

## **Health Diplomacy in the Kingdom of Saudi Arabia in the Field of Organ Transplantation and Donation: A National Framework to Enhance Health Governance, Health Security, Ethics, and Community Trust in Alignment with Saudi Vision 2030**

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### **Abstract**

Health diplomacy has emerged as a strategic approach to strengthening

healthcare systems by integrating governance, international cooperation, and public health policy.

This study aimed to develop a comprehensive national framework for health diplomacy in the Kingdom of Saudi Arabia to enhance governance, health security, ethical practices, and community trust in the field of organ transplantation and donation, in alignment with Saudi Vision 2030. A quantitative descriptive research design was adopted using a structured questionnaire distributed to a sample of 512 participants. Data were analyzed using SPSS. The results revealed a high level of agreement regarding the importance of health diplomacy and its role in enhancing cooperation, policy development, and healthcare quality. Participants also expressed strong confidence in the regulatory and ethical frameworks governing organ transplantation, while indicating the need for continuous improvement. Health security measures before and after transplantation were perceived as effective, particularly in terms of infrastructure and coordination. Although community awareness of organ donation was generally positive, some misconceptions and trust-related concerns persist. Additionally, key factors influencing patients' refusal to accept organ donations from relatives included lack of medical information,

psychological concerns, and social pressures. The findings further demonstrated strong support for establishing a comprehensive national health diplomacy framework aligned with national strategic priorities. In conclusion, the study highlights the importance of adopting an integrated health diplomacy framework to strengthen organ transplantation systems, improve governance and ethical practices, and enhance public trust in Saudi Arabia.

**Keywords:** Health Diplomacy, Organ Transplantation, Health Governance, Saudi Arabia, Saudi Vision 2030.

#### **\* Introduction**

Organ transplantation is a key and effective treatment option to rescue the lives of patients with terminal organ diseases [1]. As a result of the success of this treatment strategy in reducing morbidity and mortality, and enhancing the quality of life of the recipients, organ donation and transplantation are on the rise worldwide [2]. Despite well-planned and targeted initiatives to promote organ donation, the imbalance between the demand for organs for transplantation and donor availability has widened worldwide [3]. To achieve self-sufficiency in organ transplantation programs as proposed by The World Health

Organization (WHO), every country should develop, coordinate and monitor its own transplantation practices based on local resources.

The first organ transplant (living donor renal transplant) in the Kingdom of Saudi Arabia (KSA) was performed in 1979. In 1985, the Saudi Centre for Organ Transplantation (SCOT) was founded to oversee all organ transplantation programs in KSA and deceased donor transplantation commenced the same year. As of 2016, there were 12 kidneys, three livers, two pancreases, two lungs and one heart transplant program in KSA [2]. But with the increasing need for transplantation due to the high incidence (9892 per 100,000 affected) of chronic kidney diseases (CKD), the lack of organs has become the main limiting factor to the development of organ transplantation programs in KSA [4]. Research has demonstrated that the donor rates in Middle Eastern countries (including in KSA) are low despite having a relatively well-developed health system and an encouraging government initiative [5]. In 2022, there were 1396 living donors (living donor rate: 41 per million population (PMP), and 118 deceased organ donors (deceased donor rate: 3.5 PMP) in KSA [6]. While the rate of living donors and

deceased donors continues to increase in KSA, the deceased organ donor rate is increasing at a much slower rate.

The role of diplomacy in health is vital. With health becoming an increasingly important component of foreign policy, security policy, development policy and trade agreements, health and foreign policy decision-makers need and must develop new skills to negotiate for health in the face of other priorities. Many health issues can no longer be solved at the purely technical level they require political engagement and political solutions, and may require the participation of many players. Health diplomacy occurs on multiple levels [7].

Health diplomacy has become an important interdisciplinary field that combines public health, international relations and policy to tackle global health issues [8]. It encompasses the diplomacy and collective activities between states, international agencies and non-governmental groups to advance health as a global public good. Over the past few decades, the increasing integration of health systems has shown the need for diplomatic action, especially in cross-border collaboration, in fields like infectious disease prevention, medical research

and organ transplantation. In this respect, health diplomacy is essential for informing national policies, improving governance arrangements and ensuring equitable access to health services while upholding ethical considerations [9].

At the domestic level, health diplomacy is no longer confined to international relations; it also plays a critical role in enhancing coordination between health organizations, policymakers and stakeholders. It aids in the formulation of integrated health policies, improves governance arrangements, and facilitates ethical decision-making processes in sensitive areas of health care [10]. One such area is organ donation and transplantation, which involves medical, ethical, legal and cultural complexities. The efficiency, equity, and public acceptance of the organ transplantation system rely not only on medical competence but also on the presence of clear policies and regulations and public trust.

### **1- Aim of Study**

This study aims to develop a comprehensive national framework for health diplomacy in the Kingdom of Saudi Arabia to enhance governance, health security, ethical practices, and community trust in the field of organ transplantation and

donation, in alignment with Saudi Vision 2030.

### **2- Problem Statement**

While Saudi Arabia has made significant progress in its health infrastructure and organ transplantation program, it still faces complex issues that hinder its efficiency, fairness, and acceptability. The lack of coordinated policy implementation, public knowledge, cultural and psychological factors that discourage living organ donation, and lack of health security post-transplantation limit the best possible outcomes. Moreover, health diplomacy remains an under-developed tool to align domestic health governance, global health standards, ethical oversight, and community relations.

Lack of a nationally coordinated health diplomacy strategy for organ transplantation limits the Kingdom's capacity to holistically resolve regulatory uncertainties, enhance health security measures, reduce patient refusal rates and expand community outreach programs. Therefore, there is a need for an empirical assessment of the current state of governance, ethics, security, awareness, and decision-making in organ donation and transplantation and to develop an evidence-driven national framework

which incorporates health diplomacy to enhance organ donation and transplantation systems in line with Saudi Vision 2030.

### **3- Research Questions**

1-How is the concept of health diplomacy currently perceived and applied within the Saudi health sector?

2-To what extent are current regulatory and ethical frameworks sufficient to govern organ transplantation and donation?

3-How effective are existing health security measures before and after organ transplantation procedures?

4-What is the level of community awareness and cultural acceptance of organ donation in the Kingdom?

5-What factors contribute to patients' refusal to accept organ donations from relatives?

6-How can a national health diplomacy framework improve organ transplantation systems and align with Saudi Vision 2030?

### **4- Research Objectives**

1-Assess the current understanding and role of health diplomacy in the Kingdom.

2-Assess the adequacy of regulatory and ethical frameworks governing organ transplantation.

3-Evaluate health security measures related to organ transplantation before and after procedures.

4-Analyze the level of public awareness and cultural attitudes toward organ donation.

5-Identify key factors influencing patients' refusal to accept organ donations from relatives.

6-Propose a comprehensive national framework for health diplomacy to enhance organ transplantation systems in Saudi Arabia.

### **5- Research Significance**

This study is important because it offers insights into a crucial and emerging field at the nexus of health policy, ethics, governance, and international relations - health diplomacy in organ donation and transplantation. This is an area of growing international interest in the face of increasing demand and ethical, legal and cultural considerations. The World Health Organization highlights the need to improve governance and ethical oversight of organ donation systems to ensure safe, equitable and trusted organ transplantation programs. This study adds to this global discourse, by embedding health diplomacy in the national context of the Saudi healthcare system.

Domestically, the study is very pertinent to the national transformation ambitions of Saudi Vision 2030, which prioritizes enhancing quality of health,

efficiency of health systems, and governance. Through the proposed health diplomacy framework, the study assists national initiatives to develop a more coordinated and responsive organ transplantation program. It also resonates with Saudi Arabia's desire to improve international partnerships in health, while aligning domestic policies with global ethical and medical best practices.

The study is also valuable for policymakers and health care managers. It offers insights into the current state of regulatory frameworks and health security arrangements, as well as public perceptions of organ donation. This information can inform the development of better policies that enhance coordination among healthcare institutions, eliminate inefficiencies and improve the safety of patients before and after organ transplantation. This, in turn, helps guide institutional and national decision-making.

The study is of social importance because it focuses on perceptions, knowledge and culture of organ donation. Lack of awareness and trust are significant challenges to higher rates of organ donation in many nations. The study's exploration of these issues in Saudi

Arabia helps inform the development of more effective public awareness and education programs that can promote trust in the health system and increase participation in organ donation programs.

## **\* Methodology**

### **1- Research Design**

Research design denotes the comprehensive plan, framework, and methodology that directs the gathering, processing, and interpretation of data inside a research study [11]. It is a structured framework that delineates the techniques and methodologies researchers will employ to tackle their research questions or hypotheses. The research design is a vital component of the research process, since it affects the validity and reliability of the study's results.

This study relied on the descriptive analytical approach, as this approach aims to describe the phenomenon, study it on the ground, and obtain data from its primary sources.

### **2- Research Approach**

Research approaches denote the overarching methodologies utilized by researchers in conducting their study. The procedures utilized in the study might be categorized as quantitative, qualitative, or mixed methods, based on the study's

objectives. Quantitative research entails the utilization of numerical data to analyze and elucidate the outcomes of a study, whereas qualitative research centers on descriptive methods and explanations that do not rely on numerical values [12]. Given the nature of the study and its objectives, the researcher opted for a quantitative methodology.

### 3- Study Population

The study targeted 512 of healthcare professionals, policymakers, and stakeholders involved in organ transplantation and donation within Saudi Arabia.

### 4- Data Collection Tool

Data were collected using a structured questionnaire consisting of six main axes: -

- 1- The first axis: Health diplomacy (concept and role)
- 2- The second axis: Regulatory and ethical framework
- 3- The third axis: Health security before and after transplantation
- 4- The fourth axis: Community awareness and donation culture
- 5- The fifth axis: Patient refusal of organ donation from relatives
- 6- The sixth axis: Proposed national framework

The questionnaire was distributed electronically using Google Forms. The questionnaire items were measured using a Likert

scale to capture respondents' levels of agreement.

## 5- Data Analysis

"Data analysis" refers to the systematic and organized process of reviewing, cleaning, altering, and analyzing data collected in order to derive conclusions, answer research questions, or test hypotheses. This is the part where researchers interpret the data that has been obtained using various computational and statistical methodologies [13]. This study's questionnaire data was analyzed statistically using the SPSS program. Descriptive statistics (frequencies, percentages, means, standard deviations) was used to summarize responses.

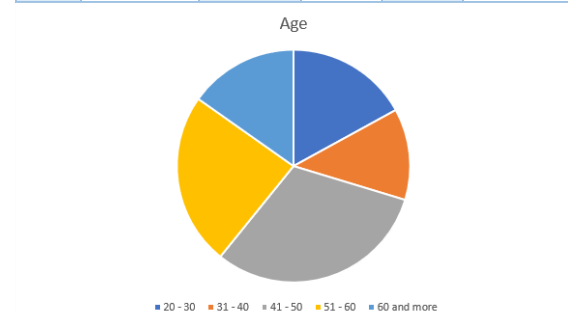
## \* Results

### 1- Demographic Information

#### 1. Age

**Table 1:Age**

| Age   |             | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------|-----------|---------|---------------|--------------------|
| Valid | 20 - 30     | 87        | 17.0    | 17.0          | 17.0               |
|       | 31 - 40     | 65        | 12.7    | 12.7          | 29.7               |
|       | 41 - 50     | 159       | 31.1    | 31.1          | 60.7               |
|       | 51 - 60     | 123       | 24.0    | 24.0          | 84.8               |
|       | 60 and more | 78        | 15.2    | 15.2          | 100.0              |
| Total |             | 512       | 100.0   | 100.0         |                    |



**Figure 1:Age**

The age of the 512 participants suggest that the sample is mainly

middle-aged, with the highest percentage of respondents in the 41-50 years' category (31.1%), followed by 51-60 years (24.0%). There are relatively fewer younger respondents, with 17.0% aged 20-30 and 12.7% aged 31-40 years, and 15.2% are 60 years and older. In all, the data indicate that more than 55% of the respondents are aged 41-60 years, suggesting a sample of mid-to-late career people.

## 2- Academic Qualification

**Table 2:Academic Qualification**

| Academic Qualification |              |           |         |               |                    |
|------------------------|--------------|-----------|---------|---------------|--------------------|
|                        |              | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid                  | Secondary    | 31        | 6.1     | 6.1           | 6.1                |
|                        | Diploma      | 66        | 12.9    | 12.9          | 18.9               |
|                        | Bachelor's   | 99        | 19.3    | 19.3          | 38.3               |
|                        | Master's     | 134       | 26.2    | 26.2          | 64.5               |
|                        | Doctorate    | 182       | 35.5    | 35.5          | 100.0              |
|                        | <b>Total</b> | 512       | 100.0   | 100.0         |                    |

Academic Qualification

■ Secondary ■ Diploma ■ Bachelor's ■ Master's ■ Doctorate

**Figure 2:Academic Qualification**

The educational background of the 512 participants suggests a highly educated sample, with 35.5% holding a Doctorate degree, 26.2% a Master's degree, and 19.3% a Bachelor's degree. There are fewer participants with lower qualifications (12.9% with a Diploma and only 6.1% with secondary education). In all, greater than 60% of the respondents have postgraduate degrees (Master's and

Doctorate), indicating that the sample is mostly comprised of highly educated individuals.

## 3- Health diplomacy – concept and general role

**Table 3:Descriptive Statistics of Health Diplomacy – Concept and General Role**

| Descriptive Statistics                                                                                                |        |                |                |                |
|-----------------------------------------------------------------------------------------------------------------------|--------|----------------|----------------|----------------|
|                                                                                                                       | Mean   | Std. Deviation | Arrangement    | Direction      |
| Health diplomacy contributes to strengthening cooperation among health entities within the Kingdom of Saudi Arabia    | 1.31   | .550           | 4              | Strongly Agree |
| Health diplomacy plays a clear role in developing national health policies                                            | 1.36   | .562           | 3              | Strongly Agree |
| Health diplomacy contributes to improving the quality of healthcare services provided to patients                     | 1.37   | .586           | 2              | Strongly Agree |
| Health diplomacy helps address complex health challenges such as organ transplantation                                | 1.31   | .465           | 5              | Strongly Agree |
| Health diplomacy contributes to enhancing the Kingdom's regional and international standing in the health sector      | 1.27   | .446           | 6              | Strongly Agree |
| There is sufficient awareness among healthcare professionals regarding the concept and importance of health diplomacy | 2.20   | .997           | 1              | Strongly Agree |
| <b>Health diplomacy – concept and general role</b>                                                                    | 1.4720 | .48232         | Strongly Agree |                |

1- Statement “There is sufficient awareness among healthcare professionals regarding the concept and importance of health diplomacy” came in first place with a mean of 2.20 and a standard deviation of 0.997. Therefore, the direction of the

sample members' responses is “Strongly Agree”.

