



REDCAP DATA ANALYSIS

**Kidney Transplant Adolescent
Transition Program survey**

Dataset Information



The dataset is organized based on different events (visits), implying longitudinal data collection over time. Here's an overview of the data structure:



1. Patient Information: Identifiers: `participant_id`, `mrn`, `first_name`, `last_name`



2. Demographics: `birthdate`, `transplant_date`



3. Survey Timestamps: various timestamps for different assessments and questionnaires



4. Questionnaires and Assessments:

- AST Transition Readiness Questionnaire (mytx1-mytx38)
- AST Transition Readiness Assessment (txa1-txa47)
- BRIEF (Behavior Rating Inventory of Executive Function) Self-Report

- BRIEF
Parent/Informant
Report

- GAD-7 (Generalized
Anxiety Disorder 7-
item scale)

- PHQ (Patient Health
Questionnaire)
Depression Scale

- Social Needs Patient
Questionnaire

- Pittsburgh Sleep
Quality Index (PSQI)

- Perceived Stress
Scale

- PROMIS (Patient-
Reported Outcomes
Measurement
Information System)
scales

- PedsQL (Pediatric
Quality of Life
Inventory) Self-Report
and Parent Report

- PedsQL Transplant
Module

5. Calculated Scores:

- Domain scores for various assessments
- T-scores and percentiles for BRIEF assessments
- Total scores for questionnaires like GAD-7, PHQ, PSQI, and PedsQL provides a comprehensive view of the physical, psychological, and social aspects of adolescent kidney transplant patients' lives.
- It includes both self-reported and parent-reported measures, allowing for a multi-perspective analysis of the patients' well-being and adaptation to life post-transplant.
- The data can be used to assess various factors such as transition readiness, executive function, anxiety, depression, sleep quality, stress levels, and overall quality of life in these young transplant recipients.

Assessment completion rates:

There are 160 participants in the study.

Only 40 out of 160 participants have birthdate information, which limits our ability to analyze age-related factors.

Transplant dates are missing for all participants, which prevents us from analyzing post-transplant outcomes over time.

Assessment Completion Rates:

BRIEF (Behavior Rating Inventory): 38/160 (23.8%)

GAD-7 (Anxiety): 32/160 (20%)

PHQ (Depression): 33/160 (20.6%)

SDOH: 22/160 (13.8%)

PSQI (sleep quality): 20/160 (12.5%)

PedsQL : 15/160 (9.4%)

These scores suggest moderate to good quality of life overall, with social functioning being the highest-rated domain.

Anxiety Symptoms (GAD-7):

- Mean scores for individual items range from 0.90 to 1.34 (on a 0-3 scale).
- Item 6 has the highest mean (1.34), suggesting that "becoming easily annoyed or irritable" is a common issue.
- Further analysis could include calculating the total GAD-7 score and categorizing severity levels.

Depression Symptoms (PHQ):

- Mean scores for individual items range from 0.09 to 1.22 (on a 0-3 scale).
- The mean total PHQ-8 score is 6.72 (SD = 5.90), indicating mild depressive symptoms on average.
- 25% of respondents scored 9.5 or higher, suggesting moderate to severe depressive symptoms in a quarter of the sample.

Quality of Life (PedsQL):

