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Providers' View on the First Kidney Transplantation Center in Ethiopia: Experience From Past to Present

Tariku Shimels[1], Abrham Getachew[1], Mekdim Tadesse[2], and Alison Thompson[3]

Abstract

Introduction: Transplantation is the optimal management for patients with end-stage renal disease. In Ethiopia, the first national kidney transplantation center was opened at St. Paul's Hospital Millennium Medical College in September 2015. The aim of this study was to explore providers' views and experiences of the past to present at this center.

Methods: A qualitative study design was employed from 1st November to 15th December, 2019. To ensure that appropriate informants would provide rich study data, 8 health care providers and top management members were purposefully chosen for in-depth interviews. A maximum variation sampling method was considered to include a representative sample of informants. Interviews were digitally audio-recorded, and transcribed verbatim. Transcribed data was coded and analyzed using Qualitative Data Analysis (QDA) Minor Lite software and Microsoft-Excel.

Result: The participants (5 males and 3 females) approached were from different departments of the renal transplant center, and the main hospital. Eight main themes and 18 sub-themes were generated initially from all interviews totaling to 109 index codes. Further evaluation and recoding retained 5 main themes, and 14 sub-themes. The main themes are; challenges experienced during and after launching the center, commitment, sympathy and satisfaction, outcomes of renal transplant, actions to improve the quality of service, and how the transplant center should operate. Providers claim that they discharge their responsibilities through proper commitment and compassion, paying no attention to incentive packages. They also explained that renal transplantation would have all the outcomes related to economic, humanistic and clinical facets.

Conclusion and Recommendation: A multitude of challenges were faced during and after the establishment of the first renal transplant center in Ethiopia. Providers discharge their responsibility through a proper compassion for patients. Concerned stakeholders should actively collaborate to improve the quality of renal transplant services in the center.

Keywords

Ethiopia, qualitative study, renal transplant, Saint paul's hospital

Introduction

Renal failure due to chronic inefficiency of the kidneys to filter out and remove metabolic byproducts is one of the fatal health conditions worldwide.[1] Chronic kidney disease is frequently reported to be preceded by risk factors such as dietary risk, high body mass index (BMI), safe water, pollution, child and maternal malnutrition, and others,[2] and is associated with an 8-to-10-fold increased risk of CVD mortality, acute kidney injury, increased risk of infection, cognitive decline, anemia, mineral and bone disorders, and fecundity.[3-5] Of the available alternatives, transplant occupies the leading place in restoring patients' health along with minimal comparative costs per quality of life gained.[6,7] From the time of its first successful trial in 1954, renal transplantation has shown a remarkable improvement in the survival of many patients.[8, 9] It is found that grafts

[1] Research Directorate, Saint Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia
[2] Department of Surgery, Saint Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia
[3] University of Toronto, Toronto, Ontario, Canada

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Corresponding Author:
Tariku Shimels, Research Directorate, Saint Paul's Hospital Millennium Medical College, Addis Ababa 1000, Ethiopia.
Email: tarphar2008@gmail.com

obtained from cadavers survival rate at 1 and 10 years were estimated to be 88% and 60% respectively, while the same success rate for live donor organs could exceed 95% and 70% respectively.[10] Currently, the program has attained acceptance as the dominant strategy globally, even for patients with multi-morbidity status.[11] However, attaining kidney transplantation is also a challenge in many settings due to the shortage of organs, space, and technical capabilities.[12] Racial or ethnic disparities, as well as socioeconomic disparities, complicate its accessibility to minorities.[13,14] To be successful with kidney transplantation interventions, an agreed upon involvement of all stakeholders, including patients, live donors, healthcare providers, policymakers, and families would account for a crucial role.[15] This may improve the patient–provider relationship, thereby building trust in the services provided and sustaining the program. Studies that evaluated patients' perspective have reported that alternatives to in-center hemodialysis as a treatment for end-stage renal disease have been shown to increase patient quality of life, decrease co-morbidities and decrease financial strain on both the patient and the health care system.[16] Patient references also come to play a role for a similar treatment modality. In cases where multiple centers could be available, patients have opted to be interested in perceived reputation, comfort, and convenience.[17] Nonetheless, it was indicated that given the rising demand for kidney transplantation within a setting of scarce resources, the economic and ethical dimensions of transplant medicine are of emerging interest to patients, providers, and payers.[18, 19] Equally important, but reported not to be clear yet in many contexts, is the question of obtaining organs and the level as well as the appropriateness of incentives to donors.[20]

In Ethiopia, the first national kidney transplantation center was opened at Saint Paul's Hospital Millennium Medical College (SPHMMC) in September 2015 in collaboration between the ministry of health and the medical faculty at the University of Michigan. The center has been reported to have performed about 52 nephrectomies in its first 2 years of establishment.[21] And, an estimated 137 patients have received service until September 2020.[22] A study conducted on the survival status of renal transplant (RT) recipients from a live donor reported that outcomes were promising and comparable to international standards despite the presence of resource constraints.[23]

Though most reports in the literature cover outcomes from earlier performed renal grafts, health care providers' and patients' attitude to the prospects of the program and their perceived challenges and opportunities is not well known. A study from Nigeria has shown that more than a third of end-stage renal disease (ESRD) patients are not likely to accept kidney transplantation and an equal proportion of prospective donors will not agree to kidney donation. Similarly, the majority of health-care professionals prefer centers outside Nigeria for patients' kidney transplantation. [24]

Whereas no study has, so far, been conducted to evaluate the successes and challenges of RT implementation in the current study setting, the structural capability and required resources from the perspective of major healthcare crew is not understood. The initiation of this study is, therefore, to explore and describe providers' views, perceived challenges and ways forward in the implementation of the RT in the Ethiopian context.

Methods

Study Setting and Design

The study was conducted at Saint Paul's Hospital Millennium Medical College (SPHMMC), which is the second largest hospital in Ethiopia located in Addis Ababa, Gulele sub-city. Established in 1969, the hospital provides different medical care services to an estimated 200,000 people every year. The millennium medical college was opened in 2007G.C. (2000 E.C.) to commemorate the new millennium of the Ethiopian calendar. The kidney transplant center was opened as a national transplant center by the Ministry of health with the cooperation of the University of Michigan in September 2015. Annually, averages of 26 patients receive renal transplantation services from live donors totaling to 137 patients who benefited from the transplantation service until September 2020.[22] A descriptive phenomenological qualitative study was conducted from 1st November to 15th of December 2019 to explore the providers' view of the first kidney transplant center in the study setting.

Reflexivity

All, except the third, authors (TS, AG, AT) were not part of either the administrative or clinical team members. One of the authors (MT) was from the clinical area with experience in the service unit, but no direct involvement in the interviews, transcription, and interpretation of findings. One team member (AT) had deeper experience and expertise in qualitative research methodology. The interviews were done by one of the local authors (AG) while probing and audio recording was made by the other local colleague (TS). Both authors, who had previous training, a good understanding of the study context, and values, performed the transcription (4 each) and cross-checked the contents embedded in the translation. An initial analysis of potential informants was discussed by the 2 authors, and schedules held to carry out the interview at participants' offices.

Participants

A maximum variation sampling method was considered to recruit a representative number of participants from all potential units. Health professionals and top management members involved in direct or indirect renal transplant (RT) service delivery and decision making at the hospital-level were selected purposively to ensure that appropriate informants would provide rich study data. Accordingly, 10 in-depth interview participants from potentially eligible departments were requested for consent and included in the study. Seven were from the medical (paramedical) area engaged in decision

making, transplant surgery, nursing care, and pharmaceutical supply chain. And, 3 were recruited from the engineering, administrative, and purchasing departments. All participants had, at least once, been to an earlier training, education, abroad visit, or experience in relation to kidney transplant and its infrastructural setups. One participant shared a comparative reflection of RT layouts from his earlier visits to Michigan, and India. Two of the medical team members (a nephrologist and a lab technologist) were not included in the interview due to overlapping schedules.

Data Collection Methods and Procedures

A semi-structured interview guide was developed, and used for all the interviews. Following identification, and consent, informants were approached on the scheduled dates to share their free opinions. Interviewers had no any direct connection with the interviewees, but were immersed in the situation, so that this would help to avoid any feeling of evaluation, coercion or risk of taking part. At times, participants shared with the researchers' experience of the phenomenon. They were also informed amicably that they would be a part of the investigation as appropriate personnel in the setting. Phenomenon of interest in the exploration was the providers' view of the first kidney transplant center at Saint Paul's Hospital as the first, and the only transplant unit in the country. This question was asked; "Would *you share me your view about the transplant center at Saint Paul's Hospital?* Further questions and probes to decipher elaboration and facets that would shape their view were also raised. Among others included; "*what are the major challenges in relation to implementation of the transplant center? What a specific challenge was the center confronted with (probe: culture, value)? And, what challenges have emerged to resources related to implementing effective RT services in the past years (Probe; budget, drugs, lab reagents . . .)? How do you explain the experience of fulfilling human resources? What was the involvement of the top management and stakeholders in the implementation? Staff engagement and ways forward?*. In-depth one-to-one interviews lasting 40–60 minutes were conducted during the specified period. The authors prepared an in-depth interview guide for all key-informants (supplemented). All the 8 in-depth interviews were digitally audio-recorded, and transcribed verbatim.

Ethical Approval

Ethical approval was obtained from SPHMMC institutional review board (ref.no: PM23/465). Participation in the study was voluntary after participants provided informed consent, and responses were kept confidential. Before obtaining informed consent, all participants had been given relevant information relating to the study's purpose as well as potential benefits. In-depth interview respondents were also told about the use of an audio recorder. The researchers have complied with all ethical principles to protect study participants from any potential harm during all stages of the study. To ensure the anonymity of study subjects during analysis, each participant's identifier was either coded with labels or altered.

Data Analysis

Transcribed data was cleaned and imported to Qualitative Data Analysis (QDA) Minor Lite software. Analysis was done following the steps stipulated by Braun and Clarke (2006).[25] First, we repeatedly read the textual transcriptions for familiarization, then initial codes of relevant data were generated, related codes were then merged into themes, reviewing of themes for coherence and data support which led to condensed themes, defining of final themes, and producing the composite description of the essence. Themes were modified and refined inductively from the data in Microsoft Excel through a thematic content analysis approach guided by the social constructivism descriptive framework. The dynamic interactions across the professional, patient, stakeholder, institutional, and system levels that could influence providers' view of the phenomenon were described. The validity of the findings has been verified by employing various methods. These included; undertaking a thorough literature search, following steps that ensure a trustworthy thematic analysis as suggested by Brien et al. (2014),[26] bracketing of the researchers' experience of the phenomenon from the participants' view, and cross checking of contents among the researchers.

Results

A total of 8 in-depth interviews (IDPs) were successfully conducted. The participants (5 males and 3 females) approached were in the age range of 27 to 48 years, and from diverse professions, namely; a transplant surgeon, operation room (OR) nurse, intensive care unit (ICU) nurse, a pharmacist, a purchasing officer, a nephrologist, and an administrative assistant. About 8 main themes and 18 sub-themes were generated initially from all interviews totaling to 109 index codes. Further evaluation and recoding of contents produced a final 5 main themes and 14 sub-themes. The main themes are; challenges experienced during and after launching the center, commitment, sympathy and satisfaction, outcomes of renal transplant, actions to improve the quality of service, and how the transplant center should operate (Table 1).

Challenges Experienced During and After Launching the Center

Gaps in the organization and system planning ($n = 5$). The majority of respondents said there was a lack of planning on the organizational structure and system when the renal transplant center was first established. These gaps were vividly illustrated in different ways among the interviewees. One participant states: *" . . . Having good communication only within a team is not adequate. I believe every department in the center should have been well structured and organized"*.

Another female participant also mentions that some units within the center are close to each other, which may pose

Table 1. Identified Themes and Categories Condensed From Meaning Units on Providers' View of the Transplant Center in Ethiopia.

Meaning units	Codes	Categories	Main themes
I believe every department in the center should have been well structured and organized	Poor organization No plan	Gaps on organization and system planning	Challenges experienced during and after launching the center
Both critical care and Post OP beds are around in the same area, I think that should be managed	No plan		
Water, machines, medicines and some supplies were in short supply initially			
How much skilled man power do you have, how many beds do you need to place, and what actual number of patients are you planning to admit or give a service to			
People are not equipped with up-to-date special training on transplantation services, most are selected from the main hospital	No training No personnel	Challenges related to personnel and capacity building	
The gap was due to the lack of studying every challenge to come and opportunity earlier, the house was rented, there was no generator initially	Knowledge gap No personnel		
It was only limited number of people who have been trained, that was a challenges and source of frustration during the time	Low capacity		
A special person to procure the items may be necessary, sometimes, items might not be obtained through a planned regular procurement process			
We are also limited to the number of services to be delivered, the capacity we had is a rate-limiting factor			
When you request listed items, PFSA (Pharmaceuticals Fund and Supply Agency) in Ethiopia may respond but we have no reserves to tackle with shortages or lead time needs	Supply uncertainties Limited supply	Challenges related to suppliers	
Some items, such as stitches, reagents and supplies might be in short supply	Trusted source Few suppliers		
I suggest a permanent system to be established for sustained availability			
There were only few suppliers to collect input bid for some startup materials			
I suggest the government arrange homes especially for those from the countryside	High rental costs Costs	Patients' capacity to afford costs	
There are costs related to medication, diet, and transplantation	Unaffordable costs		
Because all patients are not rich, costs even after 2 months and, those coming while on their follow up may suffer from the challenges			
One possible challenge I experienced from transplantation is setting the issue of finding a donor	No donor Donor	Challenges related to donor	
Donor should be from relatives and be compatible in all aspects	Lack of donor		
I noted the main challenge facing during transplantation was lack of a donor	Lack of donor Donor matters		
Those being volunteer may fail due to the incompatibility of their blood			
Your donor mainly matters; compatibility tests, and other processes till patient reaches post OP stage			
The space is limited for providing services by all professionals	Limited space	Unmatched demand and supply	
I have a fear that the center is ready well to satisfy all needs to arise in the future	Unmet need High patient load		
We have more patients waiting for the service, and that may require 2 months to complete	Limited space		
we do not have adequate beds			
Everyone in the center feels stressed throughout the care, because all want that patient recover from surgery	Stressful Tedious	Demand for commitment	Commitment, sympathy and satisfaction
I could prefer to do more scrub of other surgery than 1 renal transplant. It is tedious and intensive			
I believe the professional team is motivated despite incentive issues	Professionalism	The sympathy of providers	
We mourn with those searching for donors, and strive to help those with donors amid of less attractive incentive packages	Share feeling Share feeling		
The big satisfaction is to see a patient cured that has been suffering on dialysis			
People are happy for the service they get here	Satisfaction	Providers' view on patients' satisfaction	
They say they are back to work, they say they are free from dialysis costs	Lowered cost		

(continued)

Table 1. (continued)

Meaning units	Codes	Categories	Main themes
Dialysis may require 15000-20000 birr per month, but in transplant they might need 4000birr on average for the first month	Low cost	Economic outcomes	Outcomes of renal transplant
Because you may need to go for 3-4 times per week in dialysis, this may include family costs to care, even immunosuppressant drug costs could be better than service by dialysis	Low cost		
You will see people with good quality of life and they learn each other about their life changes	Improved quality	Clinical and humanistic outcomes	
After 4 months, they will be advised to commence their work	Productivity		
Even though there was no proper plan to premise standards, we sat and discussed with physicians on the needs to be fulfilled	Discussion		Actions taken to improve quality of service
We get ready of everything before 1 week of the procedure	Preparation		
I have a fear that the center is equipped well to cover all needs to arise in the future	Concern	Need for an active engagement of stakeholders	How the transplant center should operate
Stakeholders, particularly, the ministry of health, and PFSA need to collaborate intensively as time goes on	Engagement		
Those with low income may still suffer as they have to cover their costs	High cost	Continuity of support to patients	
I suggest the government arrange homes especially for those from the countryside	Seek support		
The government must also make sure that drugs are readily available in public sectors like the 'Kenema' (public) pharmacies	Availability and affordability		
Still more is needed to be done for meeting international standards	Standard	Sustaining the service in the center	
Assuring the availability of reagents and medications should be mandatory as this cannot be stopped once started	Availability		

reinfection. *"Both critical care and Postop beds are around in the same area. I think that should be managed".*

On the other hand, the participants raised that inputs required for procedures were not planned earlier and schedules were placed ahead of time. One of the respondents said: *"Sometimes, you might be asked an item with distinct brands and to be purchased in a very short period. This cannot be done practically for several reasons. The good thing to do was to plan it well far before commencing the service".*

Meanwhile, appropriate planning of building infrastructure was noted to be lacking. A responder said the following: "*The electric power problem was significant at the beginning. Water, machines, medicines and some supplies were in short supply initially*".

In line with this, certain building structures did not get full visualization as most of the respondents gave a witness. One participant enumerated as follows that some units were out of attention. *"Some rooms, like janitors' room, store rooms, conference room, and duty rooms were the once identified last and missed in the early preparation phase".*

And of the respondents, some stipulated that things were out of precise estimation of the type and amount of resources required as well as an appropriate party to deal with at times of uncertainties. One member of the team stated: *"There was no clear set solution in place for any problem to happen. Similarly, when some items may get shortened, there are some in excess which may end up with expiration".*

Challenges Related to Personnel and Capacity Building (n = 6). Lack of appropriate training before commencement continued support to empower the recruited healthcare crew and limitation of staffing to all required departments was reported by the respondents. An interviewee suggested: *"People are not equipped with up-to-date special training on transplantation services. Most are selected from the main hospital*" and another participant also added a further elaboration: "*It was only a limited number of people who have been trained. That was a challenge and source of frustration during the time. Skill cannot be obtained from scratch and training is inevitable. I guess there is an attitude gap on its importance''.*

However, the interviewees witnessed that there were gaps created due to poor assignment of personnel for some of the services. "*A special person to procure the items may be necessary. Sometimes, items might not be obtained through a planned regular procurement process".*

On the other hand, participants have revealed that patients rarely face long waiting times to enroll for procedures despite fulfilling criteria. The main cause of such a delay was because of limited manpower. A participant said: "*There are a few complaints from patients about long waiting times. Some complaints are from not knowing the nature of the service or waiting times till actual enrollment. We are also limited to the number of services to be delivered. The capacity we had is a rate-limiting factor".*

Challenges Related to Suppliers (n = 3). Challenges stated under this category were associated with various factors, including; procurement guidelines, personnel and availability of suppliers. One respondent said: *"When you request listed items, PFSA (Pharmaceuticals Fund and Supply Agency) in Ethiopia may respond but we have no reserves to tackle shortages or lead time needs".*

The other interviewee also suggested that the gap in the supply of items should be solved through a stable system in the organization. *"Some items, such as stitches, reagents and supplies might be in short supply. But, I suggest a permanent system to be established for sustained availability".*

An interviewee indicated that the cost of attaining suppliers locally was challenging for some items. Neither was an international bid an option since this would require further capacity. *"Only a few suppliers were available to collect input bids for some startup materials. "If we were also to import all things through an international tender, it would need a lot of requirements".*

Patients' Capacity to Afford Costs (n = 3). Patients' capacity was among the points emphasized by the respondents. They said that the sustained outcome of the renal transplant will only work if support is provided to patients. Here goes what 1 interviewee said: *"I suggest the government arrange homes, especially for those from the countryside. Some people spend up to 6000 birr per month on rent."*

The other participant also said the following on the different types patients often encounter after being enrolled in the service: *"There are costs related to medication, diet, and transplantation. Because all patients are not rich, costs even after two months and those coming while on their follow up may suffer from the challenges".*

Challenges Related to a Donor (n = 3). The interviewees raised another issue they had come across during their service delivery once a patient is in follow up to dialysis and ready for transplantation. One respondent recalls: *"One possible challenge I experienced from transplantation is setting up the issue of finding a donor. It should be from relatives and be compatible in all aspects".*

Lack of a donor was reported to be a pertinent and rate-limiting factor the healthcare crew frequently presented. There are numerous criteria that interact with a donor, and the laws that govern the process also have an impact on the outcome. *"I noted the main challenge faced during transplantation was lack of a donor. A family relationship is a prerequisite to donating a kidney. Even when a family is there, some may not be volunteers. Even those being volunteers may fail due to the incompatibility of their blood. Some may not get families to donate at all".*

The other interviewee, too, strengthens the idea that live donors are a key element in renal transplantation success. Further evaluation takes intense consideration according to the provider: *"Your donor mainly matters; compatibility tests and other processes till the patient reaches post OP stage. Finding donors, donor health, and other factors may prevent donors from receiving operations on time or at all ".*

Unmatched Demand and Supply (n = 6). The participants described various apprehensions that were notable when launching the center and still continued to be concerns about balancing demand and supply. One of the respondents elaborated: *"The space is limited for providing services by all professionals. Discussing and consulting with both the donor and recipient is difficult because of the small space . . . . I have a fear that the center is ready to satisfy all needs to arise in the future. There may be an imbalance between demand and supply. For example, we do not have adequate beds".*

In addition to adequate space, patient queues may form as a result of long wait times for procedure enrollment, which may be caused by other factors such as provider, patient, and donor. It also takes about 2 months, as 1 interviewee mentioned: *"We have more patients waiting for the service and that may require two months to complete".*

Apart from those patients receiving service from the outset, follow-up services are rendered in the center. The respondents highlighted that patients with their RT done abroad have the right to get the service. While this could be linked to a demand and supply disequilibrium as others stated, 1 respondent reflected, however, that this does not compromise usual services in the center. *"We accept patients who had their transplants abroad as well as those who had them here." I don't think it can compromise the supply for patients who already had their RT in the center. But they have an equal right to be served here and everything is going well until now".*

