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ORIGINAL ARTICLE

MILESTONES OF RENAL REPLACEMENT THERAPY IN ETHIOPIA

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ABSTRACT

Introduction: End-stage kidney disease is a growing and leading cause of morbidity and mortality worldwide, thus the need of renal replacement therapy, defined as dialysis or kidney transplantation, is expected to rise. In Africa, renal replacement therapy was available as early as 1957, but initiation and maintenance of the service remains a major challenge for many parts of the continent.

Objectives: This study aimed to document the major historical milestones that were achieved to successfully establish renal replacement therapy in Ethiopia and the lesson learned from a historical point of view.

Methods: This study utilized mixed method of quantitative and qualitative study. Data was collected from June 1, 2018 – July 30, 2018. Data about the hemodialysis service in all parts of the country was collected by structured questionnaire, and a descriptive analysis was performed. The data about kidney transplant service was collected from the only transplant center in the country, St Paul's Hospital Millennium Medical College. The data was collected through in-depth interviews of key informants who have participated in the program any time from the inception of the transplant program until the successful establishment of the kidney transplant program.

Results: The first dialysis service started in 1980 at Tikur Anbessa Specialized Hospital but a maintenance dialysis service started in 2001 at St Gabriel Hospital. The expansion of the service was restricted to Addis Ababa until recently, and majority of the dialysis service was provided by the private sector. The first successful human kidney transplant happened in September 2015 at St Paul Hospital's Millennium Medical College. Four critical factors for the development successful and sustainable renal transplantation program at College were identified: commitment at individual professional level, careful comprehensive planning, supportive leadership, and strong collaborative relationships with foreign universities and institutions.

Conclusion: As the expansion of hemodialysis service is currently limited to the major cities, kidney transplantation offers an alternative for patients with chronic kidney disease. Even with limited economic resources, with committed physician and supportive leadership, transplant can be achievable in developing countries. Furthermore, the practice organ transplantation addresses some of the fundamental challenges of advanced healthcare delivery and can positively impact the entire health care system by advancing other hospital services.

Key words: Renal Replacement therapy, Dialysis, Kidney Transplant, Ethiopia, Historical milestone

INTRODUCTION

The burden of chronic kidney disease and end stage renal failure is becoming a major problem worldwide (1). In sub-Saharan Africa, 12-23% of adults are estimated to have chronic kidney disease (CKD), with the associated risk of developing end-stage renal disease (ESRD) and requiring renal replacement therapy (RRT) to live.

Several studies have shown that lack of access to dialysis results in the death of 2·3 million to 3·2 million people yearly (2). The history of dialysis dates back 1884 but successful dialysis achieved in 1940s when Dr. Willem Kolff invented the 1st hemodialysis machine in the Netherlands. Soon after it started the service reached Africa; South Africa and Egypt, in 1957 and 1958 respectively (3).

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However, as support was limited elsewhere, maintenance dialysis remained a challenge in most countries of the continent (2, 3). The history of organ transplantation began in the medicine of mythology. Chimeric gods and heroes appear in a number of cultures. Probably the first and most famous amongst them is Ganesha, a child upon whom the Hindu god Shiva xenografted an elephant head (4,5). Well known to theologians and historians is the legend of Saint Cosmas and Saint Damian. Their most famous miraculous exploit was the grafting of a leg from a recently deceased Ethiopian to replace a patient's ulcerated or cancerous leg, which was the subject of many paintings and illuminations (6,7).

The first successful experimental kidney transplant was carried out by Emerich Ullman on March 7, 1902, in Vienna, where he auto-transplanted a dog kidney from its normal position to the vessels of the neck; which resulted in some urine flow.(4) After several years of experimentation, Ukrainian surgeon Yurii Voronoy performed the first human deceased kidney transplant in 1933 by anastomosing the renal vessels to the right femoral vessels in a young woman who had acute renal failure due to mercury poisoning. However, as the donor's blood group was B and the recipient's blood group was O, the kidney never functioned and the recipient died after 2 days (4)

In 1954 at the Peter Bent Brigham Hospital in Boston, a special kidney transplant case would succeed and teach medicine a great deal. One of the lead surgeons, Dr. Joseph Murray, was awarded the Nobel Prize for his work in organ transplantation (2). The first organ transplant at our collaborating center, the University of Michigan (UM), was a kidney donated from one identical twin to the other, which was performed in 1964. In Africa, the first kidney transplant was performed in South Africa by Dr. Chris Barnard in October 1967. Later, the procedure was introduced and performed in different African countries such as Sudan, Egypt, Nigeria, Tunisia, Kenya, and Ghana. (7,8).

In Ethiopia, dialysis service started in 1980 (3) but there is no formal documentation of how and where the dialysis service started and the progress to date. Regarding the transplant, there was no solid organ transplant happened until St. Paul started it in 2015. This study is aimed to document the development of dialysis service in Ethiopia and to describe the major historical events that took place to come up with a successful kidney transplant program in the country.

METHODS

This study was conducted in Ethiopia, data collected from June 1, 2018 – July 30, 2018. Ethiopia is the 14th most populous countries in the world and the second most populous country in Africa, second only to Nigeria.

Ethiopia is a Federal Democratic Republic composed of nine national regional states: Tigray, Afar, Amhara, Oromia, Somali, Benishangul-Gumuz, Southern Nations Nationalities and People Region (SNNPR), Gambella and Harari, as well as two administrative states (Addis Ababa City Administration and Dire Dawa City Council).

The study design was a mixed type of quantitative and qualitative research. The quantitative study focused on the development and expansion of hemodialysis service in the country. The study included all dialysis centers in the country that have started providing dialysis service, irrespective of their patient load. The Data about dialysis service was collected with structured questionnaire, it included the name of the center, region where it is found, ownership (private, Government) how many dialysis machine it owns and type of service it provides (acute or maintenance hemodialysis), what are the common challenge they are facing. The data were collected by nephrology fellows and crosschecked by the Principal Investigator (PI). Additional in-depth interview was done; on how Ethiopia started dialysis service and progress to date, by the Principal investigator with Dr. Yewondwosen Tadesse a senior consultant nephrologist and ISN fellow, renal unit head at the Department of Internal Medicine, Addis Ababa University (AAU), College of Health Science, School of Medicine.

The data regarding kidney transplant services was collected from the only transplant center in the country, At the FDRE National Kidney transplant center which is under the auspices of St. Paul's Hospital Millennium Medical College. The data was collected by in depth interviews of key informants who have participated in the program any time from the inception of the transplant program until the successful establishment and progress of the kidney transplant program.

All interviews done by the PI. The study focused on the factors resulting in the establishment of sustainable kidney transplant services in Ethiopia. A thematic approach used for data analysis. Ethical clearance to conduct the study was received from the SPHMMC Institution Review Board (IRB). After describing the aim of the study and the possible risks and benefits, informed consent was obtained from the participants to collect data and to conduct the interviews.

Key informants were: Dr. Senait Fisseha, Professor of Obstetrics and Gynecology at the University of Michigan, leader of the University of Michigan - Ethiopia collaboration. Dr. Jeffery D Punch, Professor of Surgery and a lead transplant surgeon at the University of Michigan.

Dr. Fasika Mesfin, Associate Professor of Medicine and Medical Director of Kidney Transplantation, SUNY Downstate Medical Center, Brooklyn, Dr. Zerihun Abebe, Provost of SPHMMC during the transplant happened in Ethiopia, Dr. Berhane Redae, the Medical Service vice Provost of SPHMMC. Dr. Momina Muhammed, Nephrologist, founding director of the Ethiopian National kidney transplant center, Dr. Engida Abebe, Associate Professor and transplant fellow, SPHMMC. Dr. Tekleberhan Berhae, Assistant professor, General and Urology Surgeon, transplant fellow, SPHMMC, Dr. Mekdim Tadesse, Assistant professor, Transplant fellow, SPHMMC. Dr. Berhanu Worku, Assistant Professor, nephrology fellow, SPHMMC, Dr. Seifmichael Getachew, Assistant Professor and nephrology fellow, SPHMMC, and Leja Hamza, Associate professor, nephrology fellow, SPHMMC.

RESULTS

Historical Milestones of Dialysis Service in Ethiopia

Tikure Anbessa Specialized Hospital (TASH), the oldest but often pioneering medical institute in the country started providing hemodialysis in 1980.

Dr. Yewondwosen Tadesse, stated that “The late Professor Edemariam Tsega must be given credit for starting the first residency program in Ethiopia, organizing internal medicine into subspecialties and starting subspecialty services in many areas including nephrology.” In his statement he recalled that “The first dialysis, both hemodialysis and peritoneal dialysis, in Ethiopia were done in 1980 by the Cuban team led by Professor Alfonso Guerra from the Institute of Nephrology, Havana, Cuba.” Dr. Yewondwosen explained that the service continued since then even if there were interruptions for some time “The Renal Unit of the TASH continued to perform hemodialysis (HD) and peritoneal Dialysis (PD) whenever supplies were available from the time of its first procedures in 1980 to the present date. There were interruptions in the HD services from 1990 to 1999 as consumables could not be found for the first HD machines the unit owned, NIKKISO HD machines. In 1999 the hospital bought 2 B. Braun machines and over the years donations from various sources have kept the acute dialysis service the unit provides going.”

Table 1: Historical development of Hemodialysis service In Ethiopia, July 2018

No	Name of the center	Owner	Type of BD service (acute or Chronic BDD)	Year service started	Name of the center	Owner	Type of BD service (acute or chronic BD)	Year service started
Region :- Addis Ababa City Administration								
1	Tikur Anbessa specialized hospital	government	acute	1980	Tsigereda Dialysis Specialty Clinic	private	chronic	2014
2	St. Gabriel Hospital	private	both	2001	St. Yared Hospital	private	both**	2010
3	Bethel Teaching Hospital	private	both	2006	Zewditu Memorial Hospital	government	chronic	2016
4	St. Paul hospital's Millennium Medical College	government	Both	2013	Girum Hospital	private	both	2017
5	MABD Dialysis Specialty clinic	private	both	2013	St. Peter's TB Specialized Hospital	government	acute	2017
6	Sante Medical Center	private	both	2011	Addis Hiwot Hospital	private	both	2014
7	Tom Advanced Renal Care	private	chronic	2013	Mimlik Specialized Hospital	government	chronic	2017
8	Bethzatha General Hospital	private	both	2013	Aynalem Primary Hospital	private	both	2017
9	MCM Korean Hospital	private	both	2013	hallelujah general hospital	private	both	2017
10	Hayat hospital Tigray Region	private	both	2014	Dire Dawa City Administration Council Ddel Chora	Private	both	2016
1	Ayder Specialized Hospital/Mekele	government	both	2013	General Hospital Oromia Region			
	Amhara Region			1	Adama General Hospital	private	both	2013
1	Gambi Hospital	private	both	2014	Jimma University Hospital	government*	both	2016
2	Gondar University Hospital	government*	both	2017	Sothern Natrions nationalities and Peoples Region			
3	Felegehiwot Referral Hospital	government*	both	2015	Yanet Specialized Medical	Private	both	2014
4	Woldiya General Hospital	government	acute	2018	Hawassa University College	government*	both	2017

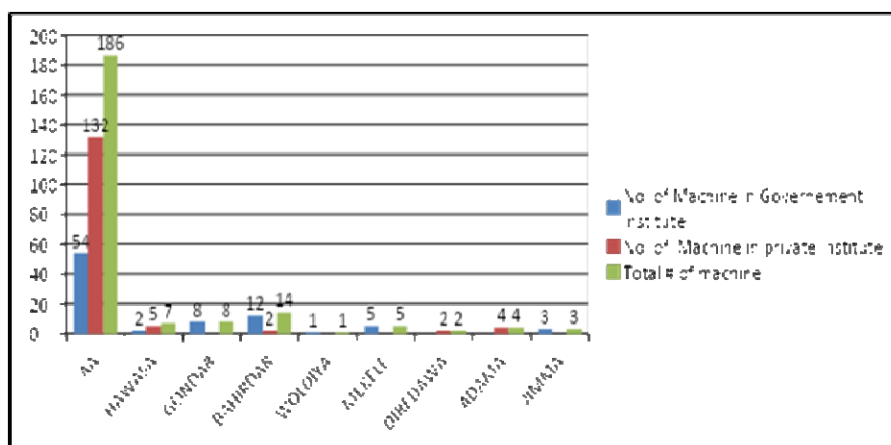
*public private partnership in government hospital

In Ethiopia maintenance dialysis started in a private center in 2001, St. Gabriel Hospital was the pioneers in the country to start providing maintenance dialysis. However no successful maintenance dialysis service was initiated at any government institute to date. The maintenance service provided in some of the government institute is through private public partnership (Table 1).

SPHMMC renal unit established by ISN fellow Dr. Momina Muhammed Ahmed in 2012. A year later, the unit started dialysis service limited to acute

kidney injury in collaboration with the Egyptian Government. The Egyptian Government provided six machines, consumables for certain period and supportive staffs at SPHMMC started providing acute dialysis officially in August 2013, and later the unit expanded its capacity and started maintenance dialysis as a bridge to kidney transplantation in early 2015.

Dialysis service growth was initially somewhat slow, but later erupted after the year 2013, when most of the dialysis center opened in the capital city Addis Ababa and few regional cities (Table 1).



The number of dialysis machines in government and private hospitals by city, Ethiopia , July 2018

Unfortunately, the growth was not evenly distributed throughout the country. As dialysis started at committed teaching institutes and private sectors, expansion initially remain in the capital city (Table 1). All service providers -be they government-supported or private owned - faced challenges, with the first and most important challenge shared by both the ability to obtain consumables for the dialysis. The private sector has the challenge of not making a profit from the service, which resulted in declining or closing services in some centers. The biggest challenge faced by the government is to pledge and convey the maintenance dialysis service at subsidized dialysis cost.

Historical milestones of Kidney Transplant

The first solid organ transplant occurred in September 2015, where the first three patients transplanted at the National Kidney Transplant Center. The surgery was led by renowned and highly respected transplant surgeon from the University of Michigan, Jeffery D Punch, working closely with four Ethiopian transplant fellows; Engida Abebe, Mahteme Bekele, Mekdim Tadesse, Teklebrehan Berhae, to establish local surgical expertise. Since then, 86 transplants have been performed, and the center has also expanded dialysis service from acute to maintenance dialysis as bridge to kidney transplant, from 6 to 32 hemodialysis chairs over the years (Table2).

The National Kidney Transplant Center was established and led by an Ethiopian nephrologist, Momina Muhammed , with the assistance of an experienced nephrologist from the USA.

The successful kidney transplant in 2015 is one of the major milestones in Ethiopia's medical history. The burden of chronic kidney disease is estimated to be huge in Africa in general, and in Ethiopia in particular. Thus, the need to for transplant service was undisputed.

These historical events happened at the country's young institution (SPHMMC), organized by several committed individuals, the Ministry of Health, the college management, and the University of Michigan collaborators. The interview of key informants at different level has revealed factors for the success of this huge mile stone of kidney transplant in the country.

These key factors are divided into four main themes, commitment at every level, bold leadership, Taking adequate time for planning or creating a sustainable system and strong collaboration with foreign university.

Table 2: Historical achievements of renal replacement therapy in St. Paul’s Hospital Millennium Medical College, July 2018

Year	Activity	Developments by July 2018
April 2013	Dialysis service Started with 6 machines, offering hemodialysis service for patients with acute kidney	32 dialysis Chairs (18 in the main hospital and 14 in the national kidney transplant center) Service expanded for Maintenance dialysis as a
April 2015	Simulation (three rounds laparoscopic donor nephrectomy and transplantation in a pig model)	Effectively used to test the center readiness for transplantation by September 2015
September 2015,	Kidney transplant the 1st 3 patients transplanted in September 2015, then 3 to 4 patients transplanted at roughly monthly intervals	- 86 live related kidney transplant has been performed Additionally, the center is now becoming the main hub for long-term care of patients transplanted else where
April 2014	Training of transplant fellows 4 transplant fellows enrolled in the training	All fellows completed their training in July 2018
April 2016	Nephrology fellowship started	Plan to enroll new fellows The first 3 senior fellows completed their training in July 2018 and 5 junior fellows are in their training

The choice to make St. Paul’s hospital a center of excellence in renal care made earlier in 2010. The Ethiopian diaspora, Dr. Fasika Mesfin Tedla, Medical Director of Kidney Transplantation, SUNY Downstate Medical Center, Brooklyn, stated that “*I began my involvement in the establishment of nephrology programs in May 2010 when the Ministry of Health requested the assistance of the Ethiopian North American Health Professionals Association (ENAHPA) with establishing a renal center. At that times the Ministry of Health had already identified St. Paul’s Hospital as the site of the future renal center.*”

The medical service vice provost Dr. Berhane Redae stated the reason why SPHMMC become transplant center “*The main reason that we were chosen to be a transplant center is the capacity we had in dialysis service and the committed staff in nephrology unit, surgical department, and the strong leadership that execute things on time.*”

Individual Commitment

The commitments of individuals are the driving force to start anything. It is well known that changes are the results of these driving forces.

It was no different when it came to transplant. When one see the level of commitment and eagerness to see the transplant happen, from the Provost and specialists, to the cleaners, one can make sure that the program will be a success. Everybody has been engaged in the design, re-innovation of the center, protocol development, procurements of supply and equipment to cleaning of the surface in preparation for the first transplant.

The lead transplant surgeon, prof. Jeffery D Punch, who has an impeccable input in the transplant program, expressed how he was impressed by the commitment of the Ethiopian physicians “*When I came to Ethiopia I found a group of young and enthusiastic surgeons and an expertly trained nephrologist. When I realized the quality of the physicians and how dedicated they were to the patients and their country, I thought that I can teach transplant to them and we can bring transplant to St. Paul, Ethiopia.*” The leader of the University of Michigan collaboration, Dr. Senait Fisseha, expressed the need of believing in a vision and committed to it.

“It is really very difficult to believe in a vision when you don’t have so many things, so it really took resilient and committed people with vision to make it happen. You cannot say we are in a poor country we don’t have the resource; when people are committed, set a goal and put a real achievable plan around it, anything is possible” Dr. Momina Muhammed Ahmed, who attended ISN fellowship in South Africa, returned to her home country to serve those who need her expertise. Her dedication and commitment was instrumental for the realization of transplant in Ethiopia. *She said that “The road was so bumpy but I never lost hope and never had a doubt on its realization because to achieve something requires faith, hard work, determination and dedication. All stakeholders, including our collaborators from University of Michigan, St. Paul Hospital Management team, MOH and local transplant team have all those qualities.”*

Dr Mekdim Tadesse, a transplant fellow expressed his commitment briefly *“transplant is my passion and I am committed to it , whatever it takes”* and Dr. Engida Abebe, the other transplant fellow said his commitment came from his motivation deep seated inside. *“I have been always thinking to contribute something to the advancement in medical practice in the country, I was very happy and committed to give whatever I can when the college offered me the chance to be part of transplant team.”*

Adequate time for preparation

This includes developing guideline, suitable infrastructure, defining work flow, training the staffs, making sure the availability of equipment, medications and functional laboratory. At the start, the lead transplant surgeon from the UM discussed with the Health Minister, he stated that the possibility of stating transplant in 3 to 6 months. But the preparation of this huge undertaking took around 30 months.

Dr. Zerihun Abebe ,who took over the responsibility of leading the college as provost after few months of planning to start the transplant said that *“Part of the reason why it took so long is, by the time we introduce that we are going to kick off kidney transplant very soon we have undermined or probably don’t understood the kind of facility, infrastructure, the medical equipment ,the enumerable supplies and most important of all the team of trained work force that kidney transplant required”*. The main reasons identified from the interviews were the program was new to the country; the procurement process was very much protracted, as it had been developed for other needs, and the infrastructure was somewhat limited.

The Medical service vice provost (MSVP), the director of the transplant center, the program manager, and all the surgical fellows expressed their serious engagement in the process of creating a sustainable system. At times, different leaders would go in person to see the construction of the building, the laboratory, the OR, and the dialysis ward, as well as lobbying the country Pharmaceuticals Fund and Supply Agency (PFSA), to obtain the needed immunosuppression or to appropriately expedite the procurement of medication and equipment.