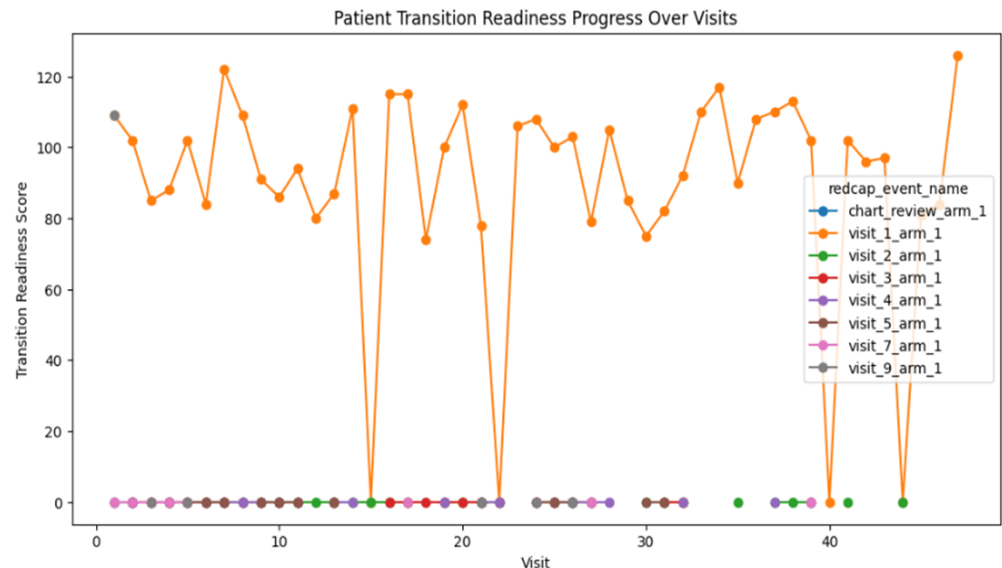
- Physical functioning (pedsq_activities_tot_ya)
mean: 68.75 (SD = 25.36)
- Emotional functioning (pedsq_feelings_tot_ya)
mean: 66.33 (SD = 22.64)
- Social functioning (pedsq_others_tot_ya)
mean: 80.67 (SD = 17.31)
- School functioning (pedsq_work_ya) mean:
67.27 (SD = 24.02)
- Total PedsQL score mean:
70.85 (SD = 19.28)

Longitudinal Analysis

Goal:

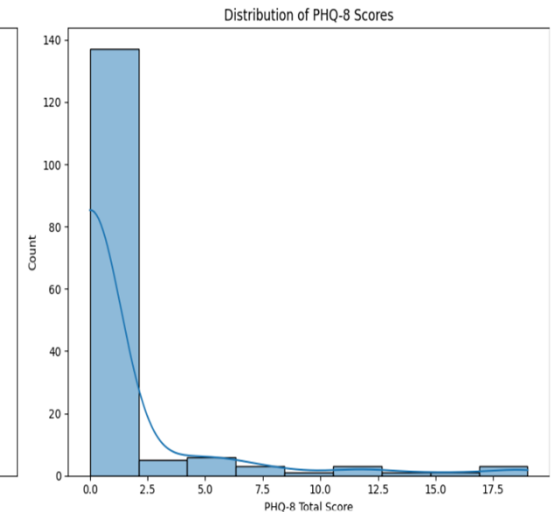
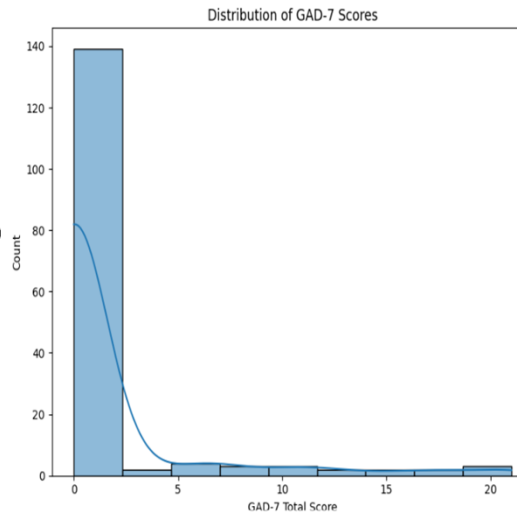
Track patient progress over multiple visits (e.g., visit_1_arm_1, visit_2_arm_1) and analyze trends in AST readiness over time.

- Most data points cluster around the 80-120 range, suggesting moderate to high transition readiness for many patients.
- There are some notable drops to 0, which could indicate missed visits or incomplete assessments.
- The chart_review_arm_1 (blue line) shows consistently low scores, possibly 5, indicating initial assessments or a different scoring method.
- There's no clear overall trend of improvement over time, suggesting that transition readiness may not consistently increase with more visits.

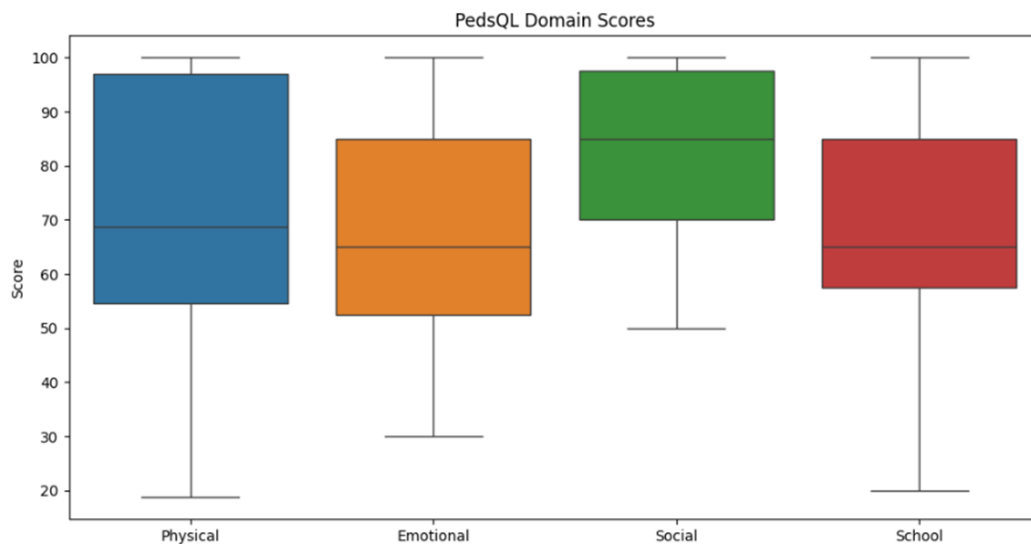


Mental Health Scores Distribution

- GAD-7 (Anxiety):
 1. The distribution is right-skewed, with most scores clustered at the lower end (0-5 range).
 2. This suggests that the majority of patients report low levels of anxiety.
 3. There's a long tail extending to higher scores, indicating some patients with moderate to severe anxiety.
- PHQ-8 (Depression):
 1. Similar to GAD-7, the distribution is right-skewed.
 2. Most scores are in the 0-7.5 range, suggesting mild or minimal depressive symptoms for the majority.
 3. The tail extends further than GAD-7, indicating more variability and potentially more severe cases of depression compared to anxiety.



Quality of Life (PedsQL) Domain Comparison



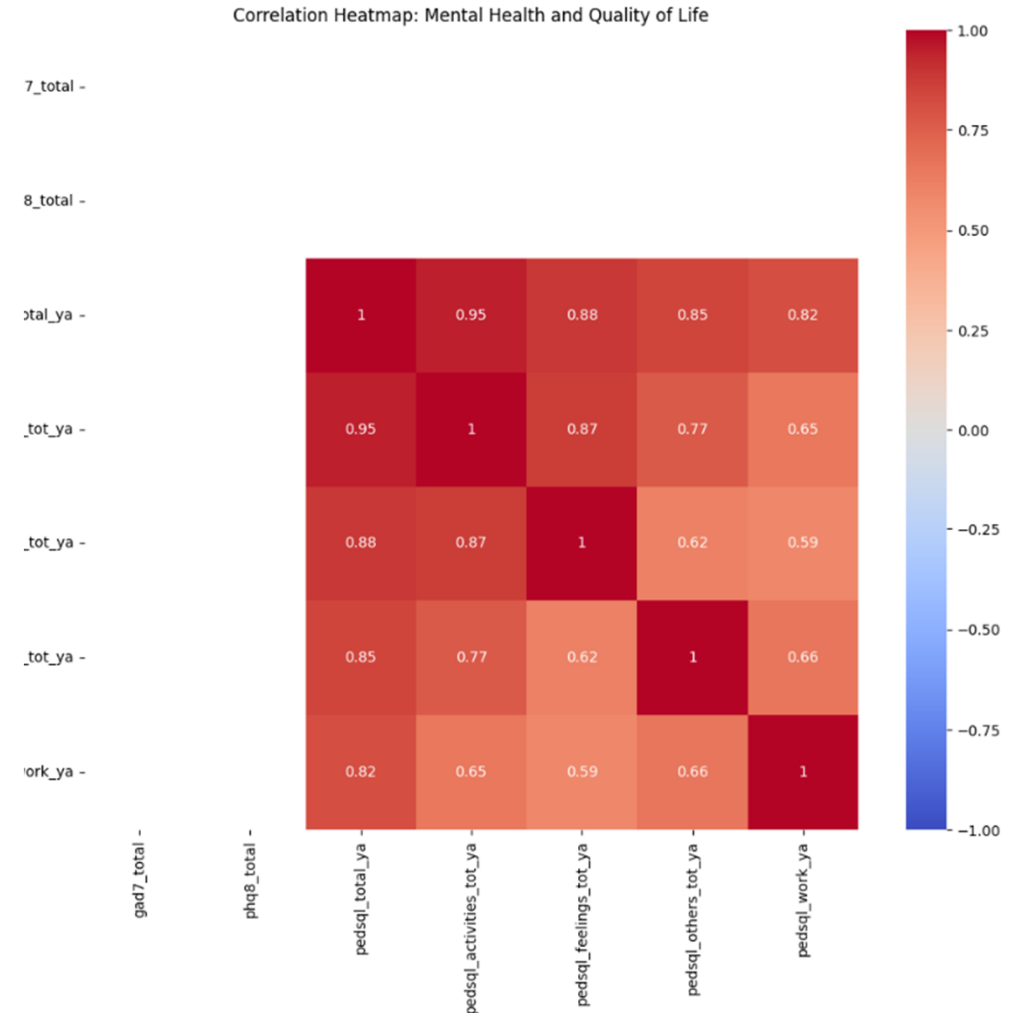
This boxplot compares the scores across different PedsQL domains, helping to identify areas where participants may be struggling more or less.

1. Social functioning has the highest median score and smallest interquartile range, suggesting patients generally report good social quality of life.
2. Physical functioning shows the largest spread, indicating high variability in physical well-being among patients.
3. Emotional functioning has the lowest median, suggesting this may be an area of concern for many patients.
4. School functioning shows a wide range, possibly reflecting diverse experiences in academic settings post-transplant.

Correlation Analysis: Mental Health and Quality of Life

This heatmap visualizes the correlations between mental health measures (GAD-7 and PHQ-8) and quality of life domains (PedsQL). It helps identify relationships between anxiety, depression, and various aspects of quality of life.

1. Strong positive correlations (0.82-1.00) exist between all PedsQL domains and the total score, indicating good internal consistency of the measure.
2. The strongest correlation (0.95) is between total PedsQL score and physical functioning, suggesting physical well-being strongly influences overall quality of life.
3. Emotional functioning correlates highly with physical (0.87) and total (0.88) scores, highlighting the importance of mental health in overall well-being.
4. School functioning has the weakest correlations with other domains, though still strong (0.59-0.66), possibly indicating its relative independence.



Social Determinants of Health (SDOH) Analysis

This bar plot shows the percentage of "Yes" responses to various Social Determinants of Health questions, highlighting the most prevalent social and environmental challenges faced by the participants.

1. Questions sdoh_9 and sdoh_10 (e.g., related to education, healthcare access) received the highest percentage of "Yes" responses (about 5% and 3% respectively).
2. Questions sdoh_2 and sdoh_3 also had notable "Yes" responses (both around 2%).
3. Many questions, particularly those related to financial needs and housing, received no "Yes" responses.
4. Overall, the percentage of "Yes" responses is quite low across all questions (5% maximum).
5. This could indicate either a population with few social determinant issues or potential underreporting.