Commitment, Sympathy and Satisfaction

Demand for Curiosity (n = 3). According to the majority of providers, the demand for commitment was a unique feature of the renal transplantation service. The whole process takes extensive technical supportive procedures until a patient comes out effective from the surgery. One provider said: *"Everyone in the center feels stressed throughout the care because all want that patient to recover from surgery. That is not intentional but, we are indebted to the feeling of being part of it. . . . ".*

The other provider also justifies how tiresome the process is, saying: "*. . . it is difficult to achieve any success without any hard effort. I'd rather do more scrub of other surgeries than one kidney transplant. It is tedious and intensive*".

The Sympathy of Providers (n = 2). Not only do providers believe they are committed to the responsibility they have at the center. They mention that they have compassion for their patients. It was also raised that despite quests for incentive issues, the satisfaction they drive from the service is immense. "*I believe a professional team is motivated,"* one of them says, "*. . . despite the fact that incentive issue remains to be a question, we pay a great respect and interest in seeing patients helped".*

The statement by the following interviewee signifies the effort made by the providers to help patients. They assist them in every aspect, including sharing their feelings. *"We mourn those searching for donors, and strive to help those with donors amidst such less attractive incentive packages. That's our maximum benefit."*And, another respondent added that the ultimate goal is to save the patient. *"The big satisfaction is to see a patient cured that has been suffering on dialysis".*

Providers' View on Patients' Satisfaction (n = 5). This section summarized the view of providers' perspectives on patients' satisfaction with the service. The interviews show that providers have a positive conception of this variable. Here is what was said by 1 respondent: *"People are happy about the service they get here. Because they will receive any care they require in a community and family they are familiar with. It is less costly, less tiresome, and soon recovered".*

Others stated that they received comments and witnessed the changes they saw. Some said they have close connection afterwards. An illustration by one interviewee reads: *"Patients are very satisfied. They say they are back to work, they say they are free from dialysis costs, they say they are learning now".*

Outcomes of Renal Transplant

Economic Outcomes (n = 2). Themes considered as economic outcomes include providers' perception of cost reduction compared to alternative strategies (dialysis). Evidence to support the change in monetary benefits was expressed in Ethiopian Birr (when 1USD = 25 ETB). A respondent stated the following: *"Dialysis may require 15000-20000 birr per month, but in transplant they might need 4000birr on average for the first month. This may decrease after a year, and the likelihood of transplantation may be reduced".*

Non-medical costs were also mentioned as an important cost to some of the interviewees. Costs incurred in dialysis were more frequent and would end up with higher cumulative costs, they say. These expenses are transferable to society too through loss of productivity. *"... transplantation is more beneficial for a patient. For one thing, it will increase their productivity. Because you may need to go 3-4 times per week for dialysis. This may include family costs for care. Even immunosuppressant drug costs could be better than service by dialysis".*

Clinical and Humanistic Outcomes (n = 3). This section shows the association between clinical and humanistic outcomes. When a patient spends less time at the hospital, his or her productivity and quality of life will improve. The providers' view shows that transplantation has better outcome in terms of quick improvement and enhanced quality of life. *"You will see people with a good quality of life and they learn from each other about their life changes. Even though all people might not necessarily be happy, I believe that more than 90 percent of them are happy ".*

A thorough check-up and capacity evaluation is undertaken to make sure that patient will commit to the management. They also declared that patients after four months of treatment will return to regular work. A responder explains: *"We also assess if they can afford various expenses, including their monthly income and post-transplant costs later to follow. After 4 months, they will be advised to commence their work and we ensure that the family is taking the responsibility for that".*

Actions Taken to Improve the Quality of Service

Despite the presence of multiple challenges the center had encountered during implementation, the staff agrees that efforts are going to improve current practice. They acknowledged that hospital management tried to fix some of the issues, such as building setups and utility infrastructure. *"Even though there was no proper plan to premise standards, we sat and discussed with physicians the needs to be fulfilled. Most were identified later after startup".*

According to the providers, a sequence of evaluations is done both for patients and donors. This is taken into account every time a patient arrives at the center. A provider stated: *"We get ready for everything before one week of the procedure".*