Dr. Momina Muhammed, the founding director of the national kidney transplant center expressed her view why it took so long saying *“ Establishment of the program has taken around two and half years which were much more than we all expected. But it is for a great cause, our mission was to lay a good strong foundation, in every necessary segment the program required to make it sustainable. The major challenge was procuring items, and still remained unresolved challenge!”*

Prof. Senait said *“For me the fact that the transplant program is successfully continuing is not surprising at all--that is why it took more than 30 months to plan. If it was just to do the transplant only, we could have been doing the 1st month, the first year or so but it wasn’t to do one and stop, it was about developing a sustainable program.”*

The led transplant surgeon Dr. Jeffery said that, *“No one seems surprised it took so long, everyone seems committed. Everyone was working hard toward the goal; it was naivety from my part to think that this entire thing can happen in such a short time.”* Dr. Punch went on to say *“I was new to trying to do things in Africa and I didn’t understand African systems -- for example in purchasing they have to do a tender; if they didn’t get multiple suppliers at first they have to do retender--and these things took long times.”*

“The main challenge was to start from the scratch, there was no guideline, no trained professional (transplant surgeons, scrubs, ICU nurses, social workers), we had to purchase all equipment and consumables, we had to establish a laboratory of higher capacity”(Dr. Berhane Redae, Medical Service Vice Provost)

The planning of doing hand assisted laparoscopic donor nephrectomy partly contributed for delay to the start of the transplant. As it is technically very demanding, in a country where minimal invasive surgery is not a routine practice, getting suppliers of the equipment that enabled doing the procedure is challenging.

“As our main collaborator was the University of Michigan, we planned to start with the American standard of hand assisted laparoscopic procedures; the procurement of the complete set of this special equipment took several months. Later we shifted to an open donor nephrectomy, as the former was very expensive and less sustainable.” Dr. Tekleberhan Berhae

Supportive leadership

Huge projects like kidney transplant need unique requirements to start, so one of these key requirements is support from the highest level of health system. The experienced lead transplant surgeon who has been involved in the transplant from the inception capitalizes the need of involving high officials:

Prof. Jeffery expressed it “The only way you can safely start transplant is if you have support from the highest level, which is very critical. The transplant happened due to strong desire of the health minister for giving care to the people of Ethiopia”

Prof. Senait on her part acknowledged the role of the provost Dr. Zerihun Abebe “We had a lot of committed people who have the vision, but it just needed courageous leaders to take bold steps and take a risk, that leadership was there in St Paul and helped the transplant to happen.”

The fellows expressed the need of strong and bold leadership at St. Paul and Ministry of health as the second key factor for the success of a transplant program

Dr. Tekleberhan Berhae expressed the role of the management “The bold management and extraordinary leadership were instrumental for the transplant to happen in SPHMMC, the management especially the provost was exceptional in providing a support and delivering assistance, it was a kind of management which goes extra miles to achieve this historical milestone in the country. The Health Minister contribution was the most remarkable, he was following the condition very closely assigning a special representative, who came and attend every week meeting and extend his unreserved support.”

Dr. Engida Abebe said “We were blessed to have a committed hospital management and consistent support from Ministry of Health”

Dr. Zerihun Abebe, a kind of transformational leader and has brought a lot of changes in the institute almost changing the college into future medical city doesn't agree to be acknowledged or congratulated for what the management deed.

He stated “with army of surgeons and nephrologist ready on the ground ,huge number of patients waiting for the service ,with the support we had from Professor Senait and her army from University Of Michigan, the unreserved support from Ministry of health. It would have been surprising if we failed to do it .We should not be congratulated we should have to be questioned if we failed.

Strong Collaboration with foreign universities

Strong collaboration with foreign university who has people well experienced at international teaching was another key factor identified from the interview. The University of Michigan - Ethiopia collaboration is an example of a strong collaboration in terms of bringing sustainable change. This collaboration was started by an Ethiopian Diaspora, who living in Michigan, working as the leader of the Global women health. The collaboration started with women health, and later expanded to other areas. The leader of this strong collaboration, Dr. Senait Fiseeha emphasized that the collaboration should not be resource intensive or is not all about primarily financial support; it should be about continuous human engagement over a long period of time. That is why she has to travel every month from USA to Ethiopia to see how things were progressing. She described her experience of the collaboration:

“When the opportunity came to explore possibility of renal transplantation in Ethiopia; I reached out to the Minister and said I can reach out to my colleagues at the university of Michigan and at that time the role I saw was that; I can help in training the surgeons doing the donor nephrectomy through minimal invasive techniques, because I didn't want donor nephrectomy to be a deterring factor for the program” Dr. Senait emphasized on human engagement as main factor of strong collaboration “I think for me engagement of committed people is critical, I know resources, especially financial resource is essentials but not critical, it is really the human engagement over a long time and making a time for that face to face dialogue or conversation to make sure that people are staying within the vision or reminding we have a bigger vision.”

Dr. Fasika is the other diaspora who was actively engaged coming at least 3 times a year and supports the nephrology unit staying for one week. Besides that he used his professional network to bring other nephrologists to support the program at St. Paul, he stated that “I and Dr. Alan Leitchman contacted nephrologist colleagues who we know through our professional networks or had trained in the past.

Four other nephrologists volunteered to participate in the rotations to travel to St. Paul's. Since June 2015, I have been traveling to Ethiopia on 3-4 one-week trips per year. The main challenge of supporting programs through frequent trips overseas is reconciling the demands of your job with the time requirements of the project. In my own situation, my Department was willing to free a limited of my time for my work at St. Paul's. The remainder of my efforts came from my personal time and at my own expense. This could be sustainable only if the project's eventual goal is self-sufficiency, as was the case with St. Paul's. In addition, the availability of other volunteer nephrologists who could share the work was extremely helpful."

Prof. Jeffery also believed that a onetime mission, coming and doing surgery in group, doesn't work to transfer skills and develop a sustainable program. He was traveling almost every month to perform 3 to 4 transplant in a week. His commitment did not change, even after having a heart attack in the middle of the 5th mission. After recovering for a few months, he resumed travel every month to train the transplant fellows. He expressed the need of such collaboration:

"In the past medical mission or the so called medical partnership ,the people from the USA, Europe and Asia come to Africa they do the operation for period of time and go back; while that is good for the patients it doesn't help the country in developing its capacity and creating a sustainable system "

DISCUSSION

In 2010, 2.618 million people received RRT worldwide. The estimated number of patients needing RRT to be between 4.902 million in conservative model and 9.701 million in high-estimate model, suggesting that at least 2.284 million people might have died prematurely because RRT could not be accessed. The largest treatment gaps noted in low-income countries, particularly Africa (1). The opening of dialysis centers and their expansion in countries like Ethiopia will definitely narrow the gap observed in RRT. The expansion of the dialysis service remained in Addis Ababa, the capital of Ethiopia until recently showing serious issue of accessibility reflected in many African countries (9-11)

Marked improvements in early graft survival and long-term graft function have made kidney transplantation a more cost-effective alternative to dialysis. Thus renal transplantation has become the treatment of choice for most patients with end stage renal disease (ESRD) (9,10).

The barrier to universal transplantation includes economic limitation in resource poor country (10, 11, and 12). The practice of organ transplantation has now diffused across all income strata and has reached the populations of low-income Member States (12). Ethiopia is now one of those low income countries where transplantation is being performed.

Realistically, there is no question on the importance of resource but the experience from Ethiopian and other resource limited country proved that when people are committed set a goal and put a real achievable plan around it, anything is possible (11).

There is an important role for higher level management to play in terms of commitment to allocation of resources, proper oversight, and the creation of an appropriate normative and legislative environment in which transplantation can operate. Our study acknowledged this critical role of higher level leaders and organizational culture in the success of the transplant program (11,12).

Ethiopia in general, and SPHMMC in particular, are the proof of the benefit of long term medical training-based missions (13) The UM-SPMMC-Ethiopian Ministry of Health collaboration is a very good model of a long term relationship resulting in significant societal impact--where the continuous engagement of the volunteer transplant surgeons and nephrologists resulted in sustainable renal replacement program. The advantage of such model includes avoiding challenges of hands on training and brain-drain from Africa (13-15).

Conclusion: As the expansion of hemodialysis service is currently limited to the major cities, kidney transplantation offers an alternative for patients with CKD. Even with limited economic resources, with committed physician and hospital leadership, transplant can be achievable in developing countries. Furthermore, the practice organ transplantation addresses some of the fundamental challenges of advanced healthcare delivery and can positively impact the entire health care system by advancing other hospital services.

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Competing Interest:

The authors declare that this manuscript was approved by all authors in its current form and that no competing interest exists.

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