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Living Organ Video Educated Donors Program for Kidney Transplant-eligible African Americans to Approach Potential Donors: A Proof of Concept

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Background. The purpose of the Living Organ Video Educated Donors (LOVED) program is to address living donor kidney transplantation (LDKT) disparities in African Americans who experience half the rates of LDKTs compared with whites in the United States. **Methods.** LOVED is an iterative-designed, distance-based, navigator-led, mobile health educational program, developed via guidance from patients, Self-determination Theory and Social Cognitive Theory. The purpose of this study was to assess the feasibility of LOVED using a proof-of-concept design to increase African Americans' knowledge about the living donor process to improve their willingness to approach others about being a potential kidney donor. The 8-week LOVED program consisted of (1) a computer tablet-delivered education program, (2) group video chat sessions with an African American LDKT recipient navigator, and (3) additional communication between group members and the navigator. **Results.** Twenty-five participants completed the LOVED study. Poststudy focus groups were analyzed using inductive and deductive qualitative descriptive techniques and analysts found 6 themes reporting LOVED being highly acceptable with the program being overall empowering and helpful. The study had 0% attrition, 90.9% adherence to the education videos and 88% adherence to the video chat sessions. Surveys showed statistically significant improvements in LDKT knowledge, higher willingness to communicate to others about their need, lower donor concerns, and higher self-efficacy about LDKT. **Conclusions.** Findings indicate that participation in LOVED can lead to improvements in predictors to increase the number of evaluations and LDKTs in African Americans; however, these findings need to be confirmed in adequately powered, randomized controlled trials. Using LOVED may reduce barriers to broadly address LDKT disparities. Findings from this study will inform the design of a future statewide randomized controlled trials.

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Living donor kidney transplantation (LDKT) in the United States is performed in half the number of African Americans compared with whites (ie, 0.4 per 100 dialysis patient years for African Americans vs 1.5 per 100 dialysis

patient years for whites from the United Network for Organ Sharing) with end-stage renal disease (ESRD).¹ Advantages of receiving a LDKT include reduced kidney transplantation (KT) wait time,² enhanced graft viability (ie, 5-year all-cause

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graft failure rate is 26.5% for deceased donors compared with 14.3% for living donors),³ and increased life expectancy, especially in older individuals.^{4,5} Prior research has identified a variety of reasons for this disparity, including mistrust in the medical community, cultural beliefs, poor understanding about the LDKT process, and lack of easy access to healthcare education and support.⁶⁻¹⁰ Poor knowledge and erroneous beliefs about LDKT have been typically addressed via transplantation center-based education programs using take-home materials or transplant-center group sessions,^{11,12} but these may not address the challenges for African Americans to approach and ask others to be evaluated as a kidney donor. Several other models that have been used include community-based grassroots education strategies, such as one promoted by Callender et al¹³ to address disparities, to those focused on intentions and behaviors to become a deceased donor.¹⁴ Living donor kidney transplantation disparities require novel efforts to address needs.^{15,16} Faith-based (ie, Talking about Living Donation Support, Project: About Choices in Transplantation and Sharing) and home-based (ie, explore transplant at home, house calls) programs have been successful in educating African Americans about LDKT.¹⁷⁻²⁰ These programs support awareness and education but may not provide behavioral skills to aid ESRD patients to ask for a KT. Few programs (ie, House Calls) have evidence to support increases in African American LDKTs which represents the clinical outcome of importance.^{18,21} Removing barriers for intervention delivery, such as needs for transportation, child care, competing obligations, such as work, or other responsibilities that may facilitate program delivery, may increase reach to those who may need it the most.

Mobile health (mHealth) programs are an option to help overcome limited involvement and adherence due to poor attendance at in-person education or behavioral program sessions. Smartphone use, reported at 77% nationally and increasing, is now ubiquitous, irrespective of ethnicity, geographical locale, or socioeconomic status.²² Mobile tablet or smartphone devices potentially provide access to programs in patients' homes or place of choosing.²³ Various telehealth and mHealth programs have been found to be efficacious for behavioral change programs.²⁴ Using mHealth for LDKT education and promotion is a logical solution to barriers and can be especially valuable in larger rural geographic areas or areas with limited proximity to a transplant center. Such programs leveraging technology, founded in behavioral theory to increase self-efficacy and motivation to speak to others about LDKT, have been recommended to help address this racial disparity.²⁵ One such education program to promote understanding of LDKT and willingness to approach potential donors (PDs) in KT-eligible African Americans is the Living Organ Video Educated Donors (LOVED) program.²⁶ Besides the Explore Transplant at Home program,¹⁷ LOVED is the only other program incorporating both knowledge building and skills building in conjunction with a distance-based delivery system giving an option to increase the chance of a LDKT to those unable to meet with in-person education programs.

The intent of the LOVED program is to educate and increase skills in African Americans with ESRD, leveraging a distance education platform with navigator support and mHealth components to develop strategies to ask others for a LDKT and ultimately increase the rate of LDKT. This

article reports on the LOVED proof-of-concept (POC) study, which examined the feasibility of LOVED to engage African American kidney waitlist patients in LDKT promotion before a subsequent randomized controlled trial (RCT).

MATERIALS AND METHODS

The overall LOVED project is a mixed-methods mHealth study consisting of navigator supported distance learning developed using an iterative design process. The LOVED project started with a needs assessment phase using focus groups, a development phase, a 1-arm POC feasibility study phase with program refinement, and lastly, a planned RCT pilot. The findings reported here are from the POC feasibility study phase using 4 waves of 5 to 8 participants over a one-and-a-half year period beginning in fall of 2014. The primary objectives were to examine program feasibility, acceptability, and changes in LDKT knowledge, attitudes, donor concerns, and self-efficacy about LDKT. Secondary outcomes consisted in the number of screenings, evaluations and LDKTs at a 1-year follow-up.

The LOVED program was developed using behavioral theories that incorporated constructs from the Self-Determination Theory (SDT)²⁷ and the Social Cognitive Theory (SCT).²⁸ Self-Determination Theory which states: people have basic psychological needs where optimum psychological health and well-being are predicated on autonomy, competence, and relatedness. This fosters intrinsic or autonomous motivation to sustain a behavior that is linked to core values, beliefs, and life goals. Social Cognitive Theory explains how people regulate their behavior through control and reinforcement to achieve goal-directed behaviors that can be initiated and maintained. Specifically, constructs encompassed self-efficacy and competence including the processes of motivation for initiating and maintaining behaviors (eg, starting and continuing to ask others to be screened) were used in the module development to frame what should be included in the video topics. Increased competence was used to understand and communicate knowledge about their need, therefore increasing self-efficacy to engage in discussions with family, friends and strangers. After topic generation, feedback was given by patients for topic refinement, then videos were created and examined to ensure SDT and SCT constructs were linked to the content.²⁶ A full description of the LOVED iterative development, evaluation, and refinement project is available elsewhere.²⁶

Before this study, 9 focus groups were completed consisting of groups of LDKT recipients, deceased donor KT (DDKT) recipients, KT waitlist patients, caretakers, and providers to discuss primary barriers to ask for a LDKT to develop the LOVED program. The prior theories framed focus group discussions to elicit feedback to overcome barriers to. Briefly, the formative analysis found high access and interest in mHealth technologies, participants wanted to build conversation skills and improve knowledge about LDKT (ie, donors' surgical outcomes, costs, effect on relationships, donor process, and impact of donors' future health).^{6,29}

Intervention

LOVED was structured as an 8-week program with 3 primary elements: (1) a tablet-delivered education program (LOVED web app), (2) navigator-led group video chat sessions, and (3) additional discussions and communication between group

members and a navigator.²⁶ An African American navigator, who successfully advocated for and received a LDKT, led the group video chat sessions. The primary outcomes included feasibility indices of fidelity (ie, % adherence to video module homework sessions, % adherence to participating in video chat sessions), tolerability (% drop outs); changes in knowledge and attitudes toward LDKT, concerns for donors and self-efficacy to approach others for a LDKT. Poststudy focus groups were performed to elicit program feasibility feedback. Secondary outcomes included number of PDs who contacted the transplant center for screening, donor evaluations, and LDKTs. The institutional review board approved all study protocols before the start research activities (review board document number: Pro00031456).

Program Element: LOVED Web app Education Sessions

The LOVED web app was developed by the Medical University of South Carolina Technology Applications Center for Healthful Lifestyles, is accessible by a web browser and formatted for a tablet-based device (ie, compatible with Android-based or iOS operating systems). A Samsung Galaxy Tab 2 (model number: GTP5113GALAXYTAB2; 25.4 cm screen form factor) was provided for each participant along with shortcuts on the home screen to the web app and video chat programs. The LOVED web app includes a tutorial and 6 weekly sessions. The format of the 6 sessions' educational content included videos from providers, narration with bullet points, testimonials of patients, donors, and caretakers with demonstrations on how to bring up the topic of LDKT into everyday encounters. Each session included three 2- to 4-minute video clips, requisite short knowledge 1 to 4 question multiple-choice quizzes assessing information presented at the end of each session video, and additional resources (ie, 2-5 web hyperlinks) related to a weekly theme. Four of the LOVED web app sessions were assigned to participants in consecutive weeks (ie, weeks 1-4: themes: "What is transplant like for the recipient?" "What is transplant like for the donor?" "Who qualifies to be a living donor?" "Communicating your need") with the last 2 sessions assigned every other week (ie, weeks 6 and 8: themes: Expectation of support, Motivation for action: get the ask out). Weeks 5 and 7 enabled practicing skills associated with approaching and asking others to be evaluated for KT.

Program Element: Video Chat Sessions

Eight weekly video chat sessions were conducted that were central to themes and topics from the video education content. In each session, discussion topics were framed as open conversations that often expanded to include personal experiences of the navigator and participants (ie, shared stories about personal conditions, colearning of resources education and skills, and groups support).

Two African American male navigators, who were between 45 and 55 years of age were hired and trained to lead the weekly discussion topics during a 1-day workshop. Education topics about the process of LDKT and prevalent myths (ie, you need both kidneys, religious organizations oppose donation, the donor will regret it, you cannot have a baby after donation, etc.) were covered in weeks 1 to 3. In weeks 4 to 8, a larger emphasis was placed on building skills to get the "ask" out through individual, group, or electronic

dissemination (eg, social media, email, etc.). Participants received assignments to propose personal strategies in expressing their need for a kidney. This included ways to discuss their need and time to practice with other group members who would provide feedback.

Program Element: Additional Discussions and Support

Outside discussions were encouraged to help participants develop strategies to express each other's needs for a KT. Although these interactions were largely unstructured, they were encouraged to improve participant experience and drive program adherence. For instance, group members could stay online to speak with each other after the session to better explain examples on reaching out to others or to speak about home dialysis options and other self-care practices. The navigators could be called outside of chat sessions to have 1-on-1 sessions to discuss certain barriers, such as how to manage follow-up questions with family members.

Participants

The transplant center records were used to identify potential participants using addresses that were approximately 60 miles distant from the medical center. Inclusion criteria consisted of ages 18 to 65 years, legally competent, able to see and read, ability to converse in English, 10 years or less on dialysis, living approximately 1 hour driving time from the transplant center, active status on the United Network for Organ Sharing kidney transplant waitlist and self-identify as African American race. Age criteria limited those whose age-related barriers may need further consideration beyond the standard program (eg, more advanced disease, technology knowledge, etc.). Limiting those with less than 10 years on dialysis was a group clinical decision to target patients with the best chance of transplant success. Exclusion criteria included previous LDKT, ongoing substance abuse, active psychiatric illness, or currently have identified PDs undergoing transplant evaluation. Randomization was block stratified by gender. A transplant center coordinator performed initial phone contact with follow-up calls conducted by research staff to further describe the study protocols and extend invitations for the orientation session. The study employed 4 waves of 5 to 8 participants due to available resources, specifically the tablets.

Protocol

Orientation sessions were completed on the university campus. After the study had been explained in detail, participants were allowed to ask questions, and if interested, completed written informed consent. Demographic and baseline questionnaires were then completed in a private conference room. Each group of participants made introductions with each other and their navigator. Study protocols and expectations were given, and a convenient time for the weekly chat session was scheduled. Navigators and participants received a tablet computer with unlimited cellular network coverage to access the program's apps at home for the duration of the study. In case of damage, several replacement tablets were available. Each participant was trained face-to-face, and competency was assessed to use the LOVED web app and video chat program (ie, Google Hangouts, Google Inc. [waves 1-3] and Vidyomobile a Health Insurance Portability and Accountability Act compliant videoconference software

[wave 4]). Participants were asked to only use first names and used study logins created by study staff for the video chat programs to protect their privacy. The email address and phone number of the navigator were shared. Each participant received a US \$75 gift card after the orientation session to cover transportation, parking, and his or her time.

Background analytics were tracked weekly through a database portal for each participants' usage of the LOVED web app including reporting quiz scores to the navigators before the next video chat session. Weekly web app session reminders were sent by telephone and email to each participant by a research program manager. Nonadherence to completing the video education sessions was tracked and communicated during reminder telephone calls to all participants 2 days before each video chat session. An additional phone call was performed to remind participants on the day of the video chat sessions. If any of the current or prior weekly videos were not marked as completed, study staff would remind the participant to watch it. Study staff were available during each video chat session to troubleshoot any technical issues and contacted nonadherent group members. After the completion of the LOVED program, participants met as a group back at the university meeting room used during orientation to return equipment and complete a focus group on their experiences during the LOVED program. Each received another US \$75 gift card after the focus group.

Measures

Primary acceptability outcomes included fidelity (% adherence to video module homework sessions, % adherence to participating in video chat sessions, tolerability (% drop outs) measured from LOVED databases and secondary primary outcomes in changes of LDKT knowledge, attitudes, concerns for donors and self-efficacy to approach others for a LDKT. Time points included baseline and 1 week poststudy follow-up (ie, 10-13 weeks after orientation). Surveys included validated scales using the (1) knowledge about living donation questionnaire (15 true/false statements), (2) concerns about living donation questionnaire (21 true/false statements), (3) willingness to discuss living donation questionnaire (one 7-point Likert scale and one 5-point Likert scale items), and (4) confidence (self-efficacy) about LDKT (thirteen 5-point Likert scale items) developed by Rodrigue et al.^{21,30} Additionally, demographic questionnaires were administered during orientation. Secondary measures included the number of PD initial calls, evaluations, and LDKTs performed at the transplant center.

A focus group interview guide (see Table 1) was developed to elicit feedback on the overall acceptability of the program and included program elements and interactions with navigators. Focus group scripts were created by a qualitative expert using open-ended questions and prompts³¹ to describe the acceptability and how program elements may have influenced their behaviors to ask others to be tested as a living donor. Topic areas with probes covered LDKT expectations, experiences, adherence, motivation, advice from advocates, and culturally competency (ie, trust, shared decision making). The focus group method was appropriate in this situation to limit participant burden and stimulate group feedback. These focus group discussions were conducted during the group follow-up visit after the tablets were returned and surveys were completed. The sessions were conducted by each

TABLE 1.
Exit interview guide

What did you like about the LOVED Program
–Overall
Video chat sessions
–What did you like about the online chat sessions
–Interfacing with the tablet, getting online, connection, technical
Video education modules
–Can you comment on the information in the video education modules?
–Probes:
◦ Understandable?
◦ Informative?
◦ Helpful?
◦ Complete?
General discussion
–Is there something we need to add, something we didn't cover?
–Did you view the additional video clips in some of the session? If yes, how were they helpful?

group's navigator and were approximately 30 minutes in length. Each session was digitally recorded, professionally transcribed, and verified for accuracy before qualitative analysis.

Sample Size Determination

The focus of this POC study was to determine the feasibility of using the LOVED intervention to engage African American kidney waitlist patients in LDKT promotion. Consistent with the intent of a feasibility RCT,^{32,33} the sample size for this study was determined for pragmatic reasons including recruitment, drop-out, and adherence rates, rather than through formal power calculation. To this end, the focus of the analyses was on precision of estimates rather than power. With 24 participants, 95% confidence interval (CI) estimates of within-group change scores in knowledge, concerns, attitude, and self-efficacy (baseline-to poststudy) had precisions ranging from ± 0.2 to ± 1.0 corresponding to estimated SD of change scores ranging from 0.5 to 2.5.

For the qualitative component of this study, 24 participants were deemed sufficient to reach saturation. Saturation is considered feasible with this number of participants, who were a homogenous population of African Americans from the southeastern United States with ESRD.³⁴

Data Analyses

Quantitative Analyses

Descriptive statistics were calculated using Statistical Analysis Software (SAS institute Inc., Cary, NC). The sample distributions were assessed for normality and outcomes were compared between time points using paired *t* tests.

Qualitative Analyses

Transcriptions from poststudy focus groups were imported into NVivo 10 (QSR International, Pty, Doncaster, Victoria, Australia). Each transcript was read as a whole first to gain an overall understanding of the data, independently by 2 of the authors (J.S. and L.S.N.). An inductive qualitative descriptive approach was used for thematic analysis. Thematic analysis is appropriate when the research question is to develop an understanding of participants related to specific phenomena.³⁵ Rather than a catalog of coded text units, such

TABLE 2.
Baseline characteristics

Variable	Mean (SD) or n, %
Age, y	44.7 (10.9)
Sex (female)	16, 64%
Marital status	
Single (never married)	3, 12%
Married	15, 60%
Widowed or divorced	5, 20%
Living with significant other	2, 8%
Education	
Less than high school	2, 8%
High school or GED	6, 24%
Some college/associates degree	12, 48%
College degree	5, 20%
Employment	
Unemployed	6, 24%
Part-time	3, 12%
Full-time	3, 12%
Retired	5, 20%
Disabled	8, 32%
Taking dialysis treatment,	92%
No. months on dialysis	45.0 (35.8)

Sample, N = 25.

