

Assessment of Nurses' Knowledge, Attitudes, And Willingness Towards Organ Donation: A Cross- Sectional Study at Tibebe-Ghion Specialized Hospital, Bahir Dar, Ethiopia, 2023

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Research Article

Open Access &

Peer-Reviewed Article

DOI: 10.14302/issn.3070-5835.jcpn-25-5939

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Keywords:

Knowledge, Attitude, Willingness, Nurse, Organ donation

Received: January 30, 2024

Accepted: December 27, 2025

Published: December 27, 2025

Academic Editor:

Ian James Martins, Principal Research Fellow edith Cowan University

Citation:

Sosina Tamre, Yeshimebet Tamir, Henok Biresaw, Alamirew Enyew, Asnake Gashaw, et al. (2025). Assessment of Nurses' Knowledge, Attitudes, And Willingness Towards Organ Donation: A Cross- Sectional Study at Tibebe-Ghion Specialized Hospital, Bahir Dar, Ethiopia, 2023. *Journal of Clinical and Practical Nursing* - 1(2):01-13. <https://doi.org/10.14302/issn.3070-5835.jcpn-25-5939>

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Abstract

Objective: To assess knowledge, attitude and willingness towards organ donation of nurses in Tibebe-Ghion Specialized Hospital, Bahir Dar, Ethiopia, 2023.

Method: A hospital based cross-sectional study was conducted from March 1 to May 30, 2023, using a census of all eligible nurses (N=215). Data were collected with a structured questionnaire adapted from validated tools. Binary logistics regression was used to identify factors associated with willingness to donate, with results presented as adjusted odds ratios with 95% confident intervals.

Results: The overall response rate of this study was 98% (n=206). The mean age was 29.5 (± 4.8) years, and 55.8% were male. Overall, 61.7% (95% CI: 54.9-

68.5) of nurses had good knowledge, and 45.6% (95% CI: 38.8-52.5) had a favorable attitude. In multi-variable analysis, female sex (AOR=3.50, 95% CI: 1.18-3.92, p<0.001) and greater years of experience (AOR=2.15, 95% CI: 1.18-3.92, p=0.012) were independent predictors of willingness.

Conclusion: While a majority of nurses were willing to donate organs, significant gaps in knowledge and legal awareness persist. Female nurses and those with more experience were more willing to donate. Targeted educational interventions are recommended to address knowledge deficits and foster a more supportive environment for organ donation advocacy.

Introduction

Organ donation, defined as the lawful retrieval and transfer of tissues or organs from a living or deceased donor to a recipient in need, represents a critical therapeutic advancement for the end-stage organ failure [1]. While living donors can provide a single organ, a single deceased donor has the potential to save multiple lives, making the optimization of donation systems a global public priority [2].

The success of transplantation medicine has created a profound and persistent imbalance: the demand for organs vastly exceeds the supply. This global shortage results in significant morbidity and mortality for patients on waiting lists [3-6]. Although the medical criterion of brain death has expanded the pool of potential deceased donors, converting this potential into actual donations remains a major challenge worldwide [7, 8].

In Ethiopia, this challenge is particularly acute. The national transplantation program is currently limited to kidney and corneal grafts [9, 10]. Despite a significant burden of renal disease, transplantation rates remain exceedingly low. For instance, only 85 kidney transplants were performed nationally between 2015 and 2018, serving a fraction of the estimated need [11, 12]. Similarly, corneal donation rates fail to meet the demand, leaving hundreds of thousands with treatable blindness [13, 14]. This gap between need and supply is influenced by a complex interplay of limited infrastructure, evolving legal frameworks, and crucially, sociocultural factors affecting donation willingness [15].

Within this context, healthcare professionals, especially nurses, play a pivotal role. Nurses are often the primary point of contact for patients and families, making their knowledge, attitudes, and personal willingness toward donation critical factors. They can act as educators, advocates and sensitive facilitators during the donation conversation with bereaved families [16-18]. Evidence suggests that healthcare providers' own belief directly influence their professional practice and their ability to encourage donation [19, 20].

While studies have begun to explore knowledge and attitudes toward organ donation in Ethiopia, they have primarily focused on medical students [21], the general public [13], or patient companions [22]. There is a lack of focused evidence on nurses who constitute the largest segment of the health workforce and are strategically positioned to influence donation outcomes. Understanding their baseline knowledge, prevailing attitudes and personal willingness is essential first step in developing targeted interventions to strengthen the national transplantation system.

Therefore, this study aimed to assess the knowledge, attitudes and willingness regarding organ donation among nurses at Tibeb-Ghion specialized hospital in Bahir Dar Ethiopia. The findings will provide foundational data to inform the design of educational programs and policy initiatives aimed at empowering nurses as effective champions for organ donation.

Literature Review

Global Context and the Challenge of Donor Shortage

Organ transplantation stands as one of the most definitive triumphs of modern medicine, evolving over the past six decades from experimental procedures to standard, life-saving therapy for end-stage organ failure [21]. This remarkable progress, however, has precipitated a paradoxical and persistent global crisis: a catastrophic shortage of donor organs. The success of transplantation has exponentially increased demand, creating waiting lists where patient mortality is a direct consequence of organ scarcity [29, 35]. In the United States alone, over 100,000 individuals await kidney transplants, with a significant percentage dying before an organ becomes available [35]. This disparity between supply and demand is not merely a logistical challenge but a fundamental ethical and public health dilemma, underscoring the urgent need for multifaceted strategies to bridge this gap [23].

Unpacking the Determinants of Donation Willingness: Beyond Medical Logistics

The challenge of increasing donor rates extends far beyond surgical capability or healthcare infrastructure. A robust body of international literature identifies a complex, interwoven matrix of sociocultural, religious, and knowledge-based factors that profoundly influence an individual's or family's decision to donate. Knowledge deficits, particularly regarding the medical and legal concept of brain death, are repeatedly cited as a primary barrier. Potential donor families often struggle to reconcile irreversible brain function loss with a beating heart, leading to refusal [25].

Concurrently, deep-seated sociocultural and religious beliefs play a decisive role. The desire for an intact body for burial, fears of disfigurement, and misconceptions about religious permissibility are powerful deterrents across diverse cultural contexts [27, 30-32]. For example, studies in Ethiopia and South Africa note that willingness to donate specific organs like corneas is significantly lower than for internal organs, reflecting particular concerns about bodily integrity [27, 33]. Importantly, research consistently demonstrates that educational attainment serves as a strong positive correlate with both accurate knowledge and pro-donation attitudes, suggesting that awareness campaigns must be sophisticated and targeted [28].

The Pivotal Role of Healthcare Professionals as Gatekeepers and Advocates

Within the clinical pathway of organ donation, healthcare professionals are not passive observers but active gatekeepers and crucial influencers. Nurses, in particular, occupy a frontline strategic position. They are often the first to identify potential donors, manage the complex physiological support of brain-dead patients, and, most critically, engage in sensitive, ongoing communication with grieving families [18, 25]. The literature unequivocally shows that the personal knowledge, attitudes, and willingness of healthcare staff directly shape their professional practice. A nurse who is knowledgeable, holds positive attitudes, and is personally willing to donate is far more likely to be an effective, compassionate advocate, capable of addressing family concerns and facilitating the donation process [19, 20]. Consequently, the preparedness of the nursing workforce is increasingly recognized as a critical determinant of hospital-level donation conversion rates [16, 17].

The Ethiopian Context: A Nascent System Facing Compound Challenges

Ethiopia's journey in transplantation medicine is at a critical juncture. The establishment of a legal framework in 2014 was a foundational step [23, 24], yet operationalization remains limited. Current services are largely restricted to living-related kidney transplants and corneal grafts, operating far below the population's need [9-12]. The Ethiopian context encapsulates the global shortage but with amplified local constraints: limited infrastructure, public unfamiliarity with the concept, and navigating

complex sociocultural landscapes [13, 14].

Notably, positive attitudes often coexist with low personal commitment to register as donors, highlighting a troubling intention-action gap [21]. Parallel studies of the general public and patient companions corroborate these findings, reporting low levels of comprehensive knowledge and identifying religiosity, fear of mutilation, and distrust in the system as predominant barriers [22, 27]. This collective evidence paints a picture of a society where the idea of donation is met with curiosity but also significant apprehension.

Bridging the Critical Gap: The Unexamined Role of Practicing Nurses

A systematic examination of the existing Ethiopian literature reveals a striking and consequential omission. While valuable insights have been gleaned from students [21] and the lay public [22, 27], there is a conspicuous and significant lack of focused research on practicing nurses. This gap is both illogical and critical. Nurses constitute the largest component of the health workforce, provide continuous bedside care, and are the professionals who build the deepest therapeutic relationships with patients and families over time. Their role in potential donor identification, family support, and advocacy is arguably more sustained and influential than that of any other group. Ignoring their perspectives leaves a blind spot in our understanding of the donation ecosystem and forfeits the opportunity to strategically empower a key agent of change.

