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## Family Mentorship Program in the Pediatric Organ Transplant Population

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Family Mentorship Program in the Pediatric Organ Transplant Population

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### Abstract

**Problem:** At a comprehensive pediatric medical center in the Midwest, there are currently no structured support programs for pediatric transplant patients and their families. A regulated and structured family mentor/support program for transplant patients and their families can provide the outlet they require to feel supported by peers who have also gone through the same journey of pediatric solid organ transplantation. **Methods:** A descriptive program evaluation design utilizing the Stetler model to evaluate data regarding the family mentor/support programs in the diabetic and sickle cell departments at a Midwestern children's hospital. The purpose was to gather meaningful data for evaluation regarding resiliency and perceived stress regarding their participation in the family mentorship/ support program. **Results:** Common themes of resiliency and higher stress levels were noted. The Brief Resiliency Survey showed that 64% of participants disagree that it takes them a long time to get over setbacks in their lives. This result shows the participants perceived they do not stay stressed for a long period of time. Perceived Stress Scale descriptive statistics showed many participants selected answers which correlated with higher stress levels. **Conclusion:** This QI project successfully identified the stress and resiliency levels of the active participants in the diabetic and sickle cell support/mentor programs. Unfortunately, this project had significant limitations due to the broad nature of the survey questions and the lack of demographic information. Future recommendations include transplant specific survey questions gathering demographic information and correlating the family support/mentor program with the participants stress and resiliency levels.

### **Family Mentorship Program in the Pediatric Organ Transplant Population**

Solid-organ transplantation is a life-saving measure for severely ill patients who might otherwise have worsening health outcomes that may lead to death. Requiring a solid organ transplant is both physically and mentally demanding. However, pediatric organ transplantation also affects the primary caregivers and family members.

Connecting with individuals who have experienced similar life events can help relieve the psychological stress the transplant patient and family are experiencing. Family mentor/support programs provide information, guidance, and emotional support to transplant patients and family members from fellow transplant recipients or transplant families. Ultimately, these can be life-saving programs for transplant recipients and their families.

In 2020, 39,036 organ transplants, including deceased and living donors, were performed in the United States. In 2020, 1,700 transplantations were in pediatric recipients (Health Resources & Services Administration., 2021). However, there are currently 106,805 patients still listed on the United Network for Organ Sharing (UNOS) wait-list (United Network for Organ Sharing (UNOS), 2021). The waiting time for transplant candidates varies anywhere from minutes to years. During this period, transplant candidates and families may experience anxiety or stress due to waiting and the uncertainty of receiving an organ offer. Unfortunately, the stress experienced before transplantation remains once the transplant is complete. Post-transplant patients and families experience the stress of potential complications, leading to re-transplantation and the fear of what the future may hold. According to Terrie (2017), The American Psychological Association reports about 50% of transplant patients to experience at least

one episode of substantial anxiety or depression within the first two years of the post-transplant period.

Throughout the transplant journey, recipients and family members experience certain life events which non-transplant patients/families will never experience. Discussing these events and requesting support from non-transplant recipients/families can be challenging due to their lack of experience and knowledge. Transplant recipients and caregivers have limited social support resources forcing them to reach out to similar families via social media to gain support and understanding in certain situations. Social media support pros include connecting with other like families, building relationships, and providing support to others. However, less reliable social media support can consist of the lack of regulation, incorrect medical advice, and dissemination of false information. There are currently no structured support programs for pediatric transplant patients and their families at a comprehensive pediatric medical center located in the Midwest. A regulated and structured family mentor/support program for transplant patients and their families can provide the outlet they require to feel supported by peers who have also gone through the same journey of pediatric solid organ transplantation.

The project aims to implement a program evaluation of the existing family mentor/support program in the diabetic and sickle cell departments and find a framework from which to create and implement a family mentor program for the transplant department. The Stetler Model is to be used in this clinical scholarship project. The five phases in The Stetler Model will thoroughly evaluate and identify the current process, workflow, and barriers to having a successful family support/mentor program (White et

al., 2019). By utilizing the Stetler Model, the implementation of these mentorships can be dissected to reveal valuable information to understand better the benefits and best methods for a successful family mentor/support program for the pediatric transplant department. This project aims to evaluate and identify the current family mentor/support recruitment structure in the diabetic and sickle cell departments and understand what factors led to successful implementation and ongoing program success. The primary outcome measure is to identify the current family mentor/support recruitment structure and potential barriers. The secondary outcome is to determine how stress and resiliency manifest in these families and how this is being addressed in those participating in the diabetic and sickle cell family mentor/support programs. The question for the study is, after careful evaluation of the diabetic and sickle cell mentor/support programs, what are the identifying factors for the creation and success of a family mentor/support program in a pediatric transplant department? The Center for Disease Control and Preventions (CDC) Six-Step framework for program evaluation will be the guidelines used for performance and program assessment.

### **Review of Literature**

A search of the literature was conducted to explore pediatric family mentor programs. PubMed, The Cumulative Index of Nursing and Allied Health Literature (CINAHL), and MEDLINE (EBSCO) were accessed. The key search terms included the following, *family mentor program*, *family mentorship*, *pediatric family mentor program*, and *pediatric transplant mentor program*. The Boolean operator used was AND. The initial search utilizing key search terms generated 6,571 articles. Inclusion criteria consisted of publications between 2015-2021, the English language, United States, full

text, abstract available, peer-reviewed journals, randomized controlled trials (RCT), research articles, systematic reviews, and meta-analyses. Exclusion criteria consisted of publications older than 2015 and languages other than English. After applying the inclusion and exclusion criteria, 374 publications were generated. Seventy-three duplicities were eliminated, leaving 301 articles for review. Abstracts of these articles were reviewed for appropriate terminology and terms leaving 63 for full-text review. After a full-text review, ten publications were selected for this literature review.

Throughout the organ transplant process, recipients are exposed to physiological and psychological stressors which may have long-term side effects on their overall health. Davydow et al. (2015) conducted a systematic literature review on the prevalence of post-traumatic stress disorder (PTSD) following organ transplantation, risk factors for post-transplantation PTSD, and the relationship of post-transplant PTSD to other clinical outcomes, including health-related quality of life (HRQL) and mortality. PTSD is a psychiatric disorder that may occur in individuals who have experienced or witnessed a traumatic event (American Psychiatric Association (APA), 2020). Post-traumatic stress symptoms (PTSS) or symptoms of PTSD may include flashbacks, nightmares, severe anxiety, and uncontrollable thoughts about the event (Mayo Clinic, 2018). Results of the systematic review found four potential risk factors for PTSD symptoms in post-transplant recipients. The risk factors include younger age, the female gender, lower educational level, and lower financial income.

Furthermore, the systematic review found five studies that examined associations between PTSD following organ transplantation and post-transplantation HRQL. All five studies found post-transplant PTSD symptoms in transplant recipients

were associated with worse mental HRQOL. Three of the five studies found post-transplant PTSD symptoms in transplant recipients were associated with worse social functioning. Finally, three studies found post-transplant PTSD symptoms in transplant recipients were associated with worse general health. Further articles report similar outcomes.

Supelana et al. (2015) conducted a systematic review of the rate of PTSD in transplant recipients. The study included peer-review articles that looked at the relationship between PTSS and transplantation. Of the identified themes, thirteen were review articles, and the other twenty-eight were manuscripts. The articles and studies showed approximately 30% of pediatric solid organ transplant recipients endorse above threshold rates of PTSS. Most pediatric studies utilized the University of California, Los Angeles (UCLA) post-traumatic stress reaction index to determine the threshold. One study reported that 99 recipients of heart, liver, or kidney transplants, 12–20 years old at the time of assessment, were assessed for symptoms of PTSD. Of the group, 31.3% (31/99) reported a diagnostic level of PTSD symptoms occurring at least twice a month, with 13.3% reporting a diagnostic PTSD symptom occurring at least twice a week. The type of transplant did not influence the rate of PTSD. Furthermore, research showed that medical procedures and treatments, such as transplantation and chemotherapy, are cited as traumatic events by children who report PTSD symptoms versus other disease-related traumatic events (Supelana et al., 2015). Unfortunately, patients are not the only individuals who suffer from the stress or PTSD/ PTSS of solid organ transplantation.

Further within the Supelana et al. (2015) systematic review, studies were identified providing evidence that primary caregivers of pediatric solid organ transplant

recipients are also affected by the transplant process and may be at a higher risk for developing PTSD/PTSS as compared to transplant recipients. In a study found in the Supelana et al. (2015) review, 27% of parents who have had a child undergo a solid organ transplant met full diagnostic criteria for PTSD. The rate of full PTSD was reported as 19%, and elevated PTSS rates were detected among 40% of a sample of parents of children who had a heart transplant. Furthermore, mothers (52%) of the transplant recipients experience higher PTSD/PTSS than the fathers (40%) (Supelana et al., 2015).

Young et al. (2016) conducted a systematic review of the literature examining the effects of liver transplantation on the HRQL of the primary caregivers and families of transplant recipients. Out of 7,076 records identified, five peer-reviewed studies were selected. From the five studies selected, Young et al. (2016) discovered two main findings within the review. First, impairment of the caregivers HRQL led to worsening outcomes for the post-liver transplant recipients. Second, the persistent burden of being a caregiver and the responsibilities following a liver transplant leads to decreased HRQL. The two studies found high caregiver burden post-liver transplantation impacted the caregivers quality of life and mood. This could potentially lead to higher depression rates among the caregivers of transplant recipients. Both studies recommended professional intervention to improve the quality of life of the caregivers (Young et al., 2016). Adequate support from the recipients primary caregiver and family is essential in the recipient's overall outcome. If the primary caregiver is coping well and has lower stress levels, the transplant recipient is more likely to have positive health outcomes. However, if the caregiver is not managing their stress well or has increased levels of anxiety or depression, then the transplant recipients will have worsening health outcomes.

Caregivers of pediatric transplant recipients demonstrate a high level of stress and anxiety, like caregivers of pediatric oncology patients. Berry-Carter et al. (2021) initiated a parent mentor program for caregivers of children who have been diagnosed with cancer at St. Jude's Research Hospital. St. Jude's developed this program based on the lack of a formal parent-to-parent mentoring program for parents or caregivers. Results of a piloted caregiver mentoring program were positive. Many mentee families expressed the mentor helped them through tough times and were emotionally supportive. The following are quotes from mentee families within the study: "My mentor shared her family's experience going through her son's treatment which was a great help and comfort to me," and "Thank you for having wonderful programs like this to help us go through this difficult journey." (Berry-Carter et al., 2021), At the end of the mentoring relationship, thirty-eight parents were surveyed on their experience of the mentor program. Results included that 42% strongly agreed their mentor helped them through difficult times, 50% said having a mentor helped them feel less isolated, and 58% said they would recommend their mentor program to other St. Jude's parents (Berry-Carter et al., 2021). Mentorship programs are beneficial not only to caregivers but to patients as well.

Adolescents with chronic health conditions have been found to benefit from mentoring programs. In two separate studies reviewing the iPeer2Peer mentor program in adolescent patients, the results showed overall self-management and coping skills were demonstrated. (Ahola et al., 2016). A research team developed the iPeer2Peer mentor program from The Hospital for Sick Children. The main objective of the iPeer2Peer program is to help teenagers with chronic medical conditions better manage their symptoms via online peer mentoring (The Hospital for Sick Children, 2016). Two studies

were conducted to evaluate the feasibility, acceptability, and impact of the iPeer2Peer program. The two main chronic medical groups assessed were adolescents with chronic pain and Juvenile idiopathic arthritis (JIA). The primary outcomes for both studies were focused on the implementation, feasibility, and acceptability of the iPeer2Peer mentor program. The secondary results differed from each other. The secondary outcomes in the JIA study focused on effectiveness. The secondary outcomes for the chronic pain study focused on the impact of the iPeer2Peer program. The results of both studies were also similar. The study demonstrated an online peer mentoring program is feasible, acceptable, and improves self-management skills (Ahola et al., 2016).

Like the iPeer2Peer studies, Anthony et al. (2020) evaluated if an online peer support program would benefit adolescents and young adults who have undergone a solid organ transplant. The study utilized a qualitative descriptive design comprised of semi-structured interviews of adolescents and young adult transplant recipients. The discussions included 15 participants (60% female gender) ages 14 to 22 years. The study participants expressed unanimous support for an online peer support mentorship program to aid disease self-management in the pediatric transplant patient population (Anthony et al., 2020). Three themes were identified throughout the study. First, self-management care can be taxing. Second, there would be value in peer mentorship for adolescent transplant patients. Third, online peer mentorship is the best option but still requires relationship building (Anthony et al., 2020).

In correspondence with the Anthony et al. (2020) study, the results from the Stinson et al. (2016) iPeer2Peer study also state that the internet improves the accessibility to peer mentors. Stinson et al. (2016) examined the iPeer2Peer program in

JIA patients via a wait-list pilot randomized control trial (RCT). Patients who met the inclusion criteria were randomly assigned to the intervention or wait-list control group. The participants were placed in their groups via a web-based randomization tool. All health care professionals and study investigators were blinded during group allocation. Peer mentors ages 16-25 years were paired with mentees ages 12-18 years. The peer mentors went through mentor training and were identified as successfully managing their JIA. Over eight weeks, the pair would connect via Skype ten times. Primary outcomes of the RCT focused on the implementation of the program. This included measures of feasibility and acceptability. The secondary outcome focused on the effectiveness of the program. This included measures of self-management, self-efficacy, pain, social support, and quality of life. Results showed there were a total of thirty adolescent participants. The mean age was 14.3 years old, and 97% of participants were of the female gender. The primary outcomes reported half of the total pairings completed the ten calls within the eight weeks. Participants reported satisfaction with the program, and all said that they would recommend it to their peers. Participants' mean engagement level with the program was 8.53/10 (Stinson et al., 2016). For the secondary outcomes, the individuals who completed the iPeer2Peer program noted improvement in their ability to manage their JIA.

The Stetler Model is the evidence-based framework selected for this clinical scholarship project. The Stetler model of evidence-based practice outlines criteria to determine the desirability and feasibility of applying a study or studies to address an issue (Stetler, 2001). This model includes the following five phases; First: preparation, second: validation, third: comparative evaluation/decision making, fourth: translation/

application, and fifth: evaluation (White et al., 2019). The Stetler Model will thoroughly evaluate and assess the process, workflow, and barriers to a successful family mentor program.

Organ transplantation is a life-saving measure for severely ill patients who might otherwise have deteriorating health outcomes that may lead to death. Patients and family members undergo both physical and mental stress throughout the transplant process. The stress experienced by the patients and family members may be lessened by utilizing a structured family mentor/support program.