How the Transplant Center Should Operate

Need for an Active Engagement of Stakeholders (n = 4). To a question about which stakeholders were involved in the establishment and supply of the inputs to the center, they mentioned that the ministry of health, Ethiopian food and drug administration (EFDA), Ethiopian Pharmaceuticals Supply Agency (EPSA), Michigan University, and individuals have most collaborated. In line with this, they said that concerned parties should work to support patients and the center in the future. There was a concern about the future capability of the center given the present limitations the center encountered. As one interviewee highlighted, "*I have a fear that the center is equipped well to cover all needs to arise in the future. There may be an imbalance between demand and supply. For example, we do not have adequate beds"*. And, another informant remarked on the need for collaboration among parties with direct link to influence; "*stakeholders, particularly, the ministry of health, and PFSA need to collaborate intensively as time goes on, and demands rise".*

Continuity of Support for Patients (n = 3). The present in-depth interview revealed that patients enrolled in renal transplantation service should get need-based help from the government. *"Even though drugs are subsidized by the government and sold for low prices, those with low income may still suffer as they have to cover their costs".*

The providers elucidated the challenge in terms of the monthly rental fees patients pay for housing. This is evident, especially for patients coming from rural areas, according to the quotes noted. *"I suggest the government arrange homes, especially for those from the countryside. Some people spend up to 6000 birr on rent ".*

It was also reported that there was a shortage of immunosuppressant medications. The respondents suggested to the government that drugs should be available in an uninterrupted manner in public-owned community pharmacies called 'Kenema Pharmacies'. This is the word of 1 respondent: *"The government must also make sure that drugs are readily*

available in public sectors like the 'Kenema' pharmacies as a shortage of input may cause devastating outcomes".

Sustaining the Service in the Center (n = 4). Members of the team reflected on and made suggestions about the efforts that every member of the hospital, and especially the management, should make. It was pointed out by 1 respondent that more is required to meet appropriate quality recommendations. *"Still more needs to be done to meet international standards. There was good discussion with the management. I recall and hope support will continue to upgrade the quality of services delivered".*

Medications, lab reagents, medical supplies and equipment are among the common inputs required in the service apart from qualified personnel and infrastructure. Consumables such as drugs and reagents, on the other hand, have received more attention from providers. One provider said: *"There is a discussion with lab professionals and pharmacists when we face a shortage of lab services and medication. Assuring the availability of reagents and medications should be mandatory as this cannot be stopped once started*".

Discussion

The findings of the present study suggest that providers had a broad range of viewpoints founded on their experience of the new transplant center. This could arise due to the fact that the center was the first and the only in the country, and transplant units are a recent development in grafting medical technology. Despite the lack of suitable kidneys for recipients, the performance of the organ procurement process, planning and meeting of required demands and scoring criteria for distribution continued to be challenging for a long time.[27]

Nonetheless, the number of people on the waiting list has been noted to be rising, which shows a crowd of unsatisfied demanding overtime. Improvements in timely screening and outpatient referral linkage, as proposed by Farouk and her colleagues,[28] may aid in reducing the complex overflow of waiting lists. Furthermore, the inquiry for live donor kidneys based on the standard criteria and a close relative may contribute to the challenge. Studies[29-31] support that allografts based on the standard criteria donors (SCDs) are hardly achievable, suggesting other extended criteria to acquire from a larger pool, such as after brain death.[32] Participants revealed that, while efforts by the hospital team and relevant parties were ongoing, global and national realities in the availability of inputs such as medical supplies, medicines, and equipment had an impact on service quality.

One domain of view providers pointed out was that they discharged their responsibility through proper commitment and compassion disregarding incentive packages. This, they perceived, have satisfied most of their clients. They emphasized that assignment to a transplant center does not end with all the evens unless everyone assumes full professionalism with the deeds from preoperative assessment to postop follow ups, and feels the true sympathy with the patient. They also reported that thorough investigation of patients and donor status before enrolment should be implemented to ensure desired kidney transplant outcome. A study documented that patients with chronic kidney disease (CKD) stage should receive proper education, early screening and consultation to reduce compliance after kidney transplantation.[33]

Vicious to patients with low income and coming from remote areas, commitment to retain in the program and finding a donor is part of the evaluation for enrollment as interviewees witnessed. This, too, marginalizes those who cannot afford the additional costs and rents mentioned by participants. As studies show, socioeconomic disparities, geographic factors, local transplant center density, and size are linked to low referral and assessment rates for transplant.[34,35] Meanwhile, both medical and financial reasons are among the rate-limiting factors that interplay in a kidney transplant cohort.[36,37]