2- Statement “Health diplomacy contributes to improving the quality of healthcare services provided to patients” came in second place with a mean of 1.37 and a standard deviation of 0.586. Therefore, the direction of the sample members' responses is “Strongly Agree”.

3- Statement “Health diplomacy plays a clear role in developing national health policies” came in third place with a mean of 1.36 and a standard deviation of 0.562. Therefore, the direction of the sample members' responses is “Strongly Agree”.

4- Statement “Health diplomacy contributes to strengthening cooperation among health entities within the Kingdom of Saudi Arabia” came in fourth place with a mean of 1.31 and a standard deviation of 0.550. Therefore, the direction of the sample members' responses is “Strongly Agree”.

5- Statement “Health diplomacy helps address complex health challenges such as organ transplantation” came in fifth place with a mean of 1.31 and a standard deviation of 0.465. Therefore, the direction of the sample members' responses is “Strongly Agree”.

6- Statement “Health diplomacy contributes to enhancing the Kingdom's regional and international standing in the health sector” came in sixth place with a mean of 1.27 and a standard deviation of 0.446. Therefore, the direction of the sample members' responses is “Strongly Agree”.

The overall mean for all items related to “Health diplomacy – concept and general role” is 1.4720, with a standard deviation of 0.48232. Therefore, the direction of the sample members' responses is “Strongly Agree,” indicating a high level of consensus regarding the importance and role of health diplomacy.

#### 4- The regulatory and ethical framework for organ transplantation

**Table 4: Descriptive Statistics of the Regulatory and Ethical Framework for Organ Transplantation**

| Descriptive Statistics                                                                                                        |        |                |                |                |
|-------------------------------------------------------------------------------------------------------------------------------|--------|----------------|----------------|----------------|
|                                                                                                                               | Mean   | Std. Deviation | Arrangement    | Direction      |
| Current Saudi regulations are sufficient to govern organ donation and transplantation                                         | 1.79   | .734           | 1              | Agree          |
| National regulations guarantee the protection of the rights of both donors and patients in the field of organ transplantation | 1.56   | .641           | 2              | Strongly Agree |
| The regulatory procedures in place minimize the risk of illicit trafficking in human organs                                   | 1.45   | .550           | 6              | Strongly Agree |
| Clear ethical standards are applied at all stages of organ donation and transplantation                                       | 1.55   | .708           | 3              | Strongly Agree |
| Saudi legislation in the field of organ transplantation is consistent with internationally recognized standards               | 1.55   | .706           | 4              | Strongly Agree |
| Effective oversight is in place for healthcare facilities performing organ transplants                                        | 1.49   | .632           | 5              | Strongly Agree |
| The regulatory and ethical framework for organ transplantation                                                                | 1.5677 | .58500         | Strongly Agree |                |

1- Statement “Current Saudi regulations are sufficient to govern organ donation and transplantation” came in first place with a mean of 1.79 and a standard deviation of 0.734. Therefore, the direction of the

sample members' responses is “Agree.”

2- Statement “National regulations guarantee the protection of the rights of both donors and patients in the field of organ transplantation” came in second place with a mean of 1.56 and a standard deviation of 0.641. Therefore, the direction of the sample members' responses is “Strongly Agree.”

3- Statement “Clear ethical standards are applied at all stages of organ donation and transplantation” came in third place with a mean of 1.55 and a standard deviation of 0.708. Therefore, the direction of the sample members' responses is “Strongly Agree.”

4- Statement “Saudi legislation in the field of organ transplantation is consistent with internationally recognized standards” came in fourth place with a mean of 1.55 and a standard deviation of 0.706. Therefore, the direction of the sample members' responses is “Strongly Agree.”

5- Statement “Effective oversight is in place for healthcare facilities performing organ transplants” came in fifth place with a mean of 1.49 and a standard deviation of 0.632. Therefore, the direction of the sample members' responses is “Strongly Agree.”

6- Statement “The regulatory procedures in place minimize the risk of illicit trafficking in human organs” came in sixth place with a mean of 1.45 and a standard deviation of 0.550. Therefore, the direction of the sample members' responses is “Strongly Agree.”

The overall mean for all items related to “The regulatory and ethical framework for organ transplantation” is 1.5677, with a standard deviation of 0.58500. Therefore, the direction of the sample members' responses is “Strongly Agree” according to the five-point Likert scale, indicating a strong overall agreement regarding the adequacy and effectiveness of the regulatory and ethical framework.