## **Methods**

### **Design**

The proposed project was conducted as a descriptive program evaluation design utilizing the Stetler model to evaluate data regarding the family mentor/support programs in the diabetic and sickle cell departments at a Midwestern children's hospital. To gather meaningful data for evaluating resiliency and perceived stress regarding their participation in the family mentorship/ support program, families in both programs were emailed a Qualtrics survey.

### **Setting**

The setting was at a large children's hospital in the Midwest that serves approximately two hundred seventy-five thousand patients per year. The transplant unit is comprised of 110 multidisciplinary team members and serves approximately 476 children in solid organ transplants per year. The diabetes department serves 1,900 patients, and the sickle cell department serves 400 patients in the family mentor/support programming.

### **Sample**

This project used a convenience sample of families participating in the diabetes and sickle cell family mentor/support programs. Families who do not belong to the diabetic or sickle cell mentor/support groups were excluded. All active families who participate in diabetes and sickle cell family mentor/support programs as of January 2022 were included.

### **Data Collection/ Analysis**

The diabetic and sickle cell mentor/support programs leaders provided emails of the families who actively participated in the diabetic and sickle cell mentor/support programs. Both the diabetic and sickle cell mentor/support programs utilize a secured and monitored email group which contains all active members of the programs. The diabetic educator and the sickle cell social worker granted permission to access and utilize the email groups.

On February 9, 2022, diabetic and sickle cell families involved in the mentor/support programs were emailed an anonymous Qualtrics Survey. The Qualtrics survey settings were set to collect data anonymously and prospectively over six weeks in Spring 2022. Qualtrics is an online survey application that automatically de-identified participant data by de-identifying the website URL. When entering the survey, families were informed of what the survey entails and were provided an opt-in or opt-out option. The survey consisted of sixteen total questions. The first survey was the six-question Brief Resilience Scale (BRS), a five-point Likert scale asking participants about their perceived feelings of resilience. The second survey contained ten questions on the Perceived Stress Scale (PSS), a five-point Likert scale asking families about their perceived stress as a diabetic or sickle cell patient family.

**Approval Processes**

Formal, written approval from St. Louis Children's Hospital and Washington University in St. Louis Institutional Review Board (IRB) was obtained. IRB approval for this project was also obtained from the University of Missouri-St. Louis (UMSL) prior to implementation.

**Procedures**

The quality improvement project was led by the Doctor of Nursing Practice (DNP) candidate. A meeting with the leaders of the diabetic and sickle cell mentor/support programs occurred prior to the start of the survey. All involved parties agreed to provide emails of families who were active participants in the diabetic and sickle cell mentor/support programs. Once the secured and monitored email groups were obtained, the Qualtrics survey was sent out to the active participants of the diabetic and sickle cell mentor/support programs. The email included a brief introduction and explanation of the clinical scholarship project and an explanation of the surveys and the Qualtrics survey system. At the bottom of the email, the link to the Qualtrics survey was provided. The survey stayed open for a total of six weeks. The email was sent out again during week three to give the participants with an additional reminder to complete the surveys. The survey was closed at week six, and data was collected.

**Results**

Fourteen diabetic and sickle cell support/mentor program participants completed the Qualtrics surveys in full. Please see Table 1 and Table 2. A Spearman's Correlation

was utilized for both surveys to identify the strength and association between each of the survey questions. A positive correlation indicates as one variable increases, the other variable tends to increase. A negative correlation indicates as one variable increases, the other tends to decrease. Spearman's correlation coefficients range from -1 to +1. Results which are close to -1 or +1 represent a stronger relationship than results closer to zero (Frost, 2021).

### **Brief Resilience Scale (BRS) Survey Results**

The BRS contained a total of six questions. The options for the five-point Likert scale were 0-Strongly agree, 1-Agree, 2-Neither Agree or Disagree 3-Agree, and 4- Strongly Agree. The questions included in the BRS survey were the following. First, I tend to bounce back quickly after hard times. Second, I have a hard time making it through stressful events. Third, it does not take me long to recover from a stressful event. Fourth, it is hard for me to snap back when something bad happens. Fifth, I usually come through difficult times with little trouble. Sixth, I tend to take a long time to get over setbacks in my life. A review of the BRS descriptive statistics showed that many participants show resilience through difficult times.

To see if the questions in the survey were correlated in a positive direction, a Spearman correlation analysis was conducted among all questions in the BRS survey. In Table 3, BRS Spearman Correlation, there is a positive correlation between question two and questions four and six. Between two and four the result was 0.680. Between two and six the result was 0.632. This positive correlation shows participants felt during stressful events the duration to overcome or snap back may take a longer time. This result indicates the participants stress level may affect their resiliency. Another positive

correlation is between questions one and five (0.477). In this correlation the participants felt they bounce back quickly and with little trouble after difficult times. This result indicates the participants showed increased resilience during difficult times.

The BRS survey further showed that 64% of participants disagree that it takes them a long time to get over setbacks in their lives. Fifty-seven percent of the participants agree they tend to bounce back quickly after hard times. Fifty percent neither agree nor disagree that they have a hard time making it through stressful events. However, as Figure 3 shows, the participant's responses varied greatly in their answer for this specific question. Fifty percent of the participants disagree that it is hard for them to snap back when something terrible has happened.

The question, "It does not take me long to recover from a stressful event," was split at 35% disagreeing and 35% stating they neither agree nor disagree. However, when looking at Figure 1, and as previously stated, the majority of the participants did not feel that it took them long to overcome the setbacks within their lives. Finally, 42% neither agree nor disagree that they come through difficult times with little trouble.

### **Perceived Stress Scale (PSS) Survey Results**

The PSS contained ten questions that looked at the participant's stress level from the previous month. The options for the five-point Likert scale were 0-Never, 1-Almost Never, 2-Sometimes, 3-Fairly Often, and 4- Very Often. The survey questions were the following. First, in the last month, how often have you felt difficulties were piling up so high that you could not overcome them? Second, in the last month, how often have you been upset because of something that happened unexpectedly? Third, in the last month, how often have you felt that you were unable to control the important things in your life?

Fourth, in the last month, how often have you felt nervous and stressed? Fifth, in the last month, how often have you felt confident about your ability to handle your personal problems? Sixth, in the last month, how often have you felt that things were going your way? Seventh, in the last month, how often have you found that you could not cope with all the things that you had to do? Eighth, in the last month, how often have you been able to control irritations in your life? Ninth, in the last month, how often have you felt that you were on top of things? Tenth, in the last month, how often have you been angered because of things that happened that were outside of your control? In reviewing the PSS descriptive statistics, many participants selected answers which correlated with higher stress levels; however, they also selected answers that coordinated with feeling confident in their ability to handle the stress.

To see if the questions in the survey were correlated in a positive direction, a Spearman correlation analysis was conducted among all questions in the PSS survey. In Table 4, when comparing questions two and four there is a significant positive correlation result of 0.866. This positive correlation reflects a strong number of the participants felt stressed or nervous within the last month and them feeling upset due to an unexpected event. This result indicates higher stress levels among the participants. Furthermore, there is also a significant positive correlation between questions seven and ten (0.878). The two questions reflect the inability to cope with tasks the participants had to do within the last month and how often the participants became angered due to things being out of their control. This result also indicates many of the participants feel they have a higher level of stress which may be difficult to control at times. The final significant positive correlation in Table 4 is between questions one and seven (0.837). This correlation shows increased

and inability to manage stress among the participants. The participants indicated they have trouble coping and overcoming specific difficulties when certain tasks begin piling up.

The PSS survey showed that 57% of participants fairly often felt confident about their ability to handle their personal problems. Please see Figure 2. Fifty percent reported that they felt in the last month they were sometimes able to control their irritations in their life and that things were going their way. Within the last month, 42.9% of the participants felt fairly often that they were able to stay on top of things. Thirty-six percent of participants felt that sometimes specific difficulties were piling up so high that they were not able to overcome them, and they could not cope with all the tasks they had to do.

Thirty-six percent of participants felt that sometimes they become upset because of something unexpected. Thirty-six percent of the participants felt nervous or stressed only some of the time. Another 35.7% recorded that they felt stressed or nervous fairly often. Also, 28.5% of the participants felt that sometimes they could not control the essential things in their lives. Finally, 35.7% of participants almost never and only sometimes felt they were angered because of things outside of their control.

### **Discussion**

This QI project aimed to evaluate and identify the current family mentor/support recruitment structure in the diabetic and sickle cell departments and understand what factors led to successful implementation and ongoing program success. The primary outcome measure was to identify the current family mentor/support recruitment structure and potential barriers. The secondary outcome aimed to identify how stress and resiliency

manifest in these families and how this is addressed in those participating in the diabetic and sickle cell family mentor/support programs. The question for study was, after careful evaluation of the diabetic and sickle cell mentor/support programs, what are the identifying factors for the creation and success of a family mentor/support program in a pediatric transplant department?

The results gathered in this QI project showed a common theme of resilience among the participants. Many of the participants still have a great deal of stress. However, the participants show resiliency during difficult times and have confidence in handling their stress. Unfortunately, due to the generalized questions, it is unclear if the participant's reliance is due to their participation in their family support/mentor programs or from outside sources.

Limitations to this QI project included a low number of returned surveys and the lack of demographic information collected from participants. The survey did not differentiate between diabetic and sickle cell families. Therefore, we cannot determine if one group has more stress or resilience than another. Another limitation was how broad the survey questions were, and the surveys lacked specific questions regarding their current family support/mentor programs. Due to these limitations, fourteen surveys were completed, and only general information was gathered. The lack of returned surveys may be due to the survey being unincentivized and the participants not knowing the surveyor.

Recommendations for the next steps in this QI project would follow the CDC Six-Step framework for program evaluation and continue the Stetler Model. The next step would be to survey the active transplant families to understand their current stress levels and resiliency abilities. These surveys will include more transplant-specific questions and

will gather demographic data. The results will then be distributed to the current stakeholders. Once the stakeholders have provided their recommendations, the development of a pediatric transplant-specific family support/mentor program will begin. Once the program is implemented, the active participants of the transplant family support/mentor program will be re-surveyed to evaluate if their stress or resiliency levels have changed. These surveys will include questions that specifically ask how the transplant family support/mentor program assists in alleviating stress and how it helps build resilience. The results of the final survey will provide the transplant program the information needed to confirm the success of the family mentor/support program.

### **Conclusion**

Pediatric organ transplantation is constantly changing due to ongoing research and medical advancements. However, the stress accompanying pediatric organ transplantation will remain for the patients and family members. This QI project successfully identified the stress and resiliency levels of the active participants in the diabetic and sickle cell support/mentor programs. Unfortunately, this project had significant limitations due to the broad nature of the survey questions and the lack of demographic information. Future recommendations include transplant specific survey questions gathering demographic information and correlating the family support/mentor program with the participant's stress and resiliency levels.

Overall, this QI project was a success and showcased the importance of the Doctor of Nursing Practice (DNP) degree. The DNP prepared nurse not only impacts patient care by directly implementing clinical research into practice but can also have a great effect on the healthcare system. A DNP graduate blends the art of nursing, the

knowledge of health care policy and organization leadership together to develop the best possible healthcare outcome for their patient population.

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## Appendix A

**Table 1***Brief Resilience Scale (BRS) Survey Results*

Questions	I tend to bounce back quickly after hard times	I have a hard time making it through stressful events	It does not take me long to recover from a stressful event	It is hard for me to snap back when something bad happens	I usually come through difficult times with little trouble	I tend to take a long time to get over setbacks in my life
Number of Participants	14	14	14	14	14	14
Mean	2.50	1.93	2.00	1.64	2.14	1.71
Median	3.00	2.00	2.00	1.50	2.00	1.00
Standard Deviation	1.019	0.917	0.784	0.929	0.770	0.994

*Note:* This table demonstrates a Likert scale with the following ranges:

- 0- Strongly Disagree
- 1- Disagree
- 2- Neither Agree or Disagree
- 3- Agree
- 4- Strongly Agree

## Appendix B

**Table 2***Perceived Stress Scale (PSS) Survey results*

Question	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	In the last month, how often have you been upset because of something that happened unexpectedly?	In the last month, how often have you felt that you were unable to control the important things in your life?	In the last month, how often have you felt nervous and stressed?	In the last month, how often have you felt confident about your ability to handle your personal problems?	In the last month, how often have you felt that things were going your way?	In the last month, how often have you found that you could not cope with all the things that you had to do?	In the last month, how often have you been able to control irritations in your life?	In the last month, how often have you felt that you were on top of things?	In the last month, how often have you been angered because of things that happened that were outside of your control?
Number of Participants	14	14	14	14	14	14	14	14	14	14
Mean	1.71	2.14	1.93	2.50	3.14	2.36	1.79	2.64	2.79	1.86
Median	2.00	2.00	2.00	2.50	3.00	2.00	2.00	2.50	3.00	2.00
Standard Deviation	1.326	0.949	1.207	0.941	0.663	0.929	1.188	0.745	0.893	1.167

*Note:* This table demonstrates a Likert scale with the following ranges:

- 0- Never
- 1- Almost Never
- 2- Sometimes
- 3- Fairly Often
- 4- Very Often

## Appendix C

**Table 3***Brief Resilience Scale (BRS) Spearman's Correlation*

Questions		I tend to bounce back quickly after hard times	I have a hard time making it through stressful events	It does not take me long to recover from a stressful event	It is hard for me to snap back when something bad happens	I usually come through difficult times with little trouble	I tend to take a long time to get over setbacks in my life
I tend to bounce back quickly after hard times	Correlation Coefficient	1.000	-.501	.078	-.554*	.477	-.550*
I have a hard time making it through stressful events	Correlation Coefficient	-.501	1.000	.113	.680**	-.419	.632*
It does not take me long to recover from a stressful event	Correlation Coefficient	.078	.113	1.000	-.087	-.226	-.209
It is hard for me to snap back when something bad happens	Correlation Coefficient	-.554*	.680**	-.087	1.000	-.550*	.611*
I usually come through difficult times with little trouble	Correlation Coefficient	.477	-.419	-.226	-.550*	1.000	-.286
I tend to take a long time to get over setbacks in my life	Correlation Coefficient	-.550*	.632*	-.209	.611*	-.286	1.000

*Note:* \*. Correlation is significant at the 0.05 level (2-tailed).

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## Appendix D

**Table 4**

*Perceived Stress Scale (PSS) Spearman's Correlation*

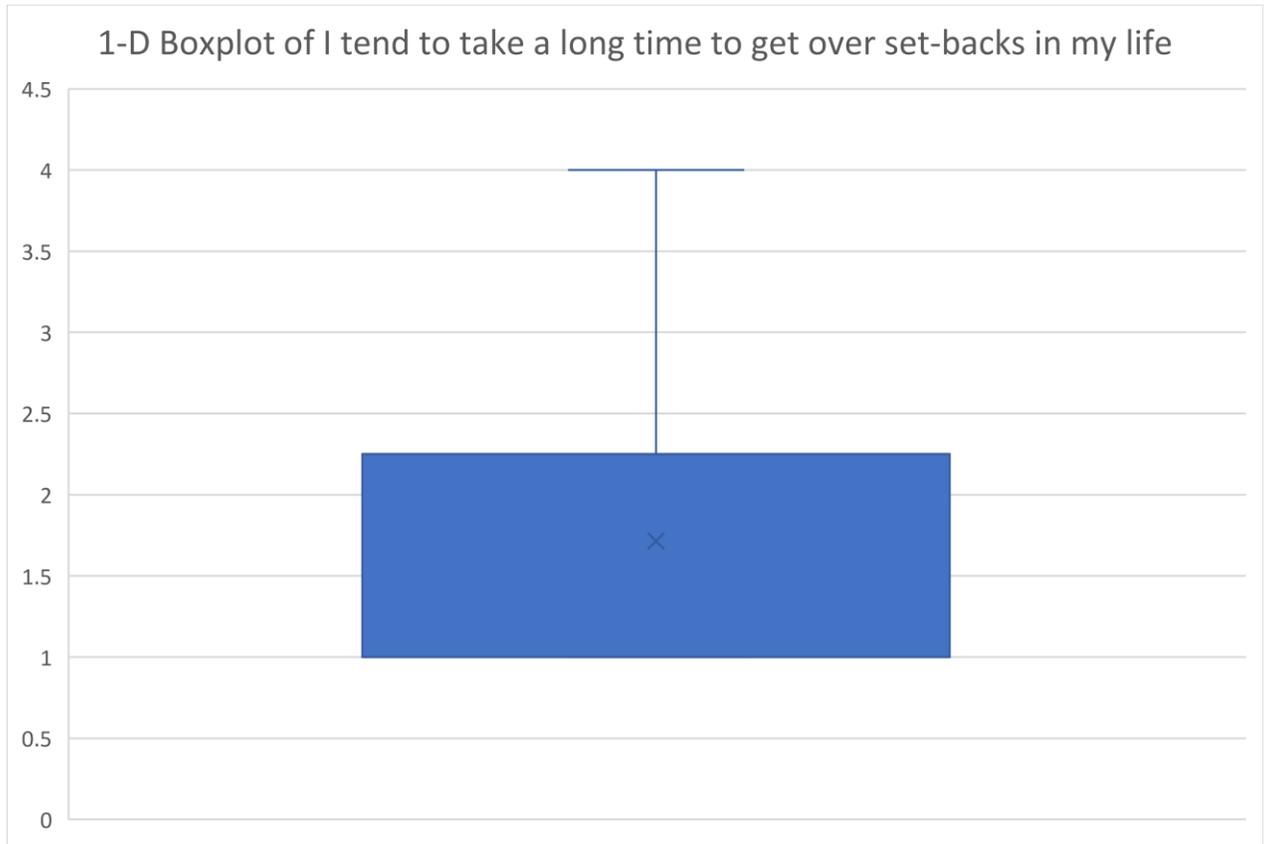
Questions		In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	In the last month, how often have you been upset because of something that happened unexpectedly?	In the last month, how often have you felt that you were unable to control the important things in your life?	In the last month, how often have you felt nervous and stressed?	In the last month, how often have you felt confident about your ability to handle your personal problems?	In the last month, how often have you felt that things were going your way?	In the last month, how often have you found that you could not cope with all the things that you had to do?	In the last month, how often have you been able to control irritations in your life?	In the last month, how often have you felt that you were on top of things?	In the last month, how often have you been angered because of things that happened that were outside of your control?	
Spearman's rho	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	Correlation Coefficient	1.000	.671**	.695**	.592*	-.850**	-.500	.837**	-.521	-.737**	.708**
	In the last month, how often have you been upset because of something that happened unexpectedly?	Correlation Coefficient	.671**	1.000	.673**	.866**	-.636*	-.434	.647*	-.476	-.529	.691**
	In the last month, how often have you felt that you were unable to control the important things in your life?	Correlation Coefficient	.695**	.673**	1.000	.605*	-.442	-.367	.727**	-.536*	-.591*	.710**
	In the last month, how often have you felt nervous and stressed?	Correlation Coefficient	.592*	.866**	.605*	1.000	-.641*	-.425	.654*	-.485	-.746**	.796**
	In the last month, how often have you felt confident about your ability to handle your personal problems?	Correlation Coefficient	-.850**	-.636*	-.442	-.641*	1.000	.406	-.741**	.548*	.683**	-.645*
	In the last month, how often have you felt that things were going your way?	Correlation Coefficient	-.500	-.434	-.367	-.425	.406	1.000	-.549*	.375	.523	-.644*
	In the last month, how often have you found that you could not cope with all the things that you had to do?	Correlation Coefficient	.837**	.647*	.727**	.654*	-.741**	-.549*	1.000	-.600*	-.723**	.878**
	In the last month, how often have you been able to control irritations in your life?	Correlation Coefficient	-.521	-.476	-.536*	-.485	.548*	.375	-.600*	1.000	.365	-.571*
	In the last month, how often have you felt that you were on top of things?	Correlation Coefficient	-.737**	-.529	-.591*	-.746**	.683**	.523	-.723**	.365	1.000	-.723**
	In the last month, how often have you been angered because of things that happened that were outside of your control?	Correlation Coefficient	.708**	.691**	.710**	.796**	-.645*	-.644*	.878**	-.571*	-.723**	1.000

Note: \*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

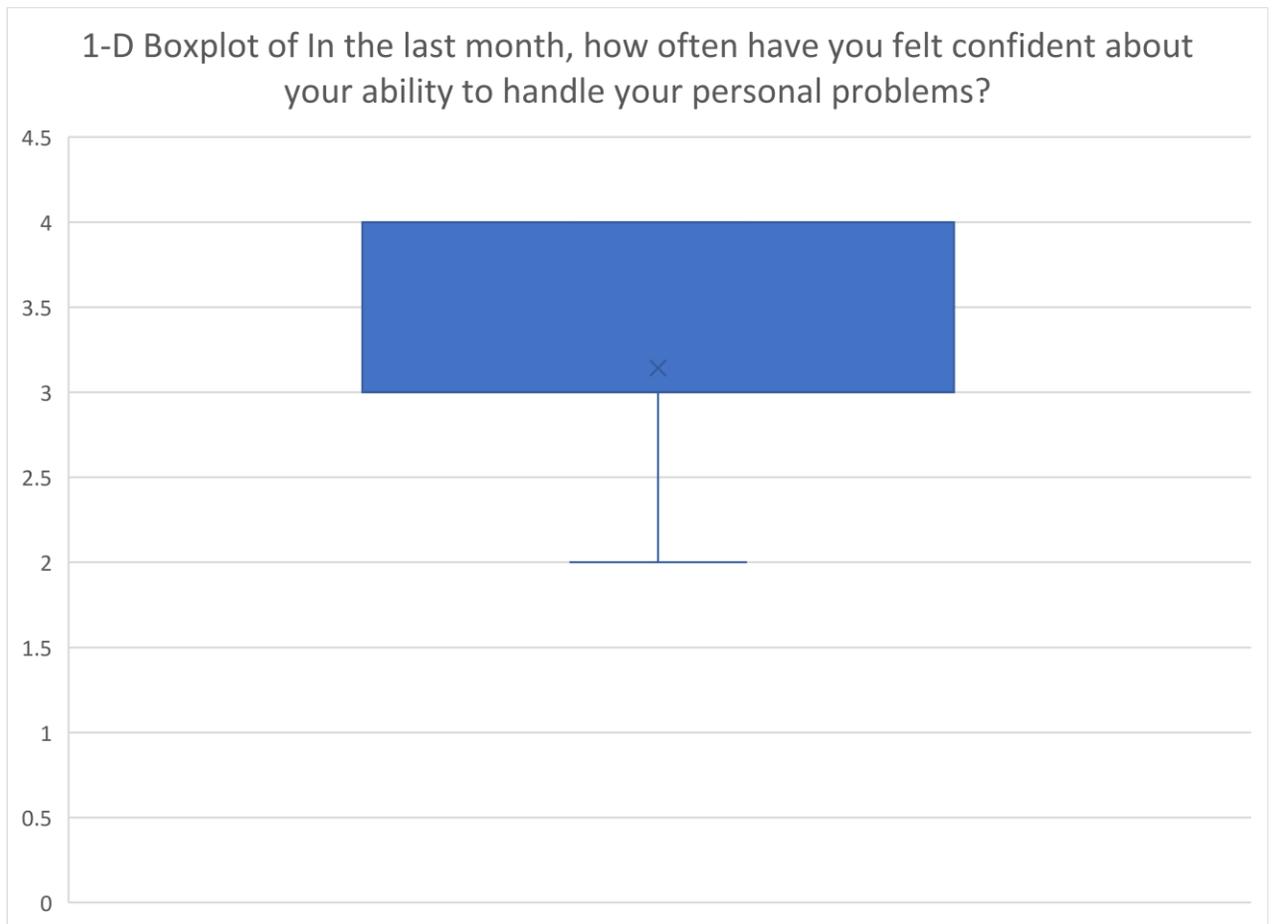
**Figure 1**

*Boxplot of question I tend to take a long time to get over setbacks in my life*



**Figure 2**

*Boxplot of question In the last month, how often have you felt confident about your ability to handle your personal problems?*



Appendix G

**Figure 3**

*Boxplot of question I have a hard time making it through stressful events*