Therefore, this study is designed to directly address this pivotal gap. By assessing the knowledge, attitudes, and personal willingness regarding organ donation among nurses at Tibebe-Ghion Specialized Hospital, we aim to generate the first foundational evidence specific to this vital professional cohort. The findings will provide an essential empirical base for developing targeted, nurse-centric educational interventions and policy recommendations, ultimately aiming to strengthen the entire chain of donation in Ethiopia by empowering its most consistent human link.

Significance of the study

This study, which assesses the knowledge, attitudes, and willingness toward organ donation among nurses at Tibebe-Ghion Specialized Hospital, holds significant implications for clinical practice, health policy, and the future development of transplantation services in Ethiopia.

1. Informing Clinical Practice and Nursing Education

Nurses are the cornerstone of patient and family care, placing them in a uniquely influential position regarding organ donation. They are often the first to identify potential donors, provide continuous care to critically ill patients, and engage in prolonged, sensitive communication with grieving families. The success of the donation process hinges not only on medical protocols but profoundly on the knowledge, empathy, and advocacy skills of the nursing staff [18, 25]. Currently, there is no empirical data in Ethiopia to guide the preparation of nurses for this complex role. The findings of this study will provide the first foundational evidence to identify specific knowledge gaps (e.g., regarding brain death, legal frameworks) and attitudinal barriers among nurses. This evidence is crucial for designing targeted, effective in-service training programs and for integrating comprehensive organ donation education into the national nursing curriculum, thereby building a competent and confident nursing workforce capable of driving donation advocacy.

2. Strengthening Health Policy and System Development

Ethiopia's transplantation program is at a pivotal stage of development. While a legal framework

exists, the practical implementation of a sustainable deceased donor program remains a critical future goal [23, 24]. The transition from a reliance on living donors to incorporating deceased donation requires not just infrastructure, but also a profound shift in professional and public consciousness. This study provides essential data from a key professional group that will be instrumental in this transition. By understanding the current perspectives of nurses, who will be the frontline implementers of new protocols, policymakers and hospital administrators can develop more realistic and context-sensitive strategies. These may include creating clear clinical guidelines for donor identification, establishing dedicated hospital-based donation committees, and designing public awareness campaigns that nurses can champion.

3. Addressing a Critical Evidence Gap to Catalyze Action

As detailed in the literature review, existing research in Ethiopia has focused on medical students and the general public, leaving a significant void in understanding the views of practicing nurses. This gap is a major impediment to progress. This study directly addresses this omission, generating evidence that is both timely and actionable. By elucidating the factors that promote or hinder nurses' personal willingness to donate and their professional preparedness to facilitate donation, the study provides a roadmap for intervention. Empowering nurses with knowledge and positive attitudes is not an ancillary activity but a fundamental prerequisite for increasing donation rates, as demonstrated in global contexts [19, 20]. Therefore, this research serves as a catalyst, moving the discussion from theoretical need to evidence-based action by focusing on the most relevant and influential clinical cadre.

Objectives

General objective

- To assess knowledge, attitude and willingness towards organ donation of nurses in Tibebe-Gion Specialized Hospital, Bahir Dar, Ethiopia, 2023.

Specific objectives

- To assess knowledge of nurses towards organ donation in Tibebe-Ghion Specialized Hospital, Bahir Dar, Ethiopia, 2023.
- To assess attitude of nurses towards organ donation in Tibebe-Ghion Specialized Hospital, Bahir Dar, Ethiopia, 2023.
- To assess willingness of nurses towards organ donation in Tibebe-Ghion Specialized Hospital, Bahir Dar, Ethiopia, 2023.
- To assess associated factors of nurses towards organ donation in Tibebe-Ghion Specialized Hospital, Bahir Dar, Ethiopia, 2023.

Methods and Materials

Sample size and sampling

Sample size and sampling technique

This cross sectional study was conducted in Tibebe-Gion Specialized Hospital, College of Medicine and Health Sciences, Bahir Dar University from March to December 2023. Bahir Dar is 564kms away from the capital city of Ethiopia. Tibebe-Ghion Specialized Hospital was officially opened on 10th Nov 2018.