## 5- Health security before and after organ transplant operations

**Table 5: Descriptive Statistics of Health Security Before and After Organ Transplant Operations**

| Descriptive Statistics                                                                                         |               |                |                       |                |
|----------------------------------------------------------------------------------------------------------------|---------------|----------------|-----------------------|----------------|
|                                                                                                                | Mean          | Std. Deviation | Arrangement           | Direction      |
| The condition of patients and donors is thoroughly assessed before organ transplantation procedures            | 1.38          | .708           | 6                     | Strongly Agree |
| Healthcare facilities in the Kingdom are adequately equipped to perform organ transplants safely               | 1.85          | .986           | 1                     | Strongly Agree |
| Post-transplant medical follow-up programs are effective in reducing health complications                      | 1.50          | .632           | 5                     | Strongly Agree |
| Necessary medications and medical supplies are provided to patients without delay after transplantation        | 1.68          | .739           | 3                     | Strongly Agree |
| Effective coordination exists between medical teams before, during, and after organ transplantation procedures | 1.67          | .716           | 4                     | Strongly Agree |
| Current health policies contribute to enhancing health security related to organ transplantation               | 1.71          | .674           | 2                     | Agree          |
| <b>Health security before and after organ transplant operations</b>                                            | <b>1.6338</b> | <b>.61876</b>  | <b>Strongly Agree</b> |                |

1- Statement “Healthcare facilities in the Kingdom are adequately equipped to perform organ transplants safely” came in first place with a mean of 1.85 and a standard deviation of 0.986. Therefore, the direction of the sample members' responses is “Strongly Agree.”

2- Statement “Current health policies contribute to enhancing health security related to organ transplantation” came in second place with a mean of 1.71 and a standard deviation of 0.674. Therefore, the direction of the sample members' responses is “Agree.”

3- Statement “Necessary medications and medical supplies are provided to patients without delay after transplantation” came in third place with a mean of 1.68 and a standard deviation of 0.739. Therefore, the direction of the sample members' responses is “Strongly Agree.”

4- Statement “Effective coordination exists between medical teams before, during, and after organ transplantation procedures” came in fourth place with a mean of 1.67 and a standard deviation of 0.716. Therefore, the direction of the sample members' responses is “Strongly Agree.”

5- Statement “Post-transplant medical follow-up programs are effective in reducing health complications” came in fifth place with a mean of 1.50 and a standard deviation of 0.632. Therefore, the direction of the sample members' responses is “Strongly Agree.”

6- Statement “The condition of patients and donors is thoroughly assessed before organ transplantation

procedures” came in sixth place with a mean of 1.38 and a standard deviation of 0.608. Therefore, the direction of the sample members' responses is “Strongly Agree.”

The overall mean for all items related to “Health security before and after organ transplant operations” is 1.6338, with a standard deviation of 0.61876. Therefore, the direction of the sample members' responses is “Strongly Agree” according to the five-point Likert scale, indicating a high level of agreement regarding the effectiveness of health security measures before and after transplantation procedures.

## 6- Community awareness and organ donation culture

**Table 6: Descriptive Statistics of Community Awareness and Organ Donation Culture**

| Descriptive Statistics                                                                                        |        |                |             |                |
|---------------------------------------------------------------------------------------------------------------|--------|----------------|-------------|----------------|
|                                                                                                               | Mean   | Std. Deviation | Arrangement | Direction      |
| The level of public awareness regarding the importance of organ donation in the Kingdom is good               | 1.94   | .997           | 2           | Agree          |
| Current awareness campaigns are effective in promoting a culture of organ donation                            | 1.97   | .995           | 1           | Strongly Agree |
| Some members of the community hold misconceptions about organ donation                                        | 1.60   | .510           | 5           | Agree          |
| Trust in healthcare institutions directly influences individuals' decisions to donate organs                  | 1.52   | .679           | 6           | Strongly Agree |
| National initiatives such as the "Donate" platform have contributed to raising awareness about organ donation | 1.72   | .685           | 3           | Agree          |
| Health diplomacy contributes to improving public awareness of organ donation                                  | 1.68   | .792           | 4           | Strongly Agree |
| Community awareness and organ donation culture                                                                | 1.7383 | .61543         | Agree       |                |

1- Statement “Current awareness campaigns are effective in promoting a culture of organ donation” came in first place with a mean of 1.97 and a standard deviation of 0.995. Therefore, the direction of the sample members' responses is “Strongly Agree.”

2- Statement “The level of public awareness regarding the importance of organ donation in the Kingdom is good” came in second place with a mean of 1.94 and a standard deviation of 0.977. Therefore, the direction of the sample members' responses is “Agree.”

3- Statement “National initiatives such as the ‘Donate’ platform have contributed to raising awareness about organ donation” came in third place with a mean of 1.72 and a standard deviation of 0.685. Therefore, the direction of the sample members' responses is “Agree.”

4- Statement “Health diplomacy contributes to improving public awareness of organ donation” came in fourth place with a mean of 1.68 and a standard deviation of 0.792. Therefore, the direction of the sample members' responses is “Strongly Agree.”

5- Statement “Some members of the community hold misconceptions about organ donation” came in fifth place with a mean of 1.60 and a standard deviation of 0.510. Therefore, the direction of the sample members' responses is “Agree.”

6- Statement “Trust in healthcare institutions directly influences individuals' decisions to donate organs” came in sixth place with a mean of 1.52 and a standard deviation

of 0.679. Therefore, the direction of the sample members' responses is “Strongly Agree.”

