The Future of Kidney Transplant Care: Leveraging Telemedicine for Better Patient Outcomes

Libiya Poonely

College of Nursing, East Carolina University

Doctor of Nursing Practice

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Main Points

- Noncompliance is an increasing problem at the kidney transplant clinic where this project was conducted.
- Patients have valid reasons for no-shows and cancellations.
- Missed appointments lead to poor treatment outcomes and high healthcare costs (Russel et al., 2020).
- The project aims to reduce no-shows and cancellations among kidney transplant patients by using telemedicine as an alternative to in-person visits.
- Telemedicine is an excellent resource for transplant centers, as it allows them to provide health care remotely using electronic information and communication technologies (Hezer et al., 2024).
- This project supported IHI's Triple Aim initiatives (Lacagnina, 2018).

Background

Kidney transplantation is one of the treatment options that allows relatively normal kidney function and maintains a good quality of life for patients with end-stage kidney disease. Most transplant patients do not feel the need for routine follow-up visits, primarily because they are unaware of post-transplant complications such as cardiovascular complications, diabetes, high blood pressure, infections, and cancers from immunosuppressive drugs (Farouk & Rein, 2020). Additionally, work and family stress can contribute to compliance with follow-up appointments. Transplant patients must regularly take immunosuppressive medications to

prevent rejection of the transplanted kidney (Abbas et al., 2021). According to Russell et al. (2020), kidney transplant patients who do not take their immunosuppressive medications as prescribed have a poor prognosis and incur very high costs—more than $33,000 per patient in the three years following transplantation.

The Kidney Disease Improving Global Outcome (KDIGO) Initiative (2009) provides evidence-based guidelines for the care of kidney transplant patients to improve outcomes. For early detection and treatment of transplant complications, follow-up examinations and laboratory tests must be carried out at least every 2-3 months. Ma et al. (2022) presented two case reports of transplant failure during COVID-19 due to missed appointments and lack of medication adherence. The authors argue that appropriate follow-up plans would have prevented this transplant failure.

Purpose

Kidney transplant patients often miss and cancel their appointments for various reasons, leading to poor health outcomes and high healthcare costs. This project aims to use telemedicine as an alternative to reduce no-shows and cancellations in kidney transplant patients and promote better long-term patient outcomes.

Methodology and Analysis

This quality improvement project was conducted in a kidney transplant clinic led by a single provider. All kidney transplant patients scheduled for clinic follow-up were included in this study, irrespective of age, gender, and ethnicity. The study was conducted from January 8, 2024, to May 2, 2024, and lasted 17 weeks. Participants in this project included patients, a Doctor of Nursing Practice (DNP) student, and several clinic schedulers. The DNP student, the project lead, developed an algorithm for clinical schedulers to use when addressing no-shows

and cancellations. The algorithm listed specific instructions for both no-shows and cancellations. All patients who did not attend or cancel an appointment were offered a telephone visit as the first option and an in-person visit as the second option. Data including no-shows, cancellations, number of patients accepting telephone visits, and number of patients accepting in-person visits were collected daily and added to the project tracking tool. After the project, all collected data were analyzed using descriptive statistics for quantitative data and thematic analysis for qualitative data.

Results

All patients scheduled for the transplant clinic were included in the study. Telephone visits were offered to those who missed appointments or canceled them. While the aim was to provide telephone visits for all patients, some declined and insisted on in-person visits. There was no attrition in the study. During the study period, a total number of 117 patients were scheduled at the transplant clinic. Among these, 17 patients canceled their appointments, representing 15% of the total, and five patients did not show up, accounting for 4%. Consequently, the overall percentage of missed appointments was 19%. The project was successful, as all patients with no-shows and canceled appointments mostly accepted telephone visits, with a few opting for in-person appointments. Of the 17 cancellations, 15 patients accepted telephone visits, while two chose in-person visits. Additionally, two patients opted for in-person visits, and three accepted telephone visits out of the five no-shows. All patients received care during the study.

Strengths

Clinic schedulers strictly followed the algorithm and offered telephone consultations to all patients. The algorithm was easy to use as it listed the step-by-step process, including separate

processes for no-shows and cancellations. Patients who had difficulty keeping appointments due to family or work issues appreciated these efforts. The clinical provider was the DNP student, who was highly motivated to reach all patients and conduct telephone visits to avoid delays in patient care.

Limitations

A few patients did not return phone calls, which placed additional pressure on the clinic scheduler and the DNP student who was the provider at the clinic. Some scheduled phone appointments required a callback, leading to conflicts with other patient's appointments and further straining the provider's time and resources. Clinic schedulers were transferred to other clinics due to staffing issues, and it was difficult for the DNP student to train new clinic schedulers during the busy day. A satisfaction survey was not conducted after the study to formally document the outcome. However, all patients verbally confirmed their satisfaction at the point of care. Some patients had difficulty understanding instructions over the phone, requiring more hours reconciling medications, arranging labs, and multiple backup calls to educate patients and family members.

Implications

This project supported IHI's Triple Aim initiative (Lacagnina, 2018) by improving patient experience, as demonstrated by verbal confirmation at the point of care. The patients and their relatives were satisfied with the care. Another aspect of IHI's initiative is improving overall population health. Telemedicine offers a promising opportunity to prevent delays in care and promote the overall health of the transplant population. This objective was exemplified when a patient, unable to attend an in-person appointment due to work conflicts, converted to a telephone visit. During the call, laboratory tests were arranged, revealing a decline in kidney

function. Prompt investigation by the clinic provider identified tacrolimus toxicity as the cause. Timely intervention restored the patient's kidney function to baseline, showcasing the efficacy of telemedicine in managing and mitigating health issues.

Conclusion

Kidney transplantation is considered the best treatment option for eligible patients with end-stage renal disease (Abbas et al., 2021). Immunosuppressive drugs, particularly calcineurin inhibitors (CNIs), significantly increase the risk of cardiovascular disease in kidney transplant recipients and are directly related to post-transplant hypertension, dyslipidemia, and the development of diabetes (Farouk & Rein, 2020). The Kidney Disease Improving Global Outcome (KDIGO) Initiative (2009) suggested that kidney transplant patients require close follow-up care due to their compromised immune systems, side effects of anti-rejection medications, and graft failure due to toxic drug concentrations. Telemedicine or telephone visits are an effective alternative for patients who miss or cancel their appointments for various reasons. In this study, all patients received prompt follow-up examinations and laboratory tests when telephone visits were offered, resulting in good outcomes for patients and their family members.

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