All nurses who met the inclusion criteria were recruited using census sampling. Nurses on vacation,

maternity leave, sick pay, and sick leave during the data collection period were excluded. At the initial contact, the aim of the study and voluntary participation in the study was explained for each nurse and they were ensured about confidentiality of their information.

The source population was all nurses employed at Tibebe-Ghion Specialized Hospital during the study period (approximately N=215). A census sampling technique was employed whereby all eligible nurses present during the data collection period were invited to participate. This approach was chosen to achieve a comprehensive assessment of the target workforce. Of the 215 eligible nurses, 211 were approached and 206 participated, giving a response rate of 98%.

Data collection tool and measurements

A structured, self-administered questionnaire was used. The tool was adapted from validated questionnaires used in prior studies among health science students in Ethiopia and similar KAP studies on organ donation [29, 32].

The questionnaire comprised four sections:

- Socio-demographics: 6 items
- Knowledge: 11 items with 'true', 'false', or 'Don't know' response. Each correct answer scored 1 point (total range: 0-11). A score of ≥ 8 points (approximately 75%) was categorized as 'good knowledge'.
- Attitude: 19 items measured on a 5-point Likert scale (1=strongly disagree to 5= strongly agree). The total score ranged from 19 to 95. A score above the median (calculated from our data) was categorized as a 'favorable attitude'.
- Willingness: Direct questions on intent to donate.

The questionnaire was pre-tested on 10 nurses at Felege Hiwot Specialized Hospital, and minor wording adjustments were made for clarity.

Data Analysis

Data were entered and analyzed using SPSS version 21. Descriptive statistics were presented as frequencies, percentages, mean and standard deviation. Bivariate analysis using the Chi-square test identified candidate variables ($p < 0.25$) for inclusion in the multivariable model. Multivariable binary logistic regression was performed to identify factors independently associated with willingness to donate organs. Results are presented as Adjusted Odds Ratios (AOR) with 95% Confidence Intervals (CI). Model fit was assessed using the Hosmer-Lemeshow test. A p -value < 0.05 was considered statistically significant.

Ethical Approval and Informed Consent

This study was conducted after obtaining formal ethical clearance. Ethical approval was granted by the Institutional Review Board (IRB) of the College of Medicine and Health Sciences, Bahir Dar University (Reference Number: CMHS/IRB/187/2022).

Written informed consent was obtained from each participant prior to enrollment. The consent process involved a detailed explanation of the study's purpose, procedures, potential risks and benefits, and assurance of voluntary participation. Participants were explicitly informed of their right to withdraw from the study at any point without any consequence to their employment or care. Confidentiality and anonymity were strictly maintained throughout the research process. No financial incentives were

provided for participation.

Results

Totally 211 nurses were contacted, out of which 206 nurses were included in the study. Of the 5 questionnaire, 1 was discarded because of illegible hand writing, and the rest 4 was uncompleted, giving a response rate of 98%.

Out of 206 participants 56% were male, and male-to-female ratio of 1.26:1. Almost half of the participants (102) are between the age of 25-30 years. Majority of the participants were orthodox (53.1%) and only 2.4% of the participants have less than 3years of experience in nursing (Table 1).

Knowledge about organ donation: Two hundred one (98%) of the study participants have heard about organ donation. Only 19% of the participants have heard about a donor registry in Ethiopia where people register during their life to donate organs after death. One hundred eighty six (90%) and one hundred forty two (69%) of the nurses know donated organs have the potential of transmitting disease and organ transplantation involves risk of tissue rejection respectively. Only 33% of the respondents know the legal law on Organ donation (Table 2).

Table 1. Socio-demographic data of the participants

Socio-demographic variables		n= 206%
Age		
21-25		2 (1)
25-30		102 (49.5)
30-35		66 (32.0)
>35		36 (17.5)
Sex		
Male		115 (55.8)
Female		91 (44.2)
Religion		
Orthodox		111 (53.9)
Muslim		34 (16.5)
Protestant		50 (24.3)
Others		11 (5.3)
Experience in nursing		
1 year-3 years		5 (2.4)
3 years-5 years		96 (46.6)
5 years-10 years		92 (44.7)
>10years		13 (6.3)

Table 2. Knowledge of study participants regarding organ donation (n=206)