The overall mean for all items related to “Community awareness and organ donation culture” is 1.7383, with a standard deviation of 0.61543. Therefore, the direction of the sample members' responses is “Agree” according to the five-point Likert scale, indicating a generally positive perception of community awareness and organ donation culture.

## 7- Patients' refusal to accept donations from their relatives

**Table 7: Descriptive Statistics of Patients' Refusal to Accept Donations from their Relatives**

| Descriptive Statistics                                                                                                           |               |                |                       |                |
|----------------------------------------------------------------------------------------------------------------------------------|---------------|----------------|-----------------------|----------------|
|                                                                                                                                  | Mean          | Std. Deviation | Arrangement           | Direction      |
| Some patients worry that their relatives will experience health complications after organ donation                               | 1.49          | .679           | 4                     | Strongly Agree |
| Social pressures influence patients' decisions to accept or refuse organ donation from relatives                                 | 1.39          | .603           | 6                     | Strongly Agree |
| A lack of medical information about the safety of living organ donation leads to patients refusing organ donation from relatives | 1.66          | .874           | 1                     | Strongly Agree |
| Psychological factors play a significant role in some patients' refusal of organ donation from relatives                         | 1.45          | .502           | 5                     | Strongly Agree |
| Specialized awareness campaigns can help reduce patient refusal of organ donation from relatives                                 | 1.49          | .603           | 3                     | Strongly Agree |
| Health policies and health diplomacy can help address patients' concerns regarding organ donation from relatives                 | 1.59          | .751           | 2                     | Strongly Agree |
| <b>Patients' refusal to accept donations from their relatives</b>                                                                | <b>1.5133</b> | <b>.46838</b>  | <b>Strongly Agree</b> |                |

1- Statement “A lack of medical information about the safety of living organ donation leads to patients refusing organ donation from relatives” came in first place with a mean of 1.66 and a standard deviation of 0.874. Therefore, the direction of

the sample members' responses is “Strongly Agree.”

2- Statement “Health policies and health diplomacy can help address patients' concerns regarding organ donation from relatives” came in second place with a mean of 1.59 and a standard deviation of 0.751. Therefore, the direction of the sample members' responses is “Strongly Agree.”

3- Statement “Specialized awareness campaigns can help reduce patient refusal of organ donation from relatives” came in third place with a mean of 1.49 and a standard deviation of 0.603. Therefore, the direction of the sample members' responses is “Strongly Agree.”

4- Statement “Some patients worry that their relatives will experience health complications after organ donation” came in fourth place with a mean of 1.49 and a standard deviation of 0.635. Therefore, the direction of the sample members' responses is “Strongly Agree.”

5- Statement “Psychological factors play a significant role in some patients' refusal of organ donation from relatives” came in fifth place with a mean of 1.45 and a standard deviation of 0.502. Therefore, the direction of the sample members' responses is “Strongly Agree.”

6- Statement “Social pressures influence patients' decisions to accept or refuse organ donation from relatives” came in sixth place with a mean of 1.39 and a standard deviation of 0.603. Therefore, the direction of the sample members' responses is “Strongly Agree.”

The overall mean for all items related to “Patients' refusal to accept donations from their relatives” is 1.5133, with a standard deviation of 0.46838. Therefore, the direction of the sample members' responses is “Strongly Agree” according to the five-point Likert scale, indicating a strong consensus regarding the factors influencing patients' refusal to accept organ donations from relatives.

## 8- The proposed national vision for an integrated health diplomacy framework

**Table 8: Descriptive Statistics the Proposed National Vision for an Integrated Health Diplomacy Framework**

| Descriptive Statistics                                                                                                                                |        |                |                |                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------|----------------|----------------|
|                                                                                                                                                       | Mean   | Std. Deviation | Arrangement    | Direction      |
| Does the Kingdom of Saudi Arabia need a comprehensive health diplomacy framework to support organ transplantation and donation?                       | 1.76   | .703           | 1              | Strongly Agree |
| Will developing and updating health legislation contribute to improving the organ donation and transplantation system in the Kingdom of Saudi Arabia? | 1.43   | .670           | 3              | Strongly Agree |
| Do you believe that international cooperation enhances the Kingdom's capabilities in the field of organ transplantation and donation?                 | 1.38   | .594           | 4              | Strongly Agree |
| Is improving the efficiency of healthcare personnel an essential part of any national framework for developing organ transplantation?                 | 1.36   | .480           | 5              | Strongly Agree |
| Is strengthening medical supply chains necessary for the success of organ transplant operations?                                                      | 1.30   | .460           | 6              | Strongly Agree |
| Do you believe that the proposed national vision for a comprehensive health diplomacy framework aligns with the objectives of Saudi Vision 2030?      | 1.50   | .685           | 2              | Strongly Agree |
| The proposed national vision for an integrated health diplomacy framework                                                                             | 1.4528 | .49645         | Strongly Agree |                |

1- Statement “Does the Kingdom of Saudi Arabia need a comprehensive health diplomacy framework to support organ transplantation and donation?” came in first place with a mean of 1.76 and a standard deviation of 0.753. Therefore, the direction of the sample members' responses is “Strongly Agree.”

