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Evaluating SBIRT in a Behavioral Health Urgent Care

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A Dissertation Submitted to The Graduate School at the

University of Missouri-St. Louis

in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice

with an emphasis in Psychiatric Mental Health Nurse Practitioner

August 2022

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Abstract

Background: Adolescent substance use (SU) is a major health concern. Most youth who engage in alcohol and other SU do not meet criteria for SU disorder (SUD). Nonetheless, evidence shows SU during adolescence impacts cognitive, social, and emotional development, increases risk of physical injury, and may progress to SUD in adulthood. Only half of clinicians properly screen adolescents for SU; those identified with SUD often receive no intervention. Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an evidence-based intervention to address this problem. The purpose of this project was to evaluate implementation of SBIRT using CRAFFT 2.1+N, a SU screening tool for adolescents, as the new standard of care in a behavioral health urgent care (BHUC) in a suburban area of a Midwestern state.

Method: This quality improvement (QI) project was a prospective record review collecting data three months after SBIRT implementation from self-administered screening forms completed by adolescents ages 12-18. Behavioral health (BH) therapists administered SBIRT and reported interventions delivered.

Results: Out of 235 adolescents, 118 (50.2%) received screening using the CRAFFT 2.1+N. Therapists reported interventions for 100 clients (85%). Of these, 74% received at least one brief intervention (BI), and 15% were referred to treatment for any BH concern.

Conclusion: SBIRT implemented at this BHUC improved identification of SU risk and provided a model to deliver specialized interventions. Recommendations include using a multi-disciplinary team approach and electronic medical record (EMR) integration to enhance SBIRT delivery for youth in a BHUC setting.

Evaluating SBIRT in a Behavioral Health Urgent Care

Alcohol and substance use (SU) is problematic among adolescents, reaching epidemic proportions in the United States (U.S.) (Hernández et al., 2021; Johnston et al., 2016; McCance-Katz, 2020; Substance Abuse and Mental Health Services Administration [SAMHSA], 2017). The American Psychiatric Association (APA) (2013) describes substance use disorder (SUD), a clinical diagnosis, as problematic when it causes distress or impairment to daily functioning. SU among youth is unusually pathologic. However, evidence shows even casual SU among adolescents may negatively impact cognitive, emotional, and social development, increases odds of developing a SUD in adulthood, and can increase harmful risk behaviors leading to accidents, physical injury, or even death (Gray & Squeglia, 2018; Hamidullah et al., 2020; Hernández et al., 2021; Stahl, 2021; Trujillo et al., 2019).

In 2020, only 10% of American adolescents with a SUD received treatment (National Survey on Drug Use and Health, [NSDUH], 2021). Poor screening practices allow SU among youth to remain invisible (Levy et al., 2017; Monico et al., 2019), and forms a barrier to accessing care (Levy et al., 2016; National Academies of Sciences, Engineering, and Medicine [NASEM], 2021).

To combat adolescent SU and improve long term health outcomes, Screening, Brief Intervention, and Referral to Treatment (SBIRT) is a model to engage youth in multiple settings and can be delivered by a variety of providers (Levy et al., 2016). Using a validated, age-appropriate SU screening tool such as the CRAFFT 2.1+N is vital. American Academy of Pediatrics [AAP] (2016) recommends SBIRT as a best practice

intervention to ameliorate adolescent SU (Levy et al., 2016). SAMHSA (2021) supports SBIRT as an early intervention for SU, and the Centers for Disease Control and Prevention (CDC) (2021) validate SBIRT as an effective method to reduce alcohol use across all age groups.

The purpose of this prospective record review was to evaluate the program implementation and delivery of SBIRT for adolescents, ages 12-18, in a Behavioral Health Urgent Care (BHUC) setting. The aim for this quality improvement (QI) project was to evaluate the program's goals within three months of implementation, including:

1. Screen 60% of adolescent clients using the CRAFFT 2.1+N.
2. BH therapists deliver an appropriate intervention in response to risk level assessed from screening.
3. The Brief Negotiated Interview (BNI) is completed with at least 85% fidelity.

The evidence-based practice framework used to guide this project was the Institute for Healthcare Improvement's (IHI) Model for Change with a Plan-Do-Study-Act (PDSA) cycle.

This framework guided implementation and evaluation of the SBIRT model using CRAFFT 2.1+N for adolescents in a BHUC clinic. Known for its action-oriented approach tested on a small scale, PDSA allows stakeholders to learn from a project's impact and refine the process before wider implementation (Melnik & Fineout-Overholt, 2019).