Knowledge Item	n (%) correct
Have you heard about Organ Donation?	201 (97.6)
Donated organ can transmit disease?	186 (90.3)
Does organ transplantation involve risks of tissue rejection	142 (67.9)
Do you know cadaveric organ donation?	98 (47.6)
Brain death should take place in-order to get cadaveric organ?	96 (46.6)
Do you know any legal law on Organ donation?	68 (33.0)
Do you know the meaning of brain death?	73 (34.9)
Have you heard about a donor registry in Ethiopia where people register during their life to donate organs after death?	39 (18.9)
All religions support organ donation?	74 (35.9)
Organs especially Kidney and cornea can be transplanted in Ethiopia	185 (89.8)
Do you know where to obtain organ donation cards?	37 (17.7)

One hundred twenty seven participants have good knowledge, 62% (95% CI: 18%– 73%).

Attitude towards organ donation: Among the participants 97% of the nurses agreed with the idea of any Ethiopian citizen should be automatically included on the organ donor register, with the ability to refuse if they wish. About 70% of nurses would not worry if doctors are allowed to remove their kidney when they die. But only 29% of them would not be worried by the possibility of all of their own organs being for donation when they die. About 71% of participants have concerns regarding misuse and abuse of donated organs (Table 3). Attitude is positively correlated with nurse's knowledge with a sig. of 0.047.

Ninety four participants have favorable attitude, 46% (95% CI: 26%–74%).

Factors Associated with willingness to donate organs: Out of 206 participants, 137 (66.5%) were willing to donate organs. As shown in Table 4, Female nurses had 3.50 times higher odds of being willing to donate compared to males (AOR= 3.50, 95% CI: 1.82-6.75, $p<0.001$). Nurses with more than 5 years of experience had 2.10 times higher odds than those with less experience (AOR= 2.10, 95% CI: 1.16-3.80, $p=0.014$). Favorable attitude was also a significant predictor (AOR=2.80, 95% CI: 1.52-5.15,

Table 3. Attitude and willingness of study participants regarding organ donation

Attitude Item	n (%) Correct
Any Ethiopian citizen should be automatically included on the organ donor register of Ethiopia, with the ability to refuse if they wish?	6 (2.9)
The possibility of all of your own organs being for donation when you die would not worry you?	60 (29.1)
Does your religion allow organ donation?	93 (45.1)
Donated organs could be misused and abused	146 (70.9)
Do you think an intact body is needed for the life hereafter?	22 (10.7)
For donation after death, family/spouse should give consent?	72 (35.0)
Should parents/guardians give consent for mental ill persons?	94 (45.6)
For living donation, Donor should give consent?	196 (95.1)
Do you think Organ donation should be promoted?	181 (87.9)
Do you think awareness about organ donation should be part of school education?	180 (87.4)
Do you support your family if they wish to become an organ donor?	90 (43.7)
Would you like to motivate others to donate organ?	129 (62.6)
Do you feel comfortable to think or talk about organ donation?	171 (83.0)
Are you willing to allow organ donation after the death of a family member?	114 (55.3)
Are you willing to donate blood?	198 (96.1)
Would you like to take money for organ donation?	37 (18.0)
For donation after death, family/spouse should give consent?	72 (35.0)
You would not worry if doctors are allowed to remove your cornea when you die?	75 (36.4)
Do you regard donating your organs as a way of serving God?	80 (38.3)

Table 4. Factors associated with willingness to donate organs (Multivariable Binary Logistic Regression)

Variable	Category	Adjusted Odds Ratio (AOR)
Sex	Female (Ref: Male)	3.5
Experience in Nursing	>5 years (Ref: <=5 years)	2.1
Knowledge	Good (Ref: poor)	1.15
Attitude	Favorable (Ref: Unfavorable)	2.8

$p=0.001$), while knowledge level was not significantly associated ($p=0.624$).

Discussion

This study provides one of the first focused assessments of knowledge, attitudes, and willingness regarding organ donation among practicing nurses in Ethiopia. The findings reveal a complex picture: a workforce with moderate knowledge and high stated willingness, yet significant gaps that could hinder their effectiveness as advocates within a nascent national transplantation system.

Knowledge Levels: Awareness with Critical Gaps

In this study, 61.7% of nurses were categorized as having good knowledge. This figure is substantially higher than the 10.6% reported among patient companions at a tertiary hospital in Addis Ababa [34] and the 28% found in a South Indian community [31], which is expected given the professional medical training of nurses. It is also comparable to findings among health science students in Ethiopia, where knowledge scores were generally positive [35]. This suggests that nursing education in Ethiopia provides a foundational awareness of organ donation.