SD, standard deviation.

as what might be done in a content analysis, this thematic analysis involved developing a few key themes that emerged summarizing user perspectives with the LOVED program. This entailed coding meaningful segments of text from the transcripts. An iterative process of reading and coding each transcript and then comparing previous codes and text clusters were helpful in refining the main concepts and categories.³⁶ Deductive analyses followed the inductive cycle through the data to search for the elements that framed our intervention from SDT and SCT constructs. Themes were developed, related to the inductive and deductive approach to analysis, as has been used in health services research related to participants' experiences.^{37,38} Two of the authors reviewed the coding and themes together to develop consensus through a process of immersion and crystallization to finalize the main qualitative themes.³⁹

RESULTS

A total of 34 patients identified by the transplant center from the KT waitlist who met inclusion criteria were randomly contacted. In total, 25 individuals agreed to participate (73.5% participation rate) and all completed the LOVED study. Those who did not participate cited "too busy" as the primary reason in addition to, "too far," "cannot take time off work," and "not social." Demographic features of study participants are described in Table 2. Participants were middle aged (age = 44.7 [SD 10.9]), over half were female (64%), with most being married (60%) and college educated (68%).

Primary Outcomes

Qualitative analysis from the focus groups resulted in 6 themes, where theoretical saturation was met. These included: 1) video chat sessions provided essential support and encouragement, (2) education videos motivated and made me more knowledgeable, (3) connectivity with the tablets was adequate

in most areas, (4) material was culturally sensitive, (5) being part of a program was overall a positive experience, and (6) willing to ask for a kidney now. Overall, each of the LOVED participants described how the LOVED program helped them become more comfortable approaching others about their need and felt the program was highly acceptable in the current format. Detailed quotes supporting these themes can be found in **Materials and Methods** (SDC, <http://links.lww.com/TXD/A96>).

Acceptability of the program was high with 0% attrition from each wave, and though 2 participants received a DDKT during the program, they continued as participants. We found an overall 90.9% adherence to the education videos and 88% adherence (group ranges, 78.6% to 94.6%) to the video chat sessions. Video chat sessions that had to be rescheduled were not included in the adherence measures.

Prepost measures on changes in LDKT knowledge and attitudes are reported in Table 3. Statistically significant improvements were found in LDKT knowledge ($1.0 \pm \text{SD } 1.8$; $P = 0.01$), in willingness to approach others about their need ($1.6 \pm \text{SD } 1.4$; $P < 0.001$), in the reduction of donor concerns ($-1.1 \pm \text{SD } 2.1$; $P = 0.02$), and in increases of participants' self-efficacy to convey information about the LDKT process or answer questions they may encounter from PDs ($0.9 \pm \text{SD } 0.7$; $P < 0.001$).

Secondary Outcomes

All participants reported asking at least 1 person to be evaluated upon engaging in the LOVED program. Twenty percent of the 25 participants had 1 or more calls to the transplant center. A total of 9 PDs were scheduled with 8 completing the evaluation process. Those who identified PDs were all women, approximately 10 years older and were on dialysis on average 3.5 years longer than those who did not identify a PD (see Table 4).

Three PDs were denied due to health conditions identified during the screening process, whereas 2 were denied due to the transplant-eligible patient's insurance issues and 2 due to worsening health conditions. At the 6-month follow-up, 1 participant was active in the donor exchange program. At the 1 year follow-up, 2 participants were active in the donor exchange program with 10 (40%) of the 25 LOVED participants having received a DDKT (see Table 5).

Intervention Fidelity

Group video chat sessions ranged from 60 to 80 minutes in length. The LOVED program varied between 9 and 11 weeks

TABLE 3.
LDKT knowledge and attitude scales

LDKT measures	Baseline	Poststudy	Change	95% CI	P^a
LDKT knowledge ^b	11.4 ± 1.2	12.3 ± 1.4	1.0 ± 1.8	0.2-1.7	0.01
Willingness to talk ^c	4.4 ± 1.4	6.1 ± 1.1	1.6 ± 1.4	1.1-2.2	<0.001
LDKT concerns ^d	4.2 ± 2.4	3.1 ± 2.1	-1.1 ± 2.1	-0.2 to -1.9	0.02
LDKT self-efficacy ^e	2.3 ± 0.9	3.2 ± 0.6	0.9 ± 0.7	0.6-1.2	<0.001

^a P value obtained from paired t tests; all scales based on Rodrigue et al.^{21,30}

^b Possible scores range from 0 to 15, with higher scores indicating more knowledge.

^c Possible scores range from 1 to 7, with higher scores indicating more willingness to talk to others about LDKT.

^d Possible scores range from 0 to 21, with higher scores indicating more concerns about pursuing LDKT.

^e Possible scores range from 0 to 4, with a higher score indicating greater confidence.

TABLE 4.**Descriptive characteristics of those successfully identifying PDs**

	Participants who	
	Did identify PD (n = 5)	Did not identify PD (n = 20)
Age (mean ± SD)	51.6 (9.8)	43.1 (11.2)
Sex (female)	5 (100%)	11 (55%)
Marital status		
Married/living together	3	14
Single	1	2
Divorced	0	3
Widowed	1	1
Education		
< High school diploma	0	2
High school diploma	2	4
Some college or tech school	2	10
College degree	1	4
Employment		
Disabled	1	7
Retired	2	3
Unemployed	2	4
Part time/full time	0	6
Time on dialysis, mo		
Mean ± SD	80.3 (53.9)	37.6 (26.4)
Range	21-132	0-120

in length. Each wave had rescheduling needs requiring longer than the planned 8-week structure. Rescheduling video chat sessions were primarily due to weather-related power outages and technical difficulties. In the first 3 waves, Google Hang-outs, a free video conferencing software, was used as the video chat platform. The video conferencing software was changed to VidyoMobile in the fourth wave due to intermittent disconnections and frozen videos. A program manager attended each of the video chat sessions with mic and video disabled to quality check the coverage of discussion topics. Navigators discussed all script topics for each session and reported feedback to the program manager immediately after each chat session.

DISCUSSION

This was the first project to incorporate a peer-navigator distance education program with a mHealth component to increase KT-eligible African Americans' understanding of LDKT process and improve their willingness to approach others to be a PD. Focus group findings resulting in a set of themes that supported the acceptability of LOVED. Notably, findings promoted empowerment through the interactions

from the video chat sessions. Sharing knowledge, practicing asking others to be evaluated and personal testimonials among participants were positively viewed by the groups, especially through the video chat session element. The social component linked back into the SCT's construct of modeling where behaviors shown by the navigator could then be learned, practiced, and used by participants on how to approach others about their need. The education videos provided much of the knowledge base so navigators could engage participants about their thoughts on the material. Themes also showed that content was culturally sensitive, and participants noted that content could be used for other groups. Most importantly, the program was viewed as a positive experience where 1 theme highlighted increased willingness to ask for a kidney. This ties into the SDT's construct of improving competence and fulfilling the primary intention of the LOVED program. In addition, results showed improvements in LDKT knowledge, willingness to ask others to be a PD, lower concerns about PD safety, and improve LDKT self-efficacy. This indicates potential changes similar other programs' findings (ie, About Choices in Transplantation and Sharing, Talking about Living Donation Support, House Calls, Explore Transplant at Home) designed to increase LDKT knowledge and reduce PD concerns and are important in predicting increased likelihood of PD evaluations and obtaining a LDKT.²¹ The LOVED program was found to be highly tolerable and acceptable as reported by the zero dropout rate, high adherence levels to various program elements. Furthermore, LOVED led to a number of evaluations that led to 2 patients in the paired-exchange program; however, because this POC study was a single-arm study, a true increase in evaluations or LDKTs cannot be established. The effectiveness of the LOVED program for increases in evaluations and LDKTs will be tested in a subsequent adequately powered RCT.

All participants reported asking at least 1 person for a KT. In effect, LOVED participants were getting the word out, but they reported barriers of existing chronic conditions (ie, diabetes, very overweight, existing chronic kidney disease) that limited PDs' ability to donate. The pool of PDs in the southeastern United States, and notably South Carolina, may be limited due to higher rates of obesity, cardiovascular disease, diabetes, chronic kidney disease, and stroke than compared with other regions, such as the northeast or western United States.⁴⁰

During the intervention, barriers were noted when using the video chat element. Although supplying connected devices to participants enabled a standard delivery of intervention components, troubleshooting was required in specific cases to access the LOVED program. Using VidyoMobile during wave 4 resolved some connectivity issues but coverage areas and stuttering video were still intermittent problems.

TABLE 5.**Participant status of PDs at 1-year follow-up**

	Wave participants vs no. eligible recipients	No. PDs who contacted center
Wave 1	3/7; 3 received deceased kidney, 1 removed from list due to illness	3; 1 donated in exchange, their recipient not yet transplanted, 2 were PDs of ill patient
Wave 2	5/8; 1 received deceased kidney, 2 inactive: 1 due to insurance, 1 at candidate request	2; both were PDs for patient with insurance issues
Wave 3	5/6; 1 received deceased kidney	3; all for 1 recipient, 2 declined, 1 has not completed process
Wave 4	4/4	1; declined
Total	17/25	9 PDs (0.36 PDs per participant) 2 in donor exchange program

Connectivity issues in 2 participants' homes were solved by instructing them to move to another location during each video chat meeting. Other situations requiring rescheduling were due to the unavailability of the navigator because of travel, and weather related power outages due to tropical storms.

Another barrier included 1 recipient who had issues with their insurance carrier during the process. Experiences also led to different levels of comfort between relatives or nonrelatives, with relatives being easier to approach directly. The use of flyers and social media were found to be a more comfortable method when approaching nonrelatives. Those who reported being more isolated, or had fewer family and friends seemed less able or willing to ask others to be evaluated. In future studies, information on number of siblings, parents, and other relatives who live locally or distant should be included. A lack of a social environment would restrict identification of PDs even if knowledge, self-efficacy, and skills to ask for a LDKT improved.