The participants explained that renal transplantation would have all the outcomes related to economic, humanistic and clinical facets. The providers' view suggests that renal transplantation is the best alternative therapy available to patients with end-stage kidney diseases (ESKD). The superior outcomes are justified by the fact that patients will get out of hospitalization sooner, return to job after 4 months and enjoy full quality of life as compared to dialysis. As per the providers, cumulative costs will decline and societal productivity will be enhanced once patients succeed in transplantation. A study reported that long term dialysis outcomes are inferior compared to transplantation.[38] Declining rates of mortality from transplantation especially, holds true following 6 and 12 months as compared to dialysis.[39] It is generally accepted that patients with functioning renal allograft have improved quality of life as compared to dialysis.[40, 41] Another economic evaluation also illustrated that renal transplantation improves the overall survival rates and quality of life and is a cost-saving alternative compared with dialysis.[42] However, it was highlighted in a study that proper long-term care and monitoring of kidney recipients, with timely diagnosis and treatment of identifiable injury, offers the best prospect of improving long-term graft survival.[43]

The study also discovered that providers give careful thought to the possibility of a renal transplant center. Their views concentrate on sustaining the service as a whole and making the service accessible to each patient in particular. They mentioned that stakeholders' involvement is fundamental. Patients' incapability to afford medication and rent costs was frequently emphasized during the interview. This is in line with reports from other studies where patients suffer from out of pocket expenditure for immunosuppressant medication costs, rent, transportation, laboratory tests, and leisure, among others.[44, 45] Patients' willingness to resume transplant may be influenced by a lack of health literacy, misinformation from peers and other sources, and misconceptions about transplant.[45]

This study has tried to explore and present pertinent views of healthcare providers in the first renal transplant center in Ethiopia. Apart from unfolding common bottlenecks the center is facing from past to present, it will be used as a baseline for further investigation with other designs. This finding may also

offer other low income countries get an experience on establishing a new kidney transplant center. The study, on the other hand, does not include patients' perspectives and may overstate their actual experience. Furthermore, the fact that only qualitative aspects were considered and only a small number of key informants were included may have influenced the findings' transferability. Research, incorporating both providers and patients with quantitative estimation of predominant indicators, is warranted.

Conclusion

This study was planned to explore the experiences of implementing a renal transplant center from the providers' perspective. Accordingly, it was uncovered that a multitude of challenges were faced during and after the establishment of the first renal transplant center in Ethiopia. These included; gaps in organization and system planning, suppliers, personnel and capacity building, patients' capacity to afford costs, kidney donors and unmatched demand and supply. Providers pointed out that they discharge their responsibilities properly, and pay no attention to incentive packages. They also explained that renal transplantation would have all the outcomes related to economic, humanistic and clinical facets. The providers also suggested that stakeholders work together to improve the sustainability and accessibility of the service to patients of all backgrounds.

Abbreviations

BMI	Body Mass Index
CVD	Cardio Vascular Disease
RT	Renal Transplant
ESRD	End-Stage renal Disease
SPHMMC	Saint. Paul's Hospital Millennium Medical College
EC	Ethiopian Calendar
ETB	Ethiopian Birr
SCD	Standard Criteria Donor
CKD	Chronic Kidney Disease
ESKD	End-Stage Kidney Disease

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ORCID iD

Tariku Shimels https://orcid.org/0000-0001-5212-7597

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Author Biographies

Tariku Shimels, BPharm, BA, MSc, has a master's degree in Pharmaco-epidemiology and Social Pharmacy. He, currently, works as a Lecturer, and serves as a research coordinator at St. Paul's Hospital Millennium Medical College (SPHMMC), Ethiopia.

Abrham Getachew, BSc, MPH, MAPM, has a master's degree in Public Health and Project Management. He works as a Lecturer, and serves as a research coordinator at SPHMMC, Ethiopia.

Mekdim Tadesse, MD, is an assistant professor of Surgery, has a master's degree and a Sub-specialty training in kidney transplantation. He practices as a general (and transplant) surgeon at SPHMMC, Ethiopia.

Alison Thompson, PhD, is an associate professor in the Department of Pharmaceutical Sciences and the Department of Public Health Sciences at the University of Toronto, Canada. She is also a member of the University of Toronto Joint Centre for Bioethics. Her qualitative research is at the intersection of sociology of health and illness and public health ethics. Her research focuses on ethical issues in public health and in global health.