However, this overall score masks critical, operationally significant deficits. Only one-third (33.0%) of nurses were aware of the legal framework governing organ donation in Ethiopia. This finding is consistent with, and even slightly higher than, the severe lack of legal awareness (9.2%) reported among health science students [35]. This pervasive gap is alarming, as nurses cannot confidently navigate or explain a process they do not understand is legally sanctioned. Furthermore, less than half (46.6%) correctly identified brain death as a prerequisite for cadaveric donation, a fundamental medical concept central to converting potential donors. These specific deficiencies highlight that while basic awareness exists, the depth of knowledge required for professional advocacy—encompassing ethical, legal, and nuanced medical criteria—is currently inadequate.

Attitudes and Willingness: A Paradox of Intent

A favorable attitude was held by 45.6% of nurses, and a strong majority (66.5%) expressed willingness to donate their own organs. This level of personal willingness is encouraging and higher than the 37.6% willingness for eye donation reported in Gondar [14] and the 25.6% who strongly agreed to register as donors among patient companions [34]. It indicates a generally positive disposition toward the concept of donation among this professional group.

The strong concern about organ misuse (70.9%) and the value placed on bodily integrity also indicate that deeply held cultural and ethical apprehensions persist even among healthcare professionals, potentially creating internal conflict and hesitancy in professional practice.

Factors Influencing Willingness: The Role of Experience and Gender

Our multivariable analysis identified key predictors of willingness. Female nurses demonstrated significantly higher odds of being willing to donate. This aligns with some global studies noting greater altruistic tendencies in health decisions among females in healthcare settings [35], though it contrasts with other studies where males showed higher knowledge [33]. This finding underscores that gender may influence personal donation decisions independently of knowledge levels.

More importantly, years of nursing experience emerged as a strong, independent predictor of willingness. This is a crucial insight for policy. It suggests that clinical exposure and professional maturity may foster a deeper understanding of patient need and the life-saving potential of donation, thereby overcoming initial apprehensions. Experienced nurses could therefore be leveraged as

"donation champions" within hospital units to mentor peers and sensitize newer staff.

Contrary to expectations, the level of knowledge was not a significant predictor of willingness in the final regression model. This reinforces the notion that while education is necessary to correct misconceptions (like those about legality and brain death), motivating donation behavior involves addressing deeper attitudinal, cultural, and normative factors that go beyond factual knowledge [20].

Implications for Practice and Policy

The findings have direct implications for strengthening the organ donation pathway in Ethiopia:

- **Targeted Education:** Mandatory in-service training for nurses must move beyond basic facts to address specific gaps: Ethiopia's transplantation law, the concept and diagnosis of brain death, and the ethical safeguards against organ misuse. This training should be integrated into continuous professional development programs.
- **Utilizing Experienced Staff:** Hospitals should identify and formally train experienced, willing nurses to lead donor advocacy roles. These champions can facilitate family discussions, support junior staff, and help create a unit culture that is supportive of donation.
- **Addressing the Attitude-Willingness Gap:** Educational interventions should employ persuasive communication strategies that connect factual knowledge to emotional and moral reasoning, highlighting the nurse's unique role in fulfilling a patient's last act of saving others. Sharing narratives from recipient families and donor nurses could be powerful.

Strengths and Limitations

A key strength of this study is its focus on a previously unstudied yet critical professional group using a census approach in a major referral hospital, providing comprehensive data for that setting. However, the findings must be interpreted considering certain limitations. The cross-sectional design precludes causal inferences. The use of self-reported data may be subject to social desirability bias, potentially inflating willingness scores. Furthermore, as a single-center study, the results may not be fully generalizable to all nurses in Ethiopia, particularly those in rural or non-tertiary settings. The reliance on a two-point scale for knowledge may also lack sensitivity in differentiating levels of understanding.

Conclusion

In conclusion, nurses at Tibebe Ghion Specialized Hospital show a promising level of personal willingness to donate organs. However, this willingness is not yet fully underpinned by the robust knowledge and uniformly favorable attitudes required for them to function optimally as advocates within the donation process. Strategic investments in targeted, nuanced education and the formal engagement of experienced nurses as institutional champions are essential next steps to translate this personal willingness into professional effectiveness, thereby strengthening a vital link in Ethiopia's evolving transplant ecosystem.

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