Several limitations should be considered when interpreting the study findings. Primarily, this study was designed as a 1-arm POC where no control group was used for comparison. Although we observed statistically significant prepost changes in several of the study outcomes, it is unknown if other patients, not participating in LOVED, would show similar improvements in survey items or have similar number of screenings and evaluations. Although we collected reasons why nonparticipants did not enroll in the study, demographic and clinical characteristics of this group were not obtained. Though this single-arm POC study was not powered to detect statistically significant differences, findings may be used as exploratory evidence to develop hypotheses. For example, we found those who reported longer time on dialysis may have been more motivated to find a PD resulting in more evaluations. Although we had several people during recruiting elect not to participate in the LOVED program, many of the reasons related to having to travel for orientation and follow-up. In the future RCT, this barrier is eliminated by not requiring in-person meetings and using mail services to deliver study materials. There is also the potential that the study sample, consisting of patients from a small region of the country, may not be representative of all African American KT waitlist patients in North America.

This is the first study to incorporate both at-home video education for LDKT and promotion of behavioral skills through video chat sessions. It is unclear which program element was most strongly associated with our findings, though future studies should test whether a fully mHealth intervention with automated guidance is a feasible alternative compared with one supported by navigators and study staff. The ability to deliver a far reaching and effective program to increase rates of LDKT in African Americans has far-reaching implications to address current barriers in this disparity. This unique program has the potential to lead to improvements in predictors to increase the number of evaluations and LDKTs in African Americans. Findings from this study will inform the design of the LOVED RCT using standard transplant center care and the LOVED intervention.

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REFERENCES

1. U.S. Renal Data System, USRDS 2016 Annual Data Report: Atlas of Chronic Kidney Disease and End-Stage Renal Disease in the United States. <http://www.usrds.org/atlas.aspx>. Accessed November 28, 2016.
2. Meier-Kriesche HU, Kaplan B. Waiting time on dialysis as the strongest modifiable risk factor for renal transplant outcomes: a paired donor kidney analysis. *Transplantation*. 2002;74:1377–1381.
3. Hart A, Smith JM, Skeans MA, et al. OPTN/SRTR 2014 annual data report: kidney. *Am J Transplant*. 2014;16(S2):11–46.
4. Mandal AK, Snyder JJ, Gilbertson DT, et al. Does cadaveric donor renal transplantation ever provide better outcomes than live-donor renal transplantation? *Transplantation*. 2003;75:494–500.
5. Kanellis J; CARI. The CARI guidelines. Justification for living donor kidney transplantation. *Nephrology (Carlton)*. 2010;15:S72–S79.
6. Sieverdes JC, Nemeth LS, Magwood GS, et al. African American kidney transplant patients' perspectives on challenges in the living donation process. *Prog Transplant*. 2015;25:164–175.
7. Segev DL, Powe NR, Troll MU, et al. Willingness of the United States general public to participate in kidney paired donation. *Clin Transplant*. 2012;26:714–721.
8. Robinson DH, Arriola KR. Strategies to facilitate organ donation among African Americans. *Clin J Am Soc Nephrol*. 2015;10:177–179.
9. Purnell TS, Hall YN, Boulware LE. Understanding and overcoming barriers to living kidney donation among racial and ethnic minorities in the United States. *Adv Chronic Kidney Dis*. 2012;19:244–251.
10. Waterman AD, Peipert JD, Hyland SS, et al. Modifiable patient characteristics and racial disparities in evaluation completion and living donor transplant. *Clin J Am Soc Nephrol*. 2013;8:995–1002.
11. Weng FL, Brown DR, Peipert JD, et al. Protocol of a cluster randomized trial of an educational intervention to increase knowledge of living donor kidney transplant among potential transplant candidates. *BMC Nephrol*. 2013;14:256.
12. Boulware LE, Hill-Briggs F, Kraus ES, et al. Effectiveness of educational and social worker interventions to activate patients' discussion and pursuit of preemptive living donor kidney transplantation: a randomized controlled trial. *Am J Kidney Dis*. 2013;61:476–486.
13. Callender CO, Hall MB, Miles PV. Increasing living donations: expanding the National MOTTEP community grassroots model. Minority Organ Tissue Transplant Education Program. *Transplant Proc*. 2002;34:2563–2564.
14. Radecki CM, Jaccard J. Signing an organ donation letter: the prediction of behavior from behavioral intentions. *J Appl Soc Psychol*. 2006;29:1833–1853.
15. Waterman AD, Rodrigue JR, Purnell TS, et al. Addressing racial and ethnic disparities in live donor kidney transplantation: priorities for research and intervention. *Semin Nephrol*. 2010;30:90–98.
16. Rodrigue JR, LaPointe Rudow D, Hays R. American Society of Transplantation. Living donor kidney transplantation: best practices in live kidney donation—recommendations from a consensus conference. *Clin J Am Soc Nephrol*. 2015;10:1656–1657.
17. Waterman AD, McSorley AM, Peipert JD, et al. Explore Transplant at Home: a randomized control trial of an educational intervention to increase transplant knowledge for Black and White socioeconomically disadvantaged dialysis patients. *BMC Nephrol*. 2015;16:150.
18. Rodrigue JR, Paek MJ, Egbuna O, et al. Making house calls increases living donor inquiries and evaluations for blacks on the kidney transplant waiting list. *Transplantation*. 2014;98:979–986.
19. Arriola KR, Powell CL, Thompson NJ, et al. Living donor transplant education for African American patients with end-stage renal disease. *Prog Transplant*. 2014;24:362–370.

20. Arriola K, Robinson DH, Thompson NJ, et al. Project ACTS: an intervention to increase organ and tissue donation intentions among African Americans. *Health Educ Behav.* 2010;37:264–274.
21. Rodrigue JR, Cornell DL, Kaplan B, et al. A randomized trial of a home-based educational approach to increase live donor kidney transplantation: effects in blacks and whites. *Am J Kidney Dis.* 2008;51:663–670.
22. Myung SK, McDonnell DD, Kazinets G, et al. Effects of Web- and computer-based smoking cessation programs: meta-analysis of randomized controlled trials. *Arch Intern Med.* 2009;169:929–937.
23. *Mobile Fact Sheet.* Pew Research Center: Internet, Science & Tech; January 12th, 2017.
24. Price M, Yuen EK, Goetter EM, et al. mHealth: a mechanism to deliver more accessible, more effective mental health care. *Clin Psychol Psychother.* 2014;21:427–436.
25. Waterman AD, Robbins ML, Peipert JD. Educating prospective kidney transplant recipients and living donors about living donation: practical and theoretical recommendations for increasing living donation rates. *Curr Transplant Rep.* 2016;3:1–9.
26. Sieverdes JC, Price M, Ruggiero KJ, et al. Design and approach of the Living Organ Video Educated Donors (LOVED) program to promote living kidney donation in African Americans. *Contemp Clin Trials.* 2017;61:55–62.
27. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol.* 2000;55:68–78.
28. Bandura A. Social cognitive theory: an agentic perspective. *Annu Rev Psychol.* 2001;52:1–26.
29. Sieverdes JC, Nemeth LS, Magwood GS, et al. Patient-centered mhealth living donor transplant education program for African Americans: development and analysis. *JMIR Res Protoc.* 2015;4:e84.
30. Rodrigue JR, Cornell DL, Kaplan B, et al. Patients' willingness to talk to others about living kidney donation. *Prog Transplant.* 2008;18:25–31.
31. Oishi S. How to Conduct In-Person Interviews for Surveys. In: *The Survey Kit 2nd ed.* Vol 5. Thousand Oaks: Sage; 2003.
32. Eldridge SM, Chan CL, Campbell MJ, et al. CONSORT 2010 statement: extension to randomised pilot and feasibility trials. *BMJ.* 2016;355:i5239.
33. Kraemer HC, Mintz J, Noda A, et al. Caution regarding the use of pilot studies to guide power calculations for study proposals. *Arch Gen Psychiatry.* 2006;63:484–489.
34. Hennink MM, Kaiser BN, Marconi VC. Code saturation versus meaning saturation: how many interviews are enough? *Qual Health Res.* 2017;27:591–608.
35. Vaismoradi M, Turunen H, Bondas T. Content analysis and thematic analysis: implications for conducting a qualitative descriptive study. *Nurs Health Sci.* 2013;15:398–405.
36. Charmaz K. *Constructing grounded theory: A practical guide through qualitative analysis.* Thousand Oaks, California: Sage Publications, Ltd; 2006.
37. Bradley EH, Curry LA, Devers KJ. Qualitative data analysis for health services research: developing taxonomy, themes, and theory. *Health Serv Res.* 2007;42:1758–1772.
38. Strauss A, Corbin J. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques.* San Francisco: Sage Publications; 1998.
39. Borkan J. *Immersion/Crystallization.* Thousand Oaks: Sage Publications; 1999.
40. Rich DQ, Gaziano JM, Kurth T. Geographic patterns in overall and specific cardiovascular disease incidence in apparently healthy men in the United States. *Stroke.* 2007;38:2221–2227.