Implementation of Web-Based Patient Education in Newly Transplanted Kidney Recipients

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California State University, Northern California Consortium Doctor of Nursing Practice

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IMPLEMENTATION OF WEB-BASED PATIENT EDUCATION IN NEWLY TRANSPLANTED KIDNEY RECIPIENTS

Tabo Mwikisa-Kelly

A doctoral project completed in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice in the Valley Foundation School of Nursing, San José State University

May 2023
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Dedication
I dedicate this Doctoral of Nursing Practice (DNP) Project to my husband, family, and friends who have supported me throughout my educational journey. I also dedicate this DNP project to my late father Moblex Mwikisa and my late mother-in-law, Doris Kelly. Special thanks go to my husband M. Kelly for always believing in me and for ensuring that I stayed healthy throughout the DNP program.

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I want to acknowledge my project chair, Dr. McKinnon, for always being resilient and positive even through some of the most challenging times of my DNP project, Dr. Walker-Vischer for your encouragement and support, Dr. Michael Francis for your mentorship, Lisa Hartmeyer for being a good role model. To my 9L family for your collaboration during my DNP journey.
Implementation of Web-Based Patient Education in Newly Transplanted Kidney Recipients

Tabo Mwikisa-Kelly, MSN, RN, CNEcl

Doctor of Nursing Practice Program

The Valley Foundation School of Nursing

San José State University

May 19th, 2023
Abstract

Kidney transplantation is the preferred treatment for patients suffering from kidney failure. It is a complex process that is intended to improve one’s quality of life by adhering to a lifelong treatment plan of immunosuppressant therapy. Therefore, it is essential for patients or their caregivers to have adequate knowledge to care for themselves following post-transplant, which can contribute to better patient outcomes. In a metropolitan Bay area hospital in Northern California, the current state of practice involves educating newly transplanted kidney recipients through face-to-face interactions with the patient and handing out a transplant booklet during their initial transplant hospital stay. Delivering patient education using this modality was met with some challenges, including limited time to provide effective patient teaching and assess patient understanding, lack of standardized patient education, and limitations in evaluating patient knowledge. This Quality Improvement project aimed to determine whether using a web-based patient education platform, Emmi, would assist with improving patient knowledge and follow-up care after three months post-transplant. A total of 45 patients were enrolled in the study, which involved watching a post-transplant education video and completing two surveys on health literacy and assessment of transplant knowledge respectively. The Quality Improvement project aim showed did not yield any noticeable impact on patient adherence and follow-up care. Future studies are necessary to address the subsequent challenges that may hinder the integration of technology-based patient education as part of delivering patient care.

Keywords: patient education, web-based patient education, information technology (IT) based patient education, kidney transplant recipients, kidney transplant.
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Implementation of Web-Based Patient Education in Newly Transplanted Kidney Recipients

According to the Centers for Disease Control and Prevention (CDC), an estimated 37 million people in the United States (US) are affected by chronic kidney disease (CKD) (CDC, 2021). CKD is commonly caused by diabetes and hypertension (CDC, 2021) and can progress into end-stage renal disease (ESRD). ESRD is the permanent loss of function of the native kidneys. In the US, nearly 786 thousand people currently live with ESRD, and the incidence of the disease continues to grow (National Institute of Diabetes and Digestive and Kidney Diseases [NIDDK], 2021).

The treatment required to sustain life in ESRD cases is renal replacement therapy through dialysis or kidney transplantation (United States Renal Data System [USRDS], 2021). Kidney transplantation is preferred over dialysis in treatment for ESRD because it improves quality of life, prolongs life expectancy, and is more cost-effective (Cheng et al., 2017; Abasi, Yazdani, Kiani, & Mahmoudzadeh-Sagheb, 2021; Kostro et al., 2016). On average, the life expectancy for a patient on dialysis is 5-10 years, and while on dialysis, the cost of care is estimated at 72 thousand dollars per year. In contrast, the average life expectancy following a transplant is between 12 and 20 years and the cost of care for these patients decreases to an estimated $24,977 per year (Saran et al., 2018).

A kidney for transplantation can be sourced from either a living donor or a cadaver. In 2020, 22,817 kidney transplants were performed and, as of August 2021, 90,201 people were awaiting a kidney transplant in the US (NIDDK, 2021). The waiting list for a kidney transplant continues to grow due to a shortage of available of kidneys, and the cost of transplantation (Mollazadeh & Maslakpak, 2018). It is therefore important to ensure the best possible health outcomes for kidney transplant patients.
The post-discharge commitments following kidney transplantation can be complex for patients due to a lifelong requirement to adhere to medication therapy, monitoring of labs, seeking medical attention, and making healthy life choices to maintain optimal graft function post-transplant (Ng et al., 2022). To prevent post-transplant complications and increase positive clinical outcomes throughout the life of the transplanted kidney, patient education pre- and post-transplantation are vital. Research has shown that providing patient education improves compliance with treatment, satisfaction with care, promotes a healthy lifestyle, and helps the patient to manage their own health and medical care (Fereidouni et al., 2019; Oyetunde & Akinmeye, 2015; Marcus, 2014). A lack of comprehensive patient education in kidney transplant recipients can lead to consequences such as non-adherence to treatment therapy, missing follow-up appointments, and graft rejection. All of which often lead to poor patient outcomes (Fereidouni et al., 2019; Kuwabara, Su, & Krauss, 2020).

**Gap in Practice**

Despite the significance that patient education has on achieving better health outcomes, delivering it to newly transplanted kidney recipients at the project site was becoming increasingly challenging for nurses due the following; not enough time to provide patient education, increasing job demands in nursing, inadequate staffing, a lack of standardized teaching, and varying level of experience amongst staff nurses. The increase in the need for further reinforcement of knowledge on adherence and follow-up care after post-transplant discharge, demonstrated the need to help improve on patient educational strategies in the in-patient setting for the newly transplanted kidney recipients.
Specific Aim

This quality improvement (QI) project was to determine whether the implementation of web-based patient education can improve patient knowledge and follow-up care in post-transplant kidney recipients, compared to traditional methods wherein handout booklets and face-to-face interactions are used. The intervention was conducted over a period of three months.

Delivery of Patient Education In-Patient

An in-patient hospital care setting offers opportunities for patient education regarding their health conditions as well as facilitation of patient lifestyle changes after discharge. Evidence shows that in-patient educational activities can lead to better patient outcomes and assist in reducing the risk of hospital readmissions (Dahodwala, Geransar, Babion, De Grood, & Sargious, 2018). However, there are limitations in the execution of in-patient hospital education including: the response to information provided to patients during hospitalization, limited time from staff to provide specialized teaching, and decreased duration of hospitalization (Dahodwala, Geransar, Babion, de Grood, & Sargious, 2018).

For kidney transplant patients, education during the initial transplant period is becoming increasingly challenging due to intensified work demands in nursing, inadequate staffing, a lack of standardized teaching and an increase in staff turnover rates (Mahdizadeh, Oskouie, Khanjari, & Parvizy, 2020). To assist with the mitigation of the identified challenges, well-designed educational tools could be utilized to maximize patient learning opportunities in hospital settings (Dahodwala, Geransar, Babion, de Grood, & Sargious, 2018). Ideally, the tools would be coupled with a personalized
multidisciplinary approach to educate patients and their families on every step of the transplant process, what to expect, and how to manage their health throughout the continuum of care (Mahdizadeh, Oskouie, Khanjari, & Parvizy, 2020; Mollazadeh, & Maslakpak, 2018). This can be achieved through the implementation of web-based video health education (Dahodwala, Geransar, Babion, de Grood, & Sargious, 2018). Compared to traditional patient education methods such as face-to-face interactions, group classes or handout booklets, web-based video patient education is a more flexible teaching approach because it is not limited to a physical space or medium. This allows the information to reach a larger audience- making it more cost-effective while maintaining consistent messaging (Dahodwala, Geransar, Babion, de Grood, & Sargious, 2018; Win, Hassan, Bonney & Inversion, 2015). Lastly, it also has the benefit of providing both visual and auditory information.

It is irrefutable that patients are increasingly seeking health information via the web, despite the potential for web-based education sources to have misleading health information (Schooley et al., 2020). When web-based patient education is presented in a comprehensible manner, it has proven to be effective in enhancing consumer knowledge, which promotes better health outcomes (Jia, Pang, & Liu, 2021; Win, Hassan, Bonney & Inversion, 2015). Hence, video-based patient education programs are becoming more favorable in healthcare (Win, Hassan, Bonney & Inversion, 2015). It is, however, worth noting that there is still a need for empirical evidence of the lasting effectiveness of web-based patient education (Tsapepas et al., 2018; Win, Hassan, Bonney & Inversion, 2015). Also worth noting is that web-based patient education tends to cater to younger patients more than older, adult patients (Dekkers, Melles, Groeneveld, & De Ridder, 2018).
Literature Review

A structured literature review was conducted to identify literature on patient education among kidney transplant recipients. The review also included other patient populations for comparison of research findings on the use of web-based patient education. Only peer-reviewed articles published in English between 2008 to 2021 were considered. Using different search techniques, a total of 8,757 articles were identified. Only 32 articles were chosen for this project. The databases searched included PUBMED, Cumulative Index of Nursing and Allied Health (CINHAL), Google Scholar, and Ovid journal database.

*Keywords included:* “patient education”, “web-based patient education”, “information technology (IT) based patient education”, “kidney transplant recipients”, “kidney transplant”, and “renal transplant”.

To recognize that implementing patient education in kidney transplant recipients (KTRs) using a web-based platform can improve knowledge and follow-up care, the literature findings had supporting evidence using the following themes: lack of knowledge, health literacy, adherence to medication regimen, and follow-up care.

Importance of Post-Transplant Knowledge in KTRs

Research studies have shown that little attention was focused on patient knowledge in post-kidney transplant recipients (Wang et al., 2021). Despite that, patient knowledge is at the core of every interface of care before and after kidney transplantation (Rosaasen et al., 2017). Patient knowledge is significantly relevant in the post-transplant setting, due to the level of information patients must learn to adhere to the complex, lifelong treatment regimen. A lack of relevant knowledge in KTRs can be fatal. For
example, a patient may fail to recognize the signs of organ rejection and ignore them (Mahdizadeh, Oskouie, Khanjari, & Parvizy, 2020; Urstad, Wahl, Moum, Engebretsen, & Andersen, 2021). In addition, lack of relevant patient knowledge has been associated with a lack of adherence to the treatment regimen, which often leads to rejection of the transplanted organ and eventually loss of graft function (Eslami et al., 2021; Tsapepas et al., 2018). Therefore, increasing knowledge in KTRs is crucial because it is central to care process outcomes.

Certain factors are known to contribute to the lack of relevant knowledge in post-KTRs. These include the following: lack of motivation in patients, the inability of the patient to commit to self-care post-transplant, low health literacy levels, and the lack of standardized patient education programs that are specific to KTRs (Mahdizadeh, Oskouie, Khanjari, & Parvizy, 2020). It has been observed that many kidney transplant centers lack patient education programs that are specific to KTRs. This has led to limited program effectiveness and contributed to poor patient outcomes (Mahdizadeh, et al, 2020). Care process outcomes include the following: medication adherence, self-care to prevent skin cancer, follow-up care, self-efficacy, and quality of life (Eslami et al., 2021).

Studies have shown that providing patient education that is effective and up to date is essential to improving patient knowledge in KTRs. This can be achieved using web-based patient education tools (Eslami et al., 2021; Win, Hassan, Bonney & Inverson, 2015). When considering web-based patient education as a method of delivering patient information, it is important to assess some of the barriers that are associated with it. These include the following: low computer literacy in patients (which makes it difficult for them to access information appropriately), unwillingness to use technology, and
poorly designed programs (Win, Hassan, Bonney & Inverson, 2015). These barriers can be overcome by using educational materials that specifically cater to the patients’ needs to help produce well-informed and knowledgeable consumers. These interventions lead to better patient outcomes (Win, Hassan, Bonney & Inverson, 2015).

Other risk factors that contribute to the lack of relevant knowledge in KDRs include the following: the lack of time to educate patients before discharge, communication barriers due to diversity in the patient population, lack of repetition of material, and lack of evaluation of post-transplant education to assess the effectiveness of patient’s comprehension. (Fereidain et al., 2019; Mahdizadeh, Oskouie, Khanjari, & Parvizy, 2020).

Despite these limitations, technology-based patient education was found to be more favorable compared to traditional methods of learning. Eslami et al (2021), conducted a systematic review whose aim was to determine the effectiveness of Information Technology (IT) based interventions on self-management in adult KTRs. As part of the investigation, 2,392 articles were retrieved with 30 outcomes evaluated. 24 of the outcomes were care processes while 6 of them were clinical. In 18 outcomes, IT-based interventions were determined to have “a statistically significant positive effect” (Eslami et al., 2021). This was split as 66% positive care process outcomes and 33% positive clinical outcomes. The study also assessed the impact that IT-based systems have on improving patient knowledge and increasing adherence to immunosuppressant therapy, which leads to better self-management and improved patient outcomes for KTRs. The review determined that IT-based interventions are effective in improving patient knowledge and self-management but that further evaluations were necessary to
establish the short- and long-term impact of IT-based interventions on patient outcomes (Eslami et al., 2021).

**Impact of Health Literacy on KTRs Patient Outcomes**

It is important to evaluate the impact that literacy has on health literacy and, therefore, on KTRs. Supporting evidence has shown that health literacy is associated with the ability for self-care management in KTRs (Chisholm-Burns, Spivey & Pickett, 2018). Low health literacy levels in KTRs can, thus cause barriers to successful kidney transplantation, often resulting in negative patient outcomes in KTRs (Dahl et al., 2020; Urstand et al., 2021). There are several contributing factors to low literacy levels. These are often socio-demographic factors, such as level of education, socioeconomic status, culture, environment, cognitive function, and the nature of caregivers (Chisholm-Burns, Spivey & Pickett, 2018).

It is essential for healthcare providers to identify which patients have low literacy levels and utilize individualized educational strategies that work for each patient. The use of technology-based education such as videos, self-management applications, and phone applications can provide enormous support in educating patients with low literacy levels in contrast with utilizing educational handouts (Bastable, 2017; Chisholm-Burns, Spivey & Pickett, 2018; Maroney et al., 2021).

In the literature review, there were findings on an education program about sun protection in KTRs. The program was developed in 2013, specifically for KTRs with low literacy levels in Urban Chicago at Northwestern Medicine and University of Illinois. Only 170 out of 522 KTRs participants were eligible for the study. For the project, tablets were used to display educational videos that were focused on improving
knowledge about skin cancer among people of color (Robinson et al., 2015). Following viewing of the educational videos, the research study intended to evaluate participants’ knowledge of the impact of sun protection, sun-protective intentions, and the use of sun protection in non-Hispanic white, Hispanic Latino, and non-Hispanic black KTRs (Robinson et al., 2015).

As part of the study, health literacy was assessed using a self-administered survey called the Short Test of Functional Health Literacy in Adults (S-TOFHLA), which contained 36 items and was timed for 7 minutes. The study showed that the use of the videos was more effective than the use of written materials in improving knowledge about skin cancer among KTRs with low literacy levels (Robinson et al., 2015). Studies suggest that technology-based information solutions are proving to be more appealing for addressing low literacy in patients with kidney disease (Dageforde & Cavanaugh, 2013).

Adherence to Medication Regimen

The maximization of graft function in KTRs highly depends on adherence to immunosuppression therapy (Cote et al., 2019). One serious problem faced by KTRs relates to poor knowledge about transplant medications. Patients often have shortened hospital stays and their post-operative phases may not be the most effective time to provide them with education on transplant medications and self-management after transplant. This may contribute to cognitive factors of feeling overwhelmed post-transplant (Mansell et al., 2019).

Inadequate knowledge about transplant medications can increase the risk of nonadherence and unnecessary hospitalizations which can often lead to poor long-term patient outcomes (Mansell et al., 2019). On average, 30–55% of KTRs are non-compliant
with their medication regimen. A lack of improvement in long-term outcomes contributes to 60% of late acute kidney rejections (Zhu et al., 2017). That is, there is loss of graft function because of noncompliance in patients. Risk factors are associated with financial strain, depression, and poor lifestyle choices (Maroney et al., 2021). Therefore, patient teaching on transplant medication is critical and requires a multidisciplinary effort and communication between the transplant team and the patient (Reese et al., 2017; Tsapepas et al., 2018).

Although the delivery of patient education is challenging, studies have shown that standardization of patient education using digital technology can have a significant impact on patient outcomes (Tsapepas et al., 2018). One retrospective study was conducted by Tsapepas et al., in a hospital setting in the United States between 2015 and 2017 with the goal of designing and implementing a simplified cutting-edge digital patient education tool, MRxEd. MRxEd was designed to provide patient education to solid organ transplant recipients (Tsapepas et al., 2018).

The digital patient education tool was implemented in tandem with early post-transplant in-person teaching sessions to help promote patient engagement. The combination of this teaching approach led to positive outcomes for both patients and healthcare providers. The study reported that using the innovative digital patient education tool delivered standardized teaching that was consistent among patients. Consequently, less time was spent on counseling patients because of the added benefit of having a streamlined workflow which resulted in patients attaining adequate comprehension and patient satisfaction (Tsepapas et al., 2018).
The limitations of the study were that it was an uncontrolled retrospective and a single-centered review. In addition, confounding variables such as maintenance regimens and dose adjustments were not captured. Another drawback was that the assessment questions were not validated for distinct knowledge constructs. The conclusion from the study is that integrating technology-based patient education provides opportunities for improved healthcare delivery models to patients (Tsepapas et al., 2018).

**Self-management After Kidney Transplantation**

Self-management refers to life-long autonomous activities that KTRs can adopt to improve their quality of life by adhering to the recommended transplant regimen. Self-management has a positive impact on patient adherence to treatment in KTRs (Ganjali et al., 2019). The goal is to promote changes in patients’ behaviors as they live with chronic conditions such as kidney transplantation (Ganjali et al., 2019; Jamieson et al., 2016). Web-based patient education can aid in the development of self-management through access to information at the patient’s convenience. Also, the use of web-based patient education can create opportunities for patients to be empowered with self-management. This means that patients can actively participate in their care compared to being passive learners (Jamieson et al., 2016).

**Follow-up Care**

Regular long-term follow-up with a transplant team is strongly recommended in KTRs because it assists with the early detection of complications (Chandraker et al., 2018). This ensures that patients adhere to treatment. Adherence can be evaluated through blood level monitoring and other tests such as renal biopsies (Neuberger, 2020). Nonadherence in follow-up care is a strong predictor of graft loss in kidney transplant
patients. There is an association between a lack of knowledge in adherence to follow-up care and low literacy levels in KTRs (Taber et al., 2017). Also, patients who are well-informed about their care can follow adjusted medication regimens that prevent them from making medication errors when they do not follow the prescribed treatment plan (Baker et al., 2017; Faba et al., 2018).

**Effectiveness of IT-Based Interventions in KTRs**

Even though the rapid development of technology has outpaced its research, there is sufficient evidence that supports the effectiveness of using IT-based interventions in educating kidney transplant patients (Eslami et al., 2021; Ganjali et al., 2018; Kim et al., 2020; Stribling & Richardson, 2016). The use of web-based education facilitates consistency with the delivery of information and education materials can also be replayed often by the patient (Dahodwala, Geransar, Babion, de Grood, & Sargious, 2018; Hansell et al., 2019). There are many reasons to favor web-based education for KTRs, but the clearest positive indicator appears to be the flexibility of using this medium.

There are a variety of technology-based methods that are currently being utilized to improve care delivery to kidney transplant patients without being dependent on traditional methods that constrain patients to a location, distance, and time frame. Examples include mobile health, telehealth devices, telehealth, and health information devices (Kuwabara, Su, & Krauss, 2020). The use of technology-based patient education in studies reported that it was more effective and came with higher patient satisfaction than traditional methods (Dekkers Tessa, 2018; Howell, et al., 2021). Patients also reported feeling more knowledgeable with the use of web-based education. Patients
reported in one study that the web-based education platform reminded them of the importance of optimal adherence to treatment plans (Howell et al., 2021).

In the kidney transplant population, patient outcomes are optimized through one’s ability to adhere to a complex and continuous self-management regimen. Therefore, patient education must be effective to help empower patients in managing their care and it is necessary to be innovative with educating patients (Mahdizadeh, Oskouie, Khanjari & Parvizy, 2020).

Eslami et al. (2021) determined that technological advancements have helped to create different methods in training patients because they facilitate increased patient knowledge and awareness and can even account for different learning styles. Eslami et al further demonstrated that the use of technology encourages patients to participate more by engaging in their care which leads to better patient outcomes. Technological advancements also improve the evaluation of patient engagement (Eslami et al., 2021).

**Framework**

Knowles’ adult learning theory is the conceptual framework that was used to guide the DNP project. The adult learning theory was originally a European concept that was adopted in the US by Malcolm Knowles- an American educator in the late 1960s. Knowles used the term “andragogy” to distinguish adult learning from children’s learning which is referred to as “pedagogy” (Knowles, 1984). The basic assumption of the adult learning theory is that adults become increasingly self-directed in their learning, and their life experiences serve as a resource for their own learning. Also, adults are inclined to learn based on life tasks or problems they encounter (Billings & Halstead, 2016).
The behaviors that shape adult learning are based on their level of maturity and life experiences as these provide them with the ability to perceive concepts. As adults are problem-centered, they feel the need to learn information that is useful and adaptable. Adults also need a learning environment that allows them to assume responsibility (Billings & Halstead, 2016). Other additional assumptive characteristics that describe adult learners are:

a. Adults experience life events at different levels.

b. Adults have different learning styles and personal learning preferences.

c. Adults have the tendency to be actively involved during the learning process.

d. Adults aspire to be connected and supported during the learning process.

e. The social context of responsibilities and life situations in adults affects how they learn (Billings & Halstead, 2016; Blevins, 2021).

There are four principles that define the adult learning theory, and these are:

i) Involvement of adult learners: this means that adults need to be involved in the planning and evaluation of their instruction (Billings & Halstead, 2016; Knowles, 1984). During the implementation phase of the DNP project, patients were encouraged to participate in their plan of care by being actively incorporated into their own learning experience. It was necessary to explain to the patient the expectations and importance of self-care management and follow-up care post-transplant. Patients received their education using an assigned web-based education video. Thereafter, a transplant nurse assisted with reinforcement of the information acquired to ensure that the patient understood the transplant teaching.
ii) Adult learners’ experience: this is the basis for learning and evolves from previous experiences including past mistakes (Billings & Halstead, 2016; Knowles, 1984). Gathering information about what the patient already knew helped to motivate them to invest in their learning and correct any misinformation. Also, it was necessary to determine the patient’s learning style. Since adult learners are task-oriented, patients were involved in their learning using the provided Emmi videos with the intent to minimize memorization.

iii) Problem-centered: adult learning stems from problems rather than content (Billings & Halstead, 2016; Knowles, 1984). Patients were given the opportunity to discover what was new in the information provided, and guidance was offered through reinforcement.

iv) Relevance and impact on learners’ lives: adults are interested in learning information that affects their lives immediately (Billings & Halstead, 2016; Knowles, 1984). The delivery of patient education using Emmi videos was intended to help increase knowledge and assist the patient with specific self-management care after discharge.

The findings from the literature review were congruent with Knowles’ adult learning theory because the principles that are associated with patient engagement can be applied to various teaching-learning situations in patient education. When adult learners actively participate in their care, they are likely to achieve better health outcomes. Applying the adult learning theory provides insight into how adults learn using the concept of andragogy and how to collaborate with patients to facilitate their learning. (Candela, Piacentine, Bobay, & Weiss, 2018: Hansell et al., 2019).
Methods

Project Design

This was a descriptive quantitative study. The focus was on assessing the effectiveness of implementing a web-based patient education video through the Emmi program to improve knowledge and follow-up care in de novo kidney transplant patients. The intervention integrated a measure of health literacy and patient assessment of knowledge: the BRIEF Health literacy screening tool and the Kidney Transplant Understanding tool, respectively.

The Institutional Review Board (IRB) at the project site determined that this was a Quality Improvement Project, and thus, required no oversight. Patients were given the opportunity to make autonomous decisions regarding their willingness to participate in the quality improvement project. Patients were free to withdraw from the QI study at any time if they wished to and would have no effect on their care while they were hospitalized. No form of payment was required from patients.

Setting

The quality improvement project was conducted at an academic medical center in Northern California. The facility evaluates over 1000 kidney transplant patients and performs close to 400 kidney transplant surgeries annually. The services at this facility include both inpatient and outpatient treatment for different specialties including renal transplant services. The QI project was implemented in an adult abdominal organ transplant unit, with a 35-bed capacity. For project timeline (see Appendix 1).

Participants

The participants were patients who received a de novo kidney transplant from either a living or deceased donor. The study included patients that spoke and understood
English or Spanish. To be eligible to participate in the study, patients had to be 18 years of age or older with no restrictions on their gender. Patients were identified using the electronic health record known as Apex, during their initial inpatient transplant hospitalization phase. The goal was to have at least 20 participants (n = 20). The targeted number of participants was appropriate for this QI project due to time constraints and the frequency with which kidney transplant surgeries are performed at the project site.

Also, a standardized verbal script was utilized to ask patients to participate in the quality improvement project (see Appendix 3). Patients were free to refuse to participate in the quality improvement project. Patients who relied on a caregiver for support were included in the study on the condition that the support person had the ability to assist with completing the assigned education task. The exclusion criteria to participate in the study were based on the following components: patients who opted not to participate in the study and patients that had a previous kidney transplant and were compliant with their past treatment regimen.

**Stakeholders**

The key stakeholders of the DNP project included the following: Patients and their caregivers, Clinical Nurse Informaticist Specialists, nursing leadership at the project site (including the unit director, project site mentor and adult chief nursing officer), the Emmi project site representative, transplant nurses and kidney transplant nurse practitioners at the project site and the transplant surgeons. Also, it is worth noting that the current leadership was open to new ideas and encouraged nurses to be more innovative as demonstrated in the supportive letter for the DNP QI project.
Procedures

Web-Based Educational Intervention

Engaging patients earlier in their in-patient hospitalization assists with improving the relevance of the project and the results may have a greater impact on clinical practice and patient outcomes (Win, Hassan, Bonney, & Iverson, 2015). A multimedia patient education platform which is also referred to as Emmi Educate or Emmi videos was the main tool used to educate KTRs for this DNP project. The evidence-based tool was developed by Wolter Kluwer, and it supports consumer health by engaging patients through educational videos specific to their health needs (Dekkers, Melles, Groeneveld, & de Ridder, 2018). Patients were encouraged to actively participate in their learning.

Transplant nurses were the only clinicians responsible for assigning the Emmi videos to patients that met the criteria. Nurses were encouraged but not required to participate in the QI project. Minimal training was required for transplant nurses to assign a video to a patient in their care that met the criteria to participate in the QI project. The Emmi® program vendor provided an activation tip sheet in the form of written instructions that served as a guide on assigning educational videos to the participant’s education profile in the electronic health record system, APEX (see Appendix 2).

This information was communicated through a presentation at a unit staff meeting and a staff development council meeting at the project site prior to implementing the QI project. Also, one-to-one sessions were provided to transplant nurses that were interested in participating in the quality improvement project. A step-by-step Emmi tip sheet was made available to the nurses on the transplant education board. Also, a copy was posted
in a file-sharing folder known as Box and was accessible to the superusers and the project mentor.

**Assigning of the Emmi Video**

Prior to patients watching the Emmi educational videos, they were encouraged to complete the BRIEF health literacy assessment questionnaire. Once the video was assigned to the patient’s educational profile, it automatically populated in the patient’s All KTRs enrolled in the study were assigned a post-transplant education video to watch. The video was instructive both to patients who received a transplant from a living donor and those who received one from a deceased donor. The kidney transplant video, titled “Living with a New Kidney,” included a series of three topics. These were:

1. After you get home.
2. Your immune system.
3. Life after transplant.

On average, the watch time for the video was 20 minutes without being paused. After the patient had the opportunity to watch the Emmi video, a transplant nurse was responsible for following up by reinforcing the patient’s understanding and answering any further questions the patient may have following the education session. The link was available for patients to access at home after discharge for up to 30 days.

**Measures**

**Assessment of Health Literacy**

Participants who agreed to be in the study were asked to complete a questionnaire to identify their health literacy level using the BRIEF screening tool (Haun et al., 2012). Participants were encouraged to complete the survey before watching the Emmi video.
The purpose of conducting the health literacy screening was to identify patients that may have required additional educational resources (Ylitalo et al., 2018). Also, the questionnaire determined whether the patient had been exposed to any health information.

The BRIEF health literacy screening tool consisted of four questions which had five possible answers: 1. Always; 2. Often; 3. Sometimes; 4. Occasionally; 5. Never.

The questions were as follows:

1. How often do you have someone help you read materials?
2. How often do you have problems learning about a medical condition because of difficulty understanding written information?
3. How often do you have a problem understanding what’s told to you about your medical condition?

**Kidney Transplant Understanding Tool (K-TUT)**

The patient’s knowledge obtained from listening to and watching the videos was measured using the Kidney Transplant Understanding Tool [K-TUT] (Rosaasen, Taylor, Blackburn, Mainra, Shoker & Mansell, 2017). The scoring tool was in the form of a Qualtrics™ survey with up to 22 true or false questions. Each question that was answered correctly received a point that was totaled to a maximum core of 69. Patients were informed that their responses were confidential and would have no effect on the care they received (Rosaasen, Taylor, Blackburn, Mainra, Shoker & Mansell, 2017). Permission to use both tools was obtained from the original authors (See appendices 6 and 7).
Adherence in Newly Transplanted Kidney Recipients 3 Months Post-Discharge

The outcome measure after implementation of the QI project was to determine whether there would be an improvement in adherence and follow-up care in newly transplanted kidney recipients three months after the initial post-transplant phase. There was a three-month comparison of data before and after the implementation of the quality improvement project.

Data Collection

The DNP student was responsible for collecting all the data generated from the patients’ activities. Data was collected from the units’ specific Emmi® program monthly reports and the post-surveys completed by the patients from the BRIEF health literacy screening tool and K-TUT questionnaire. The BRIEF and K-TUT post-surveys were collected using generated QR codes from the program Qualtrics™. Patients also received a post-evaluation survey directly from the Emmi program after watching the video which the patient could opt to complete at a time convenient to them. It was necessary to coordinate with the vendor from the Emmi program to ensure data on patients’ perspectives on the transplant education videos was collected monthly for the duration of the project.

Data Analysis

Intellectus™ Statistical software was used to analyze the data. A quantitative descriptive analysis was used to evaluate data utilization patterns that measured central tendencies which included means and frequencies. A data utilization monthly report through the Emmi program was provided during the implementation phase. A combination of data from different sources such as de-identified electronic medical
records, patient surveys, and the Emmi portal helped drive the project. Data cleaning and data normalization were included in the project to avoid duplication and to assist with the organization of the databases that contained results from the study.

Confidentiality and Data Security

To help minimize any risk exposures, no identifiable data was collected from the patients. The patient’s health information remained anonymous. The data collected was from the aggregated metrics which contained basic demographic descriptors such as age and preferred language. Data collected from the quality improvement project was kept in digital format using the project’s site secure web-based data storage program known as Box. Box is an encrypted computer file that is password-protected that contains a Health Insurance Portability Patient Act (HIPAA) compliant folder that protects patients’ health information. All data will be destroyed three years following the completion of the quality improvement project.

Risks and Benefits

This QI project may have directly benefited the kidney transplant program by adding more value to the implementation of patient education with the intent to improve processes using an evidence-based approach. Also, it may or may not have benefited patients that participated in the program. The benefit was that patients were more engaged in their learning, which may have contributed to better patient outcomes. There were no identified risk factors that may have affected the patients aside from possible compromises in their confidentiality and privacy through access to their health information when assigning them the Emmi® educational videos.
Costs

No additional cost was needed with any devices needed for patients to watch the Emmi ® video. The direct costs identified, such as salaries and training for the nurses were in-kind through the organization where the project took place. Other costs outlined in the estimated budget included expenses for the statistician, travel to the project site and indirect costs incurred by the DNP student for lamination and paper to print out the QR codes (See appendix 5).

Results

Demographics

In total, 45 participants were enrolled in the QI project. The number of participants that watched the assigned Emmi® educational video to completion was (n = 27). Of the 27 participants, only (n = 17) were accounted for in the institution (project site) Apex database as they were enrolled through the Electronic Health Record and MyChart. The most frequently observed age of all the participants was 50.

BRIEF Health Literacy Screening

Of the 45 patients enrolled in the QI project, there was a total of (n = 13) patients that completed the survey, which equaled a response rate of 29%. The most frequently observed category from the respondents were identified as marginal for health literacy (n = 10, 76.92%) with a mean score of 13.23 (Intellectus™ Statistics, 2019). See Tables 1 and 2.
### Table 1

Frequency Table for Survey Responses Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1: How often do you have someone help you read hospital materials?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>4</td>
<td>30.77</td>
</tr>
<tr>
<td>Often</td>
<td>1</td>
<td>7.69</td>
</tr>
<tr>
<td>Sometimes</td>
<td>2</td>
<td>15.38</td>
</tr>
<tr>
<td>Occasionally</td>
<td>2</td>
<td>15.38</td>
</tr>
<tr>
<td>Never</td>
<td>4</td>
<td>30.77</td>
</tr>
<tr>
<td>Q2: How often do you have problems learning about your medical condition because of difficulty understanding written information?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td>3</td>
<td>23.08</td>
</tr>
<tr>
<td>Occasionally</td>
<td>2</td>
<td>15.38</td>
</tr>
<tr>
<td>Never</td>
<td>8</td>
<td>61.54</td>
</tr>
<tr>
<td>Q3: How often do you have a problem understanding what is told to you about your medical condition?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td>1</td>
<td>7.69</td>
</tr>
<tr>
<td>Occasionally</td>
<td>4</td>
<td>30.77</td>
</tr>
<tr>
<td>Never</td>
<td>8</td>
<td>61.54</td>
</tr>
<tr>
<td>Q4: How confident are you in filling out medical forms by yourself?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Not at all  8  61.54  
A little bit  3  23.08  
Somewhat  1  7.69  
Quite a bit  1  7.69  
Health literacy level  
Inadequate  3  23.08  
Marginal  10  76.92  

*Note:* Most participants were identified as marginal for health literacy ($n = 10, 76.92$)

Total scores on the BRIEF health literacy screening ranged from 9.00 to 16.00, with $M = 13.23$ and $SD = 2.31$. The summary statistics can be found in Table 2.

**Table 2**

Summary Statistics for BRIEF Total Scores

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRIEF Total scores</td>
<td>13</td>
<td>9.00</td>
<td>16.00</td>
<td>13.23</td>
<td>2.31</td>
</tr>
</tbody>
</table>

**Kidney Transplant Understanding Tool (K-TUT)**

Of the 45 participants enrolled in the QI project, there was a total of 9 responses for the K-TUT survey. All responses were only in English. The most frequently observed category of participants was female ($n = 5, 5.56\%$). Scores on the Kidney Transplant Understanding Tool (K-TUT) ranged from 17.00 to 65.00, with $M = 53.56$ and $SD = 15.63$. (Intellectus Statistics, 2022). The summary statistics for the K-TUT are presented in Table 3.
Table 3
Summary Statistics for K-TUT Responses

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-TUT scores</td>
<td>9</td>
<td>17.00</td>
<td>65.00</td>
<td>53.56</td>
<td>15.63</td>
</tr>
</tbody>
</table>

**Patient adherence 3 months post the QI Intervention**

The only measurable data point on patient adherence for 3 months post-QI intervention was on follow-up appointments. Medication refills, social work referrals, and self-reports on adherence to medications were unobtainable as these results are usually written as free text in the patient’s notes. To assess differences in the proportion of no-show appointments, a series of two-proportion z-tests were utilized for analysis. Two points of comparison were conducted: June 2022 through September 2022 (preintervention), and December 2022 through April 2023 (post-intervention).

**Preintervention vs Postintervention Period**

The result of the two proportions z-test for the rates of no-show appointments did demonstrate a sizable change between the preintervention and postintervention period. The proportion of no-show appointments increased from 1.6% to 3.8%. These results were inclusive of all scheduled appointments in the outpatient setting for kidney transplant recipients. Table 4 presents the results of the two sample proportions z-test for no-show appointments between the pretest and posttest.
Table 4

Two Proportions z-Test for the Proportion of No-Show Appointments between the Pretest and Posttest

<table>
<thead>
<tr>
<th>Samples</th>
<th>No-show appointments</th>
<th>n</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preintervention (June 2022 to September 2022)</td>
<td>10</td>
<td>625</td>
<td>.016</td>
</tr>
<tr>
<td>Postintervention (December 2022 to April 2023)</td>
<td>53</td>
<td>1399</td>
<td>.038</td>
</tr>
</tbody>
</table>

*Note. z = -3.06, p = .002*

**Discussion**

**Summary**

This was the first time that the Emmi program was utilized to provide patient education to newly transplanted kidney recipients in the inpatient hospital setting at the project site. Newly transplanted kidney recipients had the most assigned Emmi videos at the project site within the 3 months that the project was implemented. Patients were receptive to utilizing this modality for receiving post-transplant education as evidenced by the willingness to participate in the QI improvement project. However, this did not mean that all the enrolled participants watched the assigned education video to completion.

The results of this QI suggest that the use of web-based patient education is feasible in promoting patient engagement and standardized patient education as supported
by the findings from the literature review (Tsepapas et al., 2018). However, it would have been ideal to have a more streamlined plan on how to incorporate the web-based learning activity with routine patient care. Also, all the enrolled participants in the study preferred to engage in the learning activity using their mobile device rather than the hospital portable computer that was offered. All participants received the same information in the educational video as part of their post-transplant education. Although, some patients reported that the assigned Emmi® video was easy to follow although they would have preferred to have many graphics. To capture data on health literacy and assessment of post-transplant knowledge, it was beneficial to have questionnaires through Qualtrics™. This meant that patients had to be provided with two additional QR codes besides the 11-digit access number to the Emmi video.

The transplant nurses at the project site expressed that the process of assigning the Emmi patient education videos was confusing to execute. To simplify the process, a QR code that was linked straight to the video was generated by the Emmi project site representative. The disadvantage of this approach was that patients’ data (n = 10) was not accounted for in the institution’s database as they were not registered through MyChart. Although, every patient that used the QR code to access the Emmi video watched the post-transplant video in its entirety.

It was further determined that the Emmi patient education videos could have been pre-assigned to help ease the process, although the clinicians would have still needed to inform patients to access the transplant educational video patient through the MyChart patient portal or the Emmi Educate link. It was also necessary to reinforce patient teaching after the patients finished watching the video.
Interpretation

After evaluating the approach used to implement the project, incorporating the BRIEF health literacy survey and the K-TUT would have been more effective if the results were shared with all the participants that completed the survey as this would have facilitated better reinforcement of teaching points based on patient responses. Patients’ responses in the surveys did suggest that there were some knowledge gaps that would have required some clarification. During the initial in-patient transplant hospitalization, patients asked for permission to complete the K-TUT after discharge. Mainly because they reported not having enough time to complete the surveys due to the overwhelming post-transplant education or information from various interdisciplinary teams i.e., pharmacists and nutritionists, and social work consultation.

As suggested by the developer of K-TUT this tool would be ideal to utilize in a clinic setting (Rosaasen et al., 2017). The BRIEF health literacy screening tool was a much shorter survey and much easier tool to use compared to the K-TUT, although there were nurses that reported not fully understanding their role in accessing health literacy. It was observed that all patients enrolled in the study preferred to use their personal mobile device rather than the hospital portable computer that was offered. Some patients reported that the assigned Emmi® video was easy to follow although it did not have many graphics. It is worth noting that the video was created to cater to multiple users across various healthcare settings. The results of this QI project suggest that the use of web-based patient education is feasible in promoting patient engagement and standardized patient education as evidenced by the findings from the literature review.
Limitations

The quick turnaround time for a patient’s initial post-transplant hospital stay required the DNP student to constantly ensure that patients that met the criteria were enrolled in a timely manner before being discharged from the hospital. This called for a collaborative effort with charge nurses and identified super users to ensure that participants were identified and enrolled for the QI intervention. Not all patients were able to watch the Emmi® video whilst inpatient as intended although they were provided with access information along with their discharge instruction.

A few components in the post-transplant Emmi video needed clarification when providing patients with instructions. This was mainly because of the variation in standards of care at the project site compared to other facilities that utilize the same post-transplant educational video. For example, giving patients aspirin for pain management versus giving them acetaminophen. Also, there were too many unnecessary steps in the QI process that could have been more streamlined. This could have contributed to less patient participation with completing the assigned tasks as they were not required to. Considering that the patient population is diverse, having the educational video only in English and Spanish another may have affected the number of enrolled participants in the QI project.

Barriers Encountered

There were some technical difficulties with the Qualtrics™ program which prevented participants from accessing the surveys. As a result, (n = 4) patients were unable to complete the questionnaires as they had already been discharged and had no access to the newly generated QR codes. This required the DNP student to generate new
QR code. The process of obtaining the data on patient adherence 3 months following the intervention from the project site was met with challenges due to the complexity with organizational structure.

**Implications for Nursing**

As nurses, the need to acknowledge that it is essential to identify which patients have low health literacy levels and utilize individualized educational strategies that work for each patient to help with better patient outcomes. This warrants further exploration as it may assist with addressing nonadherence in organ transplant patients. Also, nursing needs to evolve its use of technology with patient education by utilizing it in effective ways that are beneficial to patients (Booth et al., 2021).

**Conclusion**

Despite that the specific aim of the QI project did not yield any noticeable change on patient adherence and follow-up care, the utilization of web-based patient education was welcomed by the transplant nurses at the project site. Future studies are necessary on addressing the subsequent challenges that may hinder the integration of technology-based patient education as part of delivering patient care. Although, this may require a more collaborative effort amongst the various interdisciplinary teams to achieve that goal.

**Recommendations**

Expand on measurable outcomes that are related to post-transplant patient adherence. Example, tracking of medication refills, social work referrals related to nonadherence in post-kidney transplant patients and association of lab values with adherence to medication regimen. Lastly, the assessment of patient’s knowledge in
Kidney Transplant Patients should be further explored using valid measurable tools like the Kidney Transplant Understanding Tool.
References


https://doi.org/10.1080/10810730.2012.712615


https://doi.org/10.1097/TXD.0000000000001256


https://doi.org/10.1136/jim-2016-000265
**Appendix 1**

**DNP Project Timeline**

*Goal: Implementation of Web-Based Patient Education in Kidney Transplant Recipients*

<table>
<thead>
<tr>
<th>MO</th>
<th>01/2021-12/2021</th>
<th>01/2022-05/2022</th>
<th>06/2022-08/2022</th>
<th>08/2022-12/2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTHS</td>
<td>01/2021-12/2021</td>
<td>01/2022-05/2022</td>
<td>06/2022-08/2022</td>
<td>08/2022-12/2022</td>
</tr>
</tbody>
</table>

**TASKS**

- Preparation and planning
  - Define purpose of QI project
  - Design practice change
  - Complete critical appraisal of literature

- Design of practice change
- Submit project proposal
- Finalization of project proposal
- Defend project
- Approval to progress with project
Briefing with DNP Team
IRB Application
Collect baseline data
Prepare project team
Implementation of Project
Data collect/Analysis
Report on findings
Integration of project
Finalization of QI DNP project
Oral defense
Filing of project and manuscript
Graduation
Appendix 2

Emmi Tip-Sheet

Emmi is an educational tool to assist patients with chronic disease management, informed consent, and patient decision-making around medical procedures. Emmi videos are available in ApeX and can be assigned to patients. The specific video(s) issued by staff to patients is determined by the Unit’s leadership team. Provider orders are NOT needed to issue these videos. Emmi Videos: appeal to both auditory and visual learners, are written at a 5th grade reading level, enable providers to track the education of their patients, and are available in English and Spanish.

The Big Picture

Emmi integrates with ApeX and MyChart. Education modules are assigned to patients and links are sent to the patient’s MyChart. This tip sheet explains the Apex workflows in the red box.
Apex Workflow for Inpatient RNs

1. Go to the Education Activity.
On the Education tab, click Add Title in lower left.

Type “Educational Videos” and click Accept.
Next, select **Add Point**

1. **Search for the desired video topic.**
2. **Select appropriate title to indicate where to place the new point and click Accept.**
<table>
<thead>
<tr>
<th>Title/Topic/Point Name</th>
<th>Title/Topic/Point ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMMI VIDEO: DIABETES - CHECKING YOUR BLOOD GLUCOSE</td>
<td>304000381</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES - FOOT CARE</td>
<td>304000382</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES - INJECTING INSULIN</td>
<td>304000383</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES - INJECTING INSULIN PEN</td>
<td>304000384</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES - SMOKING</td>
<td>304000385</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES ALERT - HIGH A1C RESULT</td>
<td>304000386</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES ALERT - HIGH BLOOD PRESS</td>
<td>304000387</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES ALERT - MISSED PRESCR</td>
<td>304000388</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES ALERT - OVERDUE FOR A...</td>
<td>304000389</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES ALERT - TEST STRIPS NO...</td>
<td>304000400</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES EYE EXAM</td>
<td>304000401</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES TYPE 2</td>
<td>304000402</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES CARBOHYDRATE COUNT</td>
<td>304000403</td>
</tr>
<tr>
<td>EMMI VIDEO: DIABETES NUTRITION AND HEALTH</td>
<td>304000404</td>
</tr>
<tr>
<td>EMMI VIDEO: GESTATIONAL DIABETES</td>
<td>304000426</td>
</tr>
</tbody>
</table>
The Emmi Video is now part of the patient’s education record.

The video assignment will also appear on the Patient’s After Visit Summary (AVS).

Frequently Asked Questions

Emmi Education Videos

HAS MYCHART:
Your Healthcare Provider has prescribed an Emmi program for you. This program gives you accurate, easy-to-understand information about your health when you need it most.

Please access your MyChart account for details on accessing this content.

If you have a question about your health or procedure, call your healthcare provider directly.

Need help with your Emmi program?

Go to www.startemmi.com/instructions.html or contact us at support@emmisolutions.com or 888-294-3684

How do I know if the patient has viewed the educational video? Assigned:

Viewed:

What do I do if the patient was assigned the wrong video?

Users can delete videos that were assigned in error. (Note: you must also let the patient know via MyChart message.)

1. Select the video that you want to delete.
2. Click Delete button.

3. The Delete Education notification will open. Click Delete Everything Selected.

4. Notify patient that the video was entered in error.

Once the patient views the video, who resolves the teaching activity? ***Department should be resolving the videos. Is there a list of all the Emmi videos available? ***Yes, list posted on Knowledge Bank, link here.
Appendix 3

Verbal Consent Script

Hello, my name is ____ from the (Name of Project Site).

1. I’d like to ask you to participate in a quality improvement project which will use a video-based program to help teach you how to care for yourself after you are discharged from the hospital after your kidney transplant.

2. If you agree to be part of this quality improvement project, we will ask you to complete two questionnaires that will help us to know if you understand the information about your health and understanding the information that is in the education video. The study will take about 40 minutes to 1 hour to complete. We will keep all your information confidential and unidentifiable.

3. Do you have any questions about the study?

4. Would you like to participate?

5. If you have questions about this quality improvement project in the future, you can contact the kidney transplant team.
Appendix 4

Citi Training Certificate

Tabo Mwikisa-Kelly

Has completed the following CITI Program course:

Basic/Refresher Course - Human Subjects Research
(Curriculum Group)

Human Subjects Protection Training
(Course Learner Group)

1 - Stage 1
(Stage)

Under requirements set by:

University of California, San Francisco

Verify at www.citiprogram.org/verify?w02816ec6-b28a-4a0b-83ac-afbc8b7f2de1d-49904745
## Appendix 5
### Budget

<table>
<thead>
<tr>
<th>Budget Item</th>
<th>Description</th>
<th>Estimated cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct cost</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Salaries for project development and implementation.</strong></td>
<td>$75/hour x 235 hours ($17,625 in kind)</td>
<td>$17,625</td>
</tr>
<tr>
<td><strong>Training – superusers and resource nurses</strong></td>
<td>($75/hours x 15 minutes) x 5 nurses in-kind.</td>
<td>$94</td>
</tr>
<tr>
<td><strong>Statistician</strong></td>
<td>$500</td>
<td>$500</td>
</tr>
<tr>
<td><strong>Laptops for patient use</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Software for patient videos</strong></td>
<td>$0 (hospital has contract w/vendor)</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Travel to the project site</strong></td>
<td>$15 x 13 weeks</td>
<td>$195</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td></td>
<td>$18,414</td>
</tr>
<tr>
<td><strong>Indirect cost</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Office supplies (paper, lamination)</strong></td>
<td>$30</td>
<td>$30</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td></td>
<td>$18,444</td>
</tr>
</tbody>
</table>
Appendix 6
Permission to Use the Kidney Transplant Understanding Tool

SJSU

Permission to Use the K-TUT
Mansell, Holly <holly.mansell@usask.ca>
To: Tabo Mwikisa-Kelly <tabo.mwikisa-kelly@sjsu.edu>

Tue, Jun 7, 2022 at 9:20 AM

Hello Tabo,

Thank you for your interest in our knowledge tool. Please find attached the KUT and scoring tool. You have permission to use the tool in your research. We ask that you please kindly cite our manuscript which describes the development process and forward any resulting publications from your work for our records.

Best of luck with your project.

Holly

---

Holly Mansell, BSc, PharmD
Associate Professor
College of Pharmacy & Nutrition
Office: E3152 – Health Sciences Building
Phone: (306) 966-1512

From: Tabo Mwikisa-Kelly <tabo.mwikisa-kelly@sjsu.edu>
Date: Monday, June 6, 2022 at 11:38 PM
To: Mansell, Holly <holly.mansell@usask.ca>
Subject: Permission to Use the K-TUT
Appendix 7

Permission to Use Brief Health Literacy Screening Tool

Permission to Use BRIEF Health Literacy Screening Tool

Haun, Jolie N. <Jolie.Haun@va.gov>
To: Tabo Mwikisa-Kelly <tabo.mwikisa-kelly@sjsu.edu>

Fri, Jun 10, 2022 at 2:59 PM

Greetings

BRIEF Health Literacy Screening Tool is an open access resource available for research and practice.
You are welcome to use the tool for your efforts. We only ask that you cite our original research if you present or publish your findings.

Thank you and good luck in your endeavors,
Jolie
[Contact information]