The rate and fitness of specific SBIRT interventions delivered, including screenings, brief intervention (BI) components, and referrals to treatment, as well as the

rate of BNI delivery with fidelity, were the primary outcomes of interest. Barriers to SBIRT delivery in this setting, gained from qualitative data provided by the BH therapist, were secondary outcomes of interest.

The study questions for this project included:

1. What was the percentage of adolescents presenting to the BHUC who were screened using the CRAFFT 2.1+N?
2. Of youth screened, what percent received Brief Advice (BA) or BNI?
3. Of the BNIs delivered, what percent were completed with fidelity?
4. What percent of youth screened were referred to SU treatment?
5. What barriers prevented delivery of SBIRT in the BHUC?

Review of Literature

A literature search for current evidence was conducted using Medline EBSCO, APA PsychInfo, PubMed, and Google Scholar databases. Key search terms included: *SBIRT, CRAFFT, substance use screening, brief intervention, referral to treatment, adolescent, pediatric, child, teenager, young adult, primary care, emergency department, urgent care*, with Boolean operators AND and OR. Initial results generated 400 publications. The search was refined using a subject narrowing filter applying the keywords *mental disorders, substance abuse treatment centers, substance-related disorders* and the search was further refined by inclusion criteria consisting of peer reviewed and scholarly journal articles, full text access, published between 2016 and 2021, and sought content focused on the adolescent population, SU including alcohol, nicotine/tobacco, cannabis, and other illicit drugs. Exclusion criteria included: studies examining screening tools not pertaining to SU, published in a language other than

English, and outside of North America. These refinements generated 22 articles. The ancestry method identified five additional articles. Twenty-three articles were retained for use in this literature review.

Adolescent Substance Use

SU often begins during adolescence (Gray & Squeglia, 2018; Hamidullah et al., 2020). Adults with SUD report first use before age 18, emphasizing the need for early intervention (Levy et al., 2016). Delaying age of onset of drug or alcohol use is crucial (Trujillo et al., 2019). Specialized, preventative approaches to treat adolescent SU include validated, developmentally appropriate screenings and interventions that are evidence based (AAP, 2016; The Center for Adolescent Substance use and Addiction Research [CeASAR], 2018).

In a 2018 nationwide survey, 8th, 10th and 12th graders across the country reported a decrease in alcohol use, but use of cannabis, illicit drugs, and vaping (marijuana and nicotine) increased (Johnston et al., 2019). In this survey, 59% of 12th graders reported using alcohol at least once in their life. Of these, 46% used cannabis, 24% used cigarettes, 34% tried vaping nicotine, and 49% reported trying an illicit drug including inhalants. SU increased in all categories between 8th and 12th grades.

By 2019, nearly 700,000 adolescents ages 12 to 17 were diagnosed with marijuana use disorder, a significant increase since 2016 (McCance-Katz, 2020). In 2019-2020, 35% of youth used alcohol and 15% used marijuana at least once during their lifetime (SAMHSA, 2022). The Missouri Department of Mental Health Student Survey for 2020 showed in the last month 17% middle and high school students reported using alcohol and 8.9% used marijuana.

Most adolescents who use substances will not develop SUD (Gray & Squeglia, 2018). Hamidullah et al. (2020) emphasize that experimentation with substances might be considered developmentally appropriate for teens, however, it is not without consequences. Evidence shows SU adversely affects cognitive and executive function development at this age, potentially altering intellectual, social, and emotional health (Gray & Squeglia, 2018; Hamidullah et al., 2020; Stahl, 2021; Trujillo et al., 2019).

Risk factors for adolescent SU and SUD include male gender, history of trauma, sleep problems, in utero drug exposure, peer SU, and being in a relationship at an early age (Gray & Squeglia, 2018). Comorbid psychopathology, particularly depression and ADHD increase risk for SUD in adolescence (Gray & Squeglia, 2018; Hamidullah et al., 2020). It is recommended for treatment plans to prioritize addressing SU before or concurrently with mood, anxiety, and attention deficit disorders to be effective (Stahl, 2021).

Screening, Brief Intervention, and Referral to Treatment (SBIRT)

SBIRT has proven effective for adult SU, and experts also recommended this model for adolescents (AAP, 2016; CDC, 2021; SAMHSA, 2021; Levