, yield substantial returns through enhanced productivity and reduced economic vulnerability (Rachmad, 2025), supporting the argument that organ transplantation contributes to sustainable economic development.

Finally, the human capital and workforce productivity lens aligns with broader frameworks of social responsibility and sustainable development within modern economies. Human resource practices increasingly integrate employee wellbeing as a strategic priority, recognizing that productivity gains are inseparable from social responsibility and long-term sustainability (Mukhuty et al., 2022). Organ transplantation, when viewed through this lens, supports socially responsible development by enabling individuals to lead productive lives while reducing the long-term economic burden of chronic illness. By restoring health and preserving human capital, transplantation strengthens workforce stability, supports inclusive economic growth, and reinforces the interconnected relationship between public health

investment and national economic performance.

Health System Efficiency and Cost-Benefit Perspective: The health system efficiency and cost-benefit perspective provides a critical framework for evaluating organ transplantation not only as a life-saving medical intervention but also as a strategic economic investment. By comparing transplantation with long-term alternative treatments such as chronic dialysis or prolonged hospitalization, this perspective allows for a nuanced understanding of how healthcare resources can be optimized to maximize both health outcomes and financial sustainability. Cost-benefit analysis in healthcare enables policymakers to quantify the economic value of medical interventions in relation to their costs, capturing not only direct expenditures but also indirect benefits such as increased productivity, reduced long-term care, and improved quality of life (Brent, 2023). Within the Saudi Arabian context, where the prevalence of chronic kidney disease and other end-stage organ failures is rising, adopting a cost-benefit lens provides critical insights into the economic implications of expanding organ donation and transplantation programs.

Applying this perspective to organ transplantation highlights the potential for substantial cost savings over time. For instance, recurrent dialysis treatments impose a significant financial burden on healthcare systems due to their high frequency, specialized staffing requirements, and extended treatment periods. Comparative analyses in other healthcare contexts, such as bariatric surgery or personalized medicine, demonstrate that interventions with higher upfront costs can achieve net economic benefits through long-term reductions in medical expenditures and improved patient outcomes (Rognoni et al., 2020; Olagunju, 2023). In Saudi Arabia, a similar logic applies: successful organ transplantation reduces the need for repeated and costly medical interventions, alleviates pressure on hospital resources, and enables recipients to regain functional capacity, thereby mitigating indirect economic losses associated with disability and work absence.

Beyond direct healthcare costs, the cost-benefit perspective also emphasizes the importance of system-wide efficiency and the optimal allocation of resources. Strategic investment in organ donation programs, including public

awareness campaigns, donor registry systems, and transplantation infrastructure, can generate significant societal returns by enhancing the effectiveness and equity of the healthcare system. Cost-benefit frameworks used in public health interventions, such as vaccination campaigns, illustrate how relatively modest investments can produce substantial economic and social gains by preventing long-term illness and mortality (López et al., 2022). For Saudi Arabia, integrating these principles into organ transplantation planning supports evidence-based budgeting, prioritizes interventions that maximize societal value, and ensures that scarce medical resources are used in ways that produce the greatest benefit for both individual patients and the broader economy.

Finally, this perspective underscores the value of decision-making grounded in rigorous analysis and optimization. Just as cost-benefit approaches are applied in technology, structural monitoring, and augmented reality systems to determine efficient allocation of resources (Yoon & Oh, 2022; Cantero-Chinchilla et al., 2020), similar principles can guide healthcare policy and investment in transplantation programs. By evaluating the trade-offs between

immediate costs and long-term societal benefits, policymakers can identify interventions that enhance the sustainability, reliability, and economic efficiency of the healthcare system. In the context of organ donation and transplantation, this approach provides a strong rationale for expanding donor programs, streamlining transplantation processes, and implementing policies that maximize both health outcomes and national economic returns.

Institutional Capacity and Governance Context: Institutional capacity and governance form a cornerstone for the effective functioning of organ donation and transplantation systems, as they determine how healthcare services are planned, implemented, and monitored. In Saudi Arabia, the establishment of transparent policies, ethical allocation frameworks, and competent institutional structures is essential to foster public trust and facilitate successful transplantation outcomes. Research underscores that governance quality—characterized by clear regulatory frameworks, accountability mechanisms, and institutional competence—directly influences the efficiency and equity of healthcare delivery (World Health Organization, 2025). In the context of organ donation, institutions that

operate with high governance standards are better equipped to manage donor registries, coordinate between hospitals, ensure ethical adherence, and communicate effectively with families, thereby creating an environment that encourages higher donation rates and improved health outcomes.

Institutional capacity also plays a critical role in mediating collaboration and coordination across multiple actors within the healthcare ecosystem. Effective governance involves not only the technical competence of healthcare institutions but also their ability to foster cooperative networks among local authorities, hospitals, and community organizations (Khan & Han, 2023). Such collaborative capacity ensures that organ donation campaigns, transplantation logistics, and post-operative care operate seamlessly and efficiently. In practice, this means that institutional readiness, clear operational protocols, and interagency collaboration reduce procedural bottlenecks, enhance timely allocation of organs, and ultimately optimize the use of healthcare resources. Strong governance, therefore, acts as a multiplier of institutional efficiency, amplifying both clinical and

economic benefits associated with organ transplantation.

The broader concept of governance within socio-economic pathways further highlights the adaptive function of institutional capacity. Institutions that are flexible, transparent, and responsive are more capable of adapting to demographic changes, rising disease burdens, and evolving public expectations (Andrijevic et al., 2020). This adaptive capacity is particularly important in the organ transplantation sector, where ethical, cultural, and religious considerations influence donation patterns and demand fluctuate with population health trends. Empirical studies show that governance structures with clearly defined roles, accountability mechanisms, and proactive policy frameworks are better equipped to anticipate challenges, allocate resources efficiently, and ensure equitable access to transplantation services (Omweri, 2024). Consequently, strong institutional governance is not only a procedural necessity but also a strategic tool for sustaining healthcare and economic outcomes in the long term.

Finally, the relationship between institutional capacity and governance is closely linked to trust, compliance, and societal

participation. Public confidence in healthcare institutions and their governance practices shapes individuals' willingness to participate in organ donation programs, adhere to medical advice, and support policy initiatives (Luo et al., 2024). Transparent decision-making, consistent enforcement of ethical standards, and competent administration enhance credibility, reduce societal scepticism, and encourage voluntary donation behavior. In Saudi Arabia, where cultural and religious factors strongly influence public health decisions, robust institutional governance ensures that organ allocation policies are perceived as fair, ethical, and professionally managed. This perspective underscores that institutional capacity and governance are not merely administrative concerns but essential determinants of both clinical success and broader economic efficiency in the organ transplantation sector.

Social Wellbeing and National Development Perspective: The social wellbeing and national development perspective emphasize that health interventions, such as organ transplantation, extend far beyond individual recovery to influence broader societal outcomes. By improving quality of life and

restoring physical and psychological functioning, organ transplantation reduces dependency on family members, caregivers, and public social services, thereby mitigating the indirect social and economic burdens associated with chronic illness (Wilcock & Hocking, 2024). In Saudi Arabia, where family networks play a central role in providing care, transplantation allows recipients to regain independence, participate more fully in social and occupational life, and contribute to the cohesion and resilience of their communities. This perspective positions organ transplantation not merely as a clinical intervention but as a catalyst for societal stability and wellbeing, linking health recovery to enhanced social capital and collective welfare.

Beyond alleviating dependency, organ transplantation contributes to reducing health-related inequality by enabling equitable access to life-saving treatments across diverse population groups. Health disparities and unequal access to medical interventions can perpetuate cycles of social disadvantage, limiting opportunities for affected individuals to engage in productive, socially meaningful activities. Through the lens of social wellbeing, transplantation programs in Saudi Arabia can be understood as

instruments of social justice, allowing patients from different socioeconomic and regional backgrounds to regain health, maintain occupational engagement, and reduce vulnerability to economic and social marginalization (Wilbur et al., 2020). This aligns with national development goals that aim to promote inclusive growth and enhance quality of life for all citizens, demonstrating the interplay between health outcomes and social equity.

The perspective also highlights the broader economic and developmental benefits associated with improved population health. Healthier individuals contribute more effectively to the workforce, participate in community life, and reduce long-term public spending on medical and social support services, thereby strengthening the foundations of sustainable development (Pritchett, 2022). In the context of Saudi Arabia, organ transplantation supports national development strategies by transforming previously dependent individuals into active contributors to the economy and society. Furthermore, improved health outcomes foster psychological wellbeing, social engagement, and resilience, which are essential components of societal stability and

human development (Shek, 2020). Thus, transplantation has both direct and indirect effects on the social and economic fabric of the nation.

Finally, adopting a social wellbeing lens encourages a holistic, value-based approach to healthcare policy and planning. By integrating health outcomes with measures of quality of life, social participation, and equity, policymakers can design organ donation and transplantation programs that maximize societal benefits (Smith et al., 2023). This perspective underscores that investments in organ transplantation are not solely medical expenditures but strategic interventions that enhance social cohesion, reduce vulnerability, and advance sustainable national development. In Saudi Arabia, such an approach ensures that healthcare delivery aligns with broader societal objectives, creating a healthcare system that supports both individual flourishing and long-term national progress.

*** Previous Studies**

1- Study of (Shaheen, F. A. (2016). Organ transplantation in Saudi Arabia.

Organ transplantation started in the Kingdom of Saudi Arabia (KSA) in 1979 with a kidney transplanted from a live donor. The

Saudi Centre for Organ Transplantation has been established in 1985 as a governmental agency that supervises all national transplant activities in the KSA. Organ transplantation in the KSA has made great strides since 1985. Saudi Centre for Organ Transplantation is playing a central role in all aspects of transplantation including education on all levels, allocation, coordination and procurement. A new initiative has started an ambitious program in 2014 to improve the identification and reporting of organ donors aiming at an annual rate of 15 donors per million populations within 3 years in the KSA.

2- Study of (Alobaidi, S. Organ Donation in Saudi Arabia: A Profile of Public Knowledge and Behavior from an Online Survey.

Despite advanced healthcare infrastructure and supportive policy, low donor availability remains the major barrier to organ transplantation in the Kingdom of Saudi Arabia (KSA). Multiple interlinked and complex factors, including psychosocial, cultural, and religious factors, are believed to influence organ donation behavior. The current study explored public knowledge, attitudes, and behavioral intentions toward organ donation in KSA to inform targeted interventions. A

cross-sectional online survey grounded in the Theory of Planned Behavior was administered nationwide between June and December 2022. Eligible participants were KSA residents aged ≥ 16 years who could read Arabic and provided consent. A convenience sampling method was used to recruit participants; incomplete responses ($< 80\%$ of items) were excluded. The instrument assessed knowledge, attitudes, subjective norms, perceived behavioral control, and willingness to register as an organ donor. Indecision about registering as an organ donor predominated across sociodemographic groups. Females reported higher willingness to register than males (10.4% vs 8.7%) and lower refusal (10.2% vs 13.6%), with a significant association ($\chi^2 = 10.3$, $p = 0.006$). Nationality was associated with willingness, with Saudi nationals showing higher willingness ($\chi^2 = 13.8$, $p < 0.001$). Occupation ($\chi^2 = 20.3$, $p = 0.009$) and income ($\chi^2 = 17.3$, $p = 0.008$) were also significantly associated with willingness, with non-working and some higher-income groups more often undecided. Overall, a favourable normative climate and substantial religious endorsement coexisted with gaps in specific knowledge and persistent

ambivalence. In KSA, supportive norms and religious approval are necessary but insufficient to translate positive attitudes into registration behavior. Reducing indecision will likely require sustained, targeted education that addresses misconceptions, clarifies the donation process, and leverages trusted religious and community channels.

3- Study of (AlSulaiman, et al. (2021). Organ transplantation in Arabian Gulf countries: ethical and legal practice and beyond.

Almost half a century ago, organ transplantation was introduced to Arabian Gulf countries. The criteria for diagnosing brain death among these countries is relatively similar, in which the main area of discrepancy is the number of physicians required to diagnose and their required specialties. Regarding the organs and tissues allowed for transplantation, they must possess an intrinsic regenerative ability if they are harvested from a living donor to avoid jeopardizing their health. To donate, Arabian Gulf countries follow an opt-in consent system, requiring the donor's informed consent before organ procurement. Live donors can be related or unrelated to the recipient, although the latter is subjected to variable

restrictions among Arabian Gulf countries and prohibition in one of them. This is due to its implication in commercial trade. Furthermore, the Gulf Health Council was established to coordinate different health initiatives and programs between Gulf states, including organ transplantation, in an attempt to improve the health sector of all of its member states. Although organ trafficking is illegal in all Arabian Gulf countries, their penalty systems vary from barring physicians, subjecting them to fines or even imprisonment. As for the attitudes of people towards organ transplantation, the willingness to donate varies among these countries. The rate of organ transplantation remains low. This article aims to cover the history of organ transplantation, brain death diagnosis protocols, organ donation enrolment policies and conditions, as well as the issue of organ trafficking in Arabian Gulf countries.

4- Study of (Alhasan, et al. (2023, December). Awareness, attitudes, and willingness: a cross-sectional study of organ donation in Saudi Arabia.

Organ transplantation is inherently dependent on the availability of organ donors. There is a noticeable paucity of literature addressing the rates of organ

donation registration and the awareness of Islamic regulations (Fatwa) regarding organ donation within Saudi Arabia. Our study aimed to evaluate the level of organ donation registration, awareness of Islamic regulations, and knowledge of the Saudi Centre for Organ Transplantation (SCOT) within the Saudi society. They conducted a cross-sectional survey from 30 March to 9 April 2023. This survey aimed to assess the awareness of Islamic (Fatwa) guidance on organ donation, the role of SCOT, and the rate of organ donation registration facilitated through the Tawakkalna app, the official health passport application in Saudi Arabia. Out of 2329 respondents, 21% had registered as potential deceased organ donors, despite 87% acknowledging the importance of organ donation. Awareness of the Islamic Fatwa regarding organ donation was reported by 54.7% of respondents, and 37% recognized the Fatwa's acceptance of brain death criteria. The likelihood of registration as organ donors was higher among Saudi citizens under 45 years of age, females, healthcare workers (HCWs), individuals with higher education, relatives of patients awaiting organ donations, those informed about the Islamic Fatwas, and those willing to

donate organs to friends. Conversely, being over the age of 25, Saudi nationality, employment as an HCW, awareness of SCOT, and prior organ donation registration were predictive of a heightened awareness of Islamic Fatwas. However, perceiving the importance of organ donation correlated with a lower awareness of the Fatwas. Significant positive correlations were found between awareness of SCOT, awareness of Fatwas, and registration for organ donation. While the Saudi population exhibits a high regard for the importance of organ donation, this recognition is not adequately translated into registration rates. The discrepancy may be attributable to limited awareness of SCOT and the relevant Islamic Fatwas. It is imperative to initiate organ donation awareness campaigns that focus on religious authorization to boost organ donation rates and rectify prevalent misconceptions.

5- Study of (Alghamdi, A., Alsaleh, A. A., Alfozan, O. A., Qutob, R., Alaryni, A., Bukhari, A., ... & AlShammari, S. H. (2023). Awareness, attitude, and beliefs regarding organ donation among the general public in Saudi Arabia.

Organ donation is a lifesaving option to rescue many patients with end-stage organ failure from possible

morbidities and mortalities. Unfortunately, due to a shortage of donors, many patients suffering from their illnesses are waiting for an organ. This study aimed to determine the awareness, attitude, and beliefs toward organ donation among the Saudi population. This is an online cross-sectional survey that was conducted in Saudi Arabia between July and September 2022. A self-administered questionnaire was distributed to the general public using an online platform. The questionnaire consists of two sections: the first is about demographic data, and the second is about questions to assess awareness, attitude, and beliefs regarding organ donation. The Chi-squared test was used to examine the differences in participants' awareness, attitude, and beliefs towards organ donation. A binary logistic regression analysis was used to identify predictors of a positive attitude towards organ donation. A total of 3507 individuals participated in this study. Around 68.1% were aged between 18 and 30 years. Twenty-four percent of them knew of the legislative body for organ donation; 58.5% believed that organ donation should be promoted; and 66.1% had a positive attitude toward donating body organs. Younger age (31–50 years), male gender, being

unemployed or working in a government job, and being married were factors that decreased the likelihood of having a positive attitude towards organ donation. Although there was a positive attitude and belief about organ donation, awareness was suboptimal. Younger age, male gender, being unemployed or working in a government job, and being married were factors that decreased the likelihood of having a positive attitude towards organ donation. It is necessary to address the gaps in knowledge, and social media as well as mass media may have an important role in bridging the gaps.

* Study Methodology

The quantitative data were gathered by distributing a structured questionnaire that was given to the respondents who were selected. The likelihood of increased sample representativeness and minimized selection bias was based on the simple random sampling method that was used to select the participants. After data collection, statistical analysis was conducted by means of the Statistical Package of the Social Sciences (SPSS) that provided an opportunity to obtain descriptive statistics and interpret the findings of the study systematically.

The approach to the analysis that was used in this study was the descriptive analytical method of analysis since the aim of the approach is to describe, investigate the phenomenon on the ground, and gather data on its primary sources. The descriptive analytical approach implies that it is one of the scientific methods to describe the object under attack in the framework of a proper scientific procedure and describe the outcomes that are achieved in the form of expressive digital information that can be read. To support the research goals and the research nature, the quantitative research method was used in the study to enable objective measurement and statistical analysis. The research sample was 526 respondents selected within the context of some healthcare and administrative industries in Saudi Arabia.

* Results

* Demographic Information

1- Age

Table 1: Age

Age		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 -30	113	21.5	21.5	21.5
	31- 40	78	14.8	14.8	36.3
	41 – 50	326	62.0	62.0	98.3
	51 – 60	9	1.7	1.7	100.0
	Total	526	100.0	100.0	

The age structure of the respondents shows the definite concentration on the middle-age

group. Most of the participants fell within the range of 41 to 50 years (62 percent), which is almost 2/3 of the total sample. This was then succeeded by the 18 30 years' group (21.5%), and 31 40 years' group had a lower percentage (14.8%). The 51-60 years of age bracket had a little representation (1.7%). In general, the sample is highly biased towards the participants that are in their forties, which implies that the results may be more indicative of the views of more professionalized individuals, who belong to the target audience.

2- Gender

Table 2:Gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	311	59.1	59.1	59.1
	Female	215	40.9	40.9	100.0
	Total	526	100.0	100.0	

The gender distribution of the respondents shows a moderate male predominance. Males constituted 59.1%, while females accounted for 40.9%. This indicates that although both genders are well represented, the perspectives reflected in the study are somewhat more influenced by male participants.

3- Educational Level

Table 3:Educational Level

Educational Level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	University Student	300	57.0	57.0	57.0
	Bachelor's Degree	3	.6	.6	57.6
	Diploma	223	42.4	42.4	100.0
	Total	526	100.0	100.0	

The distribution of the educational level indicates that over 50 percent of the respondents were university students (57 percent) and they are the largest sample population. The number of participants with a diploma was also a significant percentage (42.4%,). The holders of a bachelor degree, on the other hand, were very few (0.6%). In general, the sample has gone out to be mostly constituted by individuals who are in higher learning institutions or in the middle academic level but there is minimal representation of fully graduated undergraduate degree holders.

4- Profession

Table 4:Profession

Profession					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Physician	169	32.1	32.1	32.1
	Healthcare practitioner	199	37.8	37.8	70.0
	Specialist	25	4.8	4.8	74.7
	Administrator	133	25.3	25.3	100.0
	Total	526	100.0	100.0	

The distribution of respondents represents a diverse group of healthcare related sample, which is professionally distributed. The clinical representation was high with healthcare practitioners making the largest proportion (37.8%) and the second greatest proportion (32.1) being the physicians. Another prominent group (25.3%), who provided managerial and policy input, was administrators. On the

contrary, experts were a comparatively low percentage (4.8).

Descriptive Statistics				
	Mean	Std. Deviation	Arrangement	Direction
Do you agree that organ donation to patients contributes to reducing healthcare costs in the long term?	1.90	1.115	9	Strongly Agree
Do we agree that organ transplantation contributes to improving the productivity of recovered patients and increasing their contribution to the economy?	1.83	1.000	13	Strongly Agree
Do you believe that awareness campaigns about organ donation have a positive impact on the national economy?	2.12	1.168	1	Strongly Agree
Do you think that increasing the number of organ donors could reduce the costs of treating chronic diseases associated with organ failure externally?	1.77	.921	23	Strongly Agree
Do you believe that improving organ transplant programs in the Kingdom will reduce reliance on treatment abroad?	1.77	1.011	24	Strongly Agree
Do you think that the Saudi government's investment in organ transplant programs could lead to the creation of new job opportunities in the health sector?	1.81	1.082	17	Strongly Agree
Do you support the idea of government support for organ donation as part of strategies to boost the national economy?	1.78	.979	21	Strongly Agree
Do you think it is necessary to increase funding for organ transplant research to improve economic benefits?	1.81	1.059	18	Strongly Agree

Do you believe that organ transplantation contributes to reducing mortality rates and thus boosting the national economy?	2.01	1.085	2	Strongly Agree
Do you agree that organ donation can improve the quality of life for transplant patients and promote economic development in the community?	1.81	1.049	19	Strongly Agree
Do you believe that raising awareness about organ transplantation can positively impact the national economy?	1.83	1.028	14	Strongly Agree
Do you believe that sustainable organ transplant programs could provide significant financial resources to the healthcare system?	1.76	.939	25	Strongly Agree
Do you believe that improving the efficiency of organ transplantation and donation can contribute to reducing patient waiting times and thus improving treatment outcomes?	1.78	1.049	22	Strongly Agree
Do you agree that the organ transplantation and donation program could make the Kingdom a leading country in the field of healthcare regionally and internationally?	1.81	.907	20	Strongly Agree
Do you agree that organ donation is a long-term investment in the health and well-being of citizens?	1.96	1.101	4	Strongly Agree
Do you believe that organ donation should be supported by financial or non-financial incentives to boost the national economy?	1.91	1.125	7	Strongly Agree
Do you believe that Saudi donors obtaining government jobs based on their qualifications is a step that strengthens the national economy by increasing organ donation?	1.97	.988	3	Strongly Agree
Do you think that improving the infrastructure for organ transplantation and donation can attract patients from outside the Kingdom and boost medical tourism?	1.94	.966	6	Strongly Agree

Do you agree that organ donation reduces the need for costly long-term treatments, thus easing the financial burden on families?	1.83	1.004	15	Strongly Agree
Do you think that expanding awareness programs about the importance of organ donation can boost public support for those programs?	1.89	1.019	11	Strongly Agree
Do you believe that strengthening cooperation between the public and private sectors in the field of organ transplantation and donation will bring significant economic benefits in order to enhance the funding of organ transplantation programs, make them more accessible, and achieve economic sustainability goals?	1.90	1.004	10	Strongly Agree
Do you agree that the Kingdom's investment in research and technology related to organ transplantation and donation could lead to important economic developments such as improved healthcare infrastructure?	1.85	1.018	12	Strongly Agree
Do you think that updating the national organ transplantation and donation system could reduce the costs of temporary alternative treatments?	1.96	1.087	5	Strongly Agree
Do you think organ transplantation contributes to reducing the time patients spend in hospitals, thus saving health resources?	1.82	1.021	16	Strongly Agree
Do you agree that organ transplantation and donation can help build a positive image of the Kingdom as a leading country in healthcare?	1.91	1.036	8	Strongly Agree
Do you believe that organ donation transplant programs can contribute to achieving the economic goals of the Kingdom's Vision 2030?	1.71	.814	26	Strongly Agree
Organ transplantation and donation and its relationship to the national economy in the Kingdom of Saudi Arabia	1.8636	.71891		Strongly Agree

1- Statement “Awareness campaigns about organ donation have a positive impact on the national economy” came in first place with a mean of 2.12 and a standard deviation of 1.168. Therefore, the direction of the sample members' responses is “Strongly Agree.”

2- Statement “Organ transplantation contributes to reducing mortality rates and thus boosting the national economy” came in second place with a mean of 2.01 and a standard deviation of 1.085. Therefore, the direction of the sample members' responses is “Strongly Agree.”

3- Statement “Saudi donors obtaining government jobs based on their qualifications strengthens the national economy by increasing organ donation” came in third place with a mean of 1.97 and a standard deviation of .988. Therefore, the direction of the sample members' responses is “Strongly Agree.”

4- Statement “Organ donation is a long-term investment in the health and well-being of citizens” came in fourth place with a mean of 1.96 and a standard deviation of 1.10. Therefore, the direction of the sample members' responses is “Strongly Agree.”

5- Statement “Updating the national organ transplantation and donation system could reduce the costs of temporary alternative treatments” came in fifth place with a mean of 1.96 and a standard deviation of 1.087. Therefore, the direction of the sample members' responses is “Strongly Agree.”

6- Statement “Improving infrastructure can attract patients from outside the Kingdom and boost medical tourism” came in sixth place with a mean of 1.94 and a standard deviation of .966, indicating “Strongly Agree.”

7- Statement “Organ donation should be supported by financial or non-financial incentives to boost the national economy” came in seventh place with a mean of 1.91 and a standard deviation of 1.125. Therefore, the direction of the sample members' responses is “Strongly Agree.”

8- Statement “Organ transplantation and donation can help build a positive image of the Kingdom as a leading

country in healthcare” came in eighth place with a mean of 1.91 and a standard deviation of 1.036. Therefore, the direction of the sample members' responses is “Strongly Agree.”

9- Statement “Organ donation contributes to reducing healthcare costs in the long term” came in ninth place with a mean of 1.90 and a standard deviation of 1.115. Therefore, the direction of the sample members' responses is “Strongly Agree.”

10- Statement “Strengthening cooperation between the public and private sectors in organ transplantation will bring significant economic benefits” came in tenth place with a mean of 1.90 and a standard deviation of 1.004. Therefore, the direction of the sample members' responses is “Strongly Agree.”

11- Statement “Expanding awareness programs can boost public support for organ donation programs” came in eleventh place with a mean of 1.89 and a standard deviation of 1.019. Therefore, the direction of the sample members' responses is “Strongly Agree.”

12- Statement “Investment in research and technology related to organ transplantation could lead to economic developments” came in

twelfth place with a mean of 1.85 and a standard deviation of 1.018. Therefore, the direction of the sample members' responses is "Strongly Agree."

13- Statement "Organ transplantation improves productivity of recovered patients and their economic contribution" came in thirteenth place with a mean of 1.83 and a standard deviation of 1.000. Therefore, the direction of the sample members' responses is "Strongly Agree."

14- Statement "Raising awareness about organ transplantation positively impacts the national economy" came in fourteenth place with a mean of 1.83 and a standard deviation of 1.028. Therefore, the direction of the sample members' responses is "Strongly Agree."

15- Statement "Organ donation reduces the need for costly long-term treatments and eases family financial burdens" came in fifteenth place with a mean of 1.83 and a standard deviation of 1.004. Therefore, the direction of the sample members' responses is "Strongly Agree."

16- Statement "Organ transplantation reduces the time patients spend in hospitals, saving health resources" came in sixteenth place with a mean of 1.82 and a standard deviation of 1.021. Therefore, the direction of the

sample members' responses is "Strongly Agree."

17- Statement "Government investment in transplant programs could create new health sector jobs" came in seventeenth place with a mean of 1.81 and a standard deviation of 1.082. Therefore, the direction of the sample members' responses is "Strongly Agree."

18- Statement "Increasing funding for transplant research is necessary to improve economic benefits" came in eighteenth place with a mean of 1.81 and a standard deviation of 1.059. Therefore, the direction of the sample members' responses is "Strongly Agree."

19- Statement "Organ donation improves quality of life and promotes community economic development" came in nineteenth place with a mean of 1.81 and a standard deviation of 1.049. Therefore, the direction of the sample members' responses is "Strongly Agree."

20- Statement "Transplant programs could make the Kingdom a regional and international healthcare leader" came in twentieth place with a mean of 1.81 and a standard deviation of .907. Therefore, the direction of the sample members' responses is "Strongly Agree."

21- Statement "Government support for organ donation should be part of

economic strategies” came in twenty-first place with a mean of 1.78 and a standard deviation of .979. Therefore, the direction of the sample members' responses is “Strongly Agree.”

22- Statement “Improving efficiency reduces waiting times and improves outcomes” came in twenty-second place with a mean of 1.78 and a standard deviation of 1.049. Therefore, the direction of the sample members' responses is “Strongly Agree.”

23- Statement “Increasing donors could reduce costs of chronic disease treatment abroad” came in twenty-third place with a mean of 1.77 and a standard deviation of .921. Therefore, the direction of the sample members' responses is “Strongly Agree.”

24- Statement “Improving transplant programs will reduce reliance on treatment abroad” came in twenty-fourth place with a mean of 1.77 and a standard deviation of 1.011. Therefore, the direction of the sample members' responses is “Strongly Agree.”

25- Statement “Sustainable transplant programs provide financial resources to the healthcare system” came in twenty-fifth place with a mean of 1.76 and a standard deviation of .939. Therefore, the direction of the sample members' responses is “Strongly Agree.”

26- Statement “Transplant programs contribute to achieving Vision 2030 economic goals” came in twenty-sixth place with a mean of 1.71 and a standard deviation of .814. Therefore, the direction of the sample members' responses is “Strongly Agree.”

*** Discussion**

Demographic data of the interviewees point to the fact that the sample consists mostly of middle-aged people, which means that the results are mostly subjective as to the views of experienced professionals, whose understanding of healthcare organizations and transplantation programs is largely practical. Although the older and younger groups were underrepresented, the study shares the opinions of individuals most engaged in clinical and administrative activities. The sample was moderately more male, but also females were represented significantly. Such balance makes sure that the findings represent varying perspectives, although this might be a minor overrepresentation of male perspectives.

In terms of the level of education, most of the respondents were university students, and then diploma holders, with a very low percentage having undergone bachelor degrees. This distribution points out that the sample size is

mostly composed of people currently pursuing their higher learning or those with mid-level academic education. Therefore, the results are a combination of new professional knowledge and practical experience, but there was no much information of a highly specialized academic perspective. The respondents were varied in their professional composition comprising of healthcare practitioners, physicians, administrators as well as a smaller percentage of specialists. The range was sufficient to make the study encompass both clinical and managerial approaches of the organ transplantation systems, which give account of interaction between healthcare delivery, policy making, and program administration.

This study suggests that there is a high level of agreement among the healthcare workers and other interested parties in Saudi Arabia concerning the benefits of organ transplantation and donation programs in terms of their economic aspects. The respondents indicated that awareness campaigns, government assistance, and strategic investments in transplant programs play huge roles in enhancing the growth of the national economy by enhancing patient outcomes, lowering healthcare costs, and raising

productivity. Those findings can be compared with the history provided by Shaheen (2016), who emphasized the gradual evolution of organ transplantation in Saudi Arabia and the role of the Saudi Centre for Organ Transplantation (SCOT) as a coordinator of donation efforts, education, and implementation of the policy. This knowledge is expanded in the present work that shows that, in addition to clinical advantages, transplantation programs are viewed as strategic economic interventions.

The significance of the public awareness, as indicated in the research, echoes the results of Alobaidi (2022) and Alhasan et al. (2023) that found knowledge gaps and ambivalence to organ donation regardless of positive social and religious practices. Our findings support the notion that properly specific awareness campaigns and education programs can convert positive attitudes into action behaviours, not only in raising the availability of donors but also in increasing the economic advantages by cutting down on the cost of expensive treatments overseas and optimising healthcare performance. In the same manner, Alghamdi et al. (2023) stressed that despite the positive attitudes to organ donation among Saudi citizens, the level of

awareness is still suboptimal, and educational initiatives and the media are vital to eliminate knowledge gaps.

Another issue that is also brought to the fore in the current study concerns the economic benefits of the infrastructure improvement, public-private relationships, and the investment in research and technology. These results are in line with the regional views as presented by AlSulaiman et al. (2021) that address ethical, legal, and operational frameworks of organ transplantation in the Arabian Gulf countries. Similar to the activities of the Gulf Health Council to organize transplantation programs among the member states, the proposed study would recommend bold infrastructure and cooperation to lure external patients, support medical tourism, and enhance the global healthcare image of the country.

In addition to that, the respondents stressed that organ donation programs were health interventions as well as long-term investment in the development of the country, and that this would help achieve Vision 2030. The alleged connection between organ transplantation and economic growth indicates the dual purpose of such programs to save lives and create long-term monetary benefits, which

portrays larger findings in the literature about the necessity to constantly invest, support policies, and align them with national strategic goals (Shaheen, 2016; Alhasan et al., 2023).

This study supports the earlier research work but has additional information on the subject of organ transplant within the economic aspect of Saudi Arabia. It also demonstrates the importance of combined approaches which involve community education, regulatory assistance, infrastructural progress, and research funding in order to increase the health and economic dividend. Such results confirm the need to consider the organ donation programs as the holistic means of further developing the society, integrating the health policy with the economic planning process and making the Kingdom a hub of transplantation and healthcare innovations.

*** Conclusion**

The findings of this study point to the idea that organ transplantation and donation programs are not only necessary in terms of enhancing the health and well-being of a person but they are also critical in terms of contributing to the overall societal and economic growth. The participants always acknowledged

that such programs have numerous gains such as saving life, decreasing the load of chronic diseases, raising the productivity of the recovered patients, and decreasing the financial burden on families and health care systems. These are considered long term investments that bring about growth in a country since healthcare gains are coupled with economic and social gains.

The study reports on the importance of the public in terms of awareness and education in effectiveness of organ donation programs. Despite the positive attitudes to the organ donation, gaps in knowledge and wrong beliefs may reduce the attempts to participate in the process. There is thus need to have specific campaigns that touch on the cultural, religious and social factors to promote increased donor registration and to make the engagement sustainable. These awareness programs coupled with favourable government policies and incentives can turn the positive attitudes into actual actions which eventually will make the entire organ transplantation system stronger.

All in all, the organ transplantation and organ donation must be considered as a pillar of the healthcare system that transcends the clinical outcomes. With proper

policies designed, awareness programs, and long-term investment in infrastructure and research, these initiatives can enhance the quality of life and reduce the costs of healthcare, spur economic development, and make the Kingdom a leader in healthcare innovation in the region. This paper supports the holistic approach that must match medical, social, and economic goals and proves that organ donation programs are an essential instrument in meeting the national health and development goals in the long-term.

*** Recommendations**

- 1- Design specific and sustained awareness campaigns to inform the people about the advantages of organ donation, dispel their myths, and cultural issues and religious provisions to reach out to a greater number of donor enrolment.
- 2- Engage the religious leaders and community leaders in supporting organ donation based on Islamic Fatwas and societal values to minimize ambivalence and indecisiveness of the population.
- 3- Provide permanent government support of the organ transplantation programs by use of policies, incentives and strategic investments to improve the efficiency and accessibility of the programs.

4- Grow and upgrade transplant centers to enhance performance, minimize the waiting time of patients, and contribute to the development of medical tourism, making the Kingdom one of the leaders in the medical field.

5- Contemplate both financial and non-financial incentives for donations, such recognition programs or career prospects, to encourage participation while upholding ethical standards.

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