2- Statement “Do you believe that the proposed national vision for a comprehensive health diplomacy framework aligns with the objectives of Saudi Vision 2030?” came in second place with a mean of 1.50 and a standard deviation of 0.685. Therefore, the direction of the sample members' responses is “Strongly Agree.”

3- Statement “Will developing and updating health legislation contribute to improving the organ donation and transplantation system in the Kingdom of Saudi Arabia?” came in third place with a mean of 1.43 and a standard deviation of 0.670. Therefore, the direction of the sample members' responses is “Strongly Agree.”

4- Statement “Do you believe that international cooperation enhances the Kingdom's capabilities in the field of organ transplantation and donation?” came in fourth place with a mean of 1.38 and a standard deviation of 0.594. Therefore, the direction of the sample members' responses is “Strongly Agree.”

5- Statement “Is improving the efficiency of healthcare personnel an essential part of any national framework for developing organ transplantation?” came in fifth place with a mean of 1.36 and a standard deviation of 0.480. Therefore, the

direction of the sample members' responses is "Strongly Agree."

6- Statement "Is strengthening medical supply chains necessary for the success of organ transplant operations?" came in sixth place with a mean of 1.30 and a standard deviation of 0.460. Therefore, the direction of the sample members' responses is "Strongly Agree."

The overall mean for all items related to "The proposed national vision for an integrated health diplomacy framework" is 1.4528, with a standard deviation of 0.49645. Therefore, the direction of the sample members' responses is "Strongly Agree" according to the five-point Likert scale, indicating strong support for the proposed national vision.

#### **\* Discussion**

This study's results offer empirical evidence for the rising significance of health diplomacy in enhancing organ transplantation programs in the Kingdom of Saudi Arabia. The age and education profiles suggest that the sample primarily consists of professionals with considerable experience and advanced education, with over 50% aged 41-60 years and more than 60% possessing a postgraduate degree. This adds to the validity of the findings, as participants are likely to

have professional knowledge and expertise in the areas of health policy and governance.

The findings of this study indicates high levels of agreement on the role of health diplomacy in improving healthcare systems, especially in the area of organ transplantation. There was overwhelming agreement on its capacity to improve collaboration, policy-making and quality of health care. This confirms Rosenbaum et al. [14] that global health diplomacy is widely recognized as an important mechanism for aligning health systems and health policies with the governance and international cooperation agendas. Falqui et al. [15] acknowledges that health diplomacy facilitates holistic approaches to addressing complex health issues by connecting health with political, economic and security priorities. Likewise, other Brown et al. [16] highlights that health diplomacy is a means to build consensus and support for effective health interventions at national and global levels. These findings corroborate the current study's findings, which indicate a high degree of consensus among participants on the role of health diplomacy in Saudi Arabia.

As for the regulatory and ethical framework, the study findings show that the participants have a strong trust in the current Saudi regulations, including in terms of safeguarding donor and recipient rights and adherence to international standards. But the lower mean for the sufficiency of regulations indicates that stakeholders still feel there is room for improvement. This is consistent with Bakhtiar & Bakhtiar [17], which shows that while there are improvements in transplantation systems, there are still challenges in terms of ethical issues particularly organ trafficking and unequal access, which should be addressed through improving regulations. In addition, international transplantation reports show that inequities and ethical issues still remain in advanced systems, underlining the need for flexible legal frameworks [18]. Thus, the study's results align with the literature, which advocates for policy development and improved monitoring.

Regarding health security before and after transplantation, the study shows high agreement about the well-equipped healthcare facilities in Saudi Arabia and efficient clinical coordination. But there are relatively lower levels of agreement as to the role of policies in

improving health security, reflecting a need for better implementation of policies. This is consistent with [19] stating that transplantation systems need to have sophisticated medical facilities and coordinate policies, logistics and clinical processes. Transplantation systems suggest the need for enhancements in coordination, post-transplant care and resource management to maintain patient outcomes and system effectiveness [20]. So while the infrastructure seems to be good, there is still more that can be improved with regard to the execution of policies.

The results of the survey on community awareness and the culture of organ donation highlight positive attitudes but also the presence of misconceptions and the importance of trust in the health system. These findings are well supported by recent empirical research in Saudi Arabia. For example, Alshehri et al. [21] demonstrated that while awareness of organ donation is on the rise, knowledge gaps and cultural issues still play a role in individuals' motivation to donate organs. Furthermore, a recent systematic review [22] of Muslim populations around the world found that religious beliefs, misconceptions, and mistrust are important barriers to organ

donation, while education and awareness acts as a facilitator. This is consistent with the findings of the present study, which suggest the need for awareness and trust builders.

In terms of the refusal of patients to accept organ donations from their relatives, the study notes a lack of medical knowledge, emotional factors and social pressures as the key factors at play. These findings are in line with recent studies that highlight that anxiety, lack of knowledge and emotional factors play an important role in the decision-making process of living organ donation [23]. Olawade et al. [24] stress the need for education, counselling and communication strategies to address these factors and improve acceptance. The findings of this study also mirror recent research, and highlight the need for policies and communication strategies that promote awareness and patient-centered communication in transplantation.

Finally, the findings demonstrate that there is a high level of agreement with the proposed national health diplomacy framework, its need, the relevance to national objectives, and its potential to improve the transplantation system. This is in line with recent global developments that advocate

multi-disciplinary approaches in health. Recent research indicates that contemporary health systems require coordinated strategies that involve governance, diplomacy, digital health and international cooperation for sustainable success [25;26]. Additionally, the emerging literature on health diplomacy underscores the growing importance of health diplomacy in addressing complex health issues and building national health systems [27].

The discussion shows that although Saudi Arabia has a strong healthcare system, robust regulatory systems and well-established awareness programs, it also needs a holistic and integrated health diplomacy framework. This framework would improve coordination, fill gaps, increase trust and ensure sustainability in organ transplantation systems in line with international standards.

### **\* Conclusion**

The purpose of this study was to establish a national framework for health diplomacy in the Kingdom of Saudi Arabia to improve governance, health security, ethical considerations and public trust in organ transplantation and donation. The results suggest a high level of agreement with participants about the value of health diplomacy and its

impact on enhancing collaboration, policy-making and health services in the Kingdom.

The findings also indicate that rules and regulations for organ transplantation are generally well developed, with a high level of trust in the safeguards for organ donors and recipients. However, there is also a suggestion that there is a need for ongoing refinement and updating of regulations to keep up with international best practice and challenges. Likewise, pre- and post-transplantation health security measures are reported to be high, especially with regard to health care infrastructure and clinical practice.

Moreover, the study confirms that general awareness of organ donation is fairly good, but there are some gaps and concerns regarding trust. We also identified the factors that affect patients' decision to refuse organ donation by family members, including lack of information, psychological factors and social stigma, and the need for targeted communication and awareness.

Finally, the study shows that an integrated national health diplomacy framework, in line with Saudi Vision 2030, is highly welcomed. And the study suggests that this would help to enhance organ transplantation programs, while also

supporting Saudi Arabia's efforts to improve health care.

#### **\* Statements**

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#### **\* Statement of Ethics**

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. In line with the institutional policies, research studies that utilize anonymous electronic questionnaires and do not collect any personal or sensitive data are considered minimal-risk and are therefore exempt from requiring formal ethical approval. Participation in the study was entirely voluntary, and all respondents provided electronic informed consent prior to completing

the questionnaire. No identifiable personal information was collected, and all data were handled with strict confidentiality and used solely for research purposes.

#### **\* Conflict of Interest Statement**

The authors declare that there are no conflicts of interest related to the conduct, analysis, or publication of this research. All authors contributed to the study with full academic independence, and no external entity influenced the research design, data interpretation, or manuscript preparation.

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#### **\* Author Contributions**

**Yaser M. Kattoah:** **Conceptualization;** Study design; Development of the research framework; Supervision; Data interpretation; Writing – original draft; Final manuscript approval. Methodology; Literature review; Questionnaire development; Writing – review & editing.

#### **\* Co- Author Contributions**

1- Amani M. Alsulaymani: Data collection coordination; Ethical considerations review; Validation of regulatory and ethical framework content; Verification of health-security-related items.

2-Mohammed Y. Kattoah: Statistical analysis using SPSS; Data cleaning; Preparation of tables and figures.

3-Noura Y. Kattoah: Data collection; Participant communication; Support in organizing survey distribution; Contribution to results interpretation.

4-Talal M. Alzahrani: Technical review of transplantation procedures; Validation of clinical accuracy; Contribution to discussion section; Support in interpreting health-security findings.

5-Waleed A. Alhakami: Laboratory-related content review; Medical terminology verification; Assistance in data interpretation; Support in pre-transplant assessment content.

6-Shareefah H. Haqawi: Nursing-related content review; Ensuring accuracy of post-transplant care content; Editing of health security section; Support in validating patient-care items.

7-Shahd M. Alhamoh: Formatting; Manuscript proofreading; Support in organizing the results section.

8-Munirah A. Massrahi: Contribution to cultural and community-based insights; Review of public awareness and donation-culture items; Support in aligning questionnaire content with social and cultural contexts.

9-Sahar s. sabhi: Support in data visualization; Development of graphical representations for descriptive statistics; Assistance in preparing visual summaries for presentation.

10- Hammam m. altalhi: Verification of electronic survey functionality; Ensuring technical reliability of the online data collection platform; Oversight of digital data integrity.

#### **\* Data Availability**

The data supporting the findings of this study are available from the corresponding author upon reasonable request. All datasets were anonymized to ensure participant confidentiality and comply with ethical research standards. Due to privacy and institutional restrictions, the raw data cannot be publicly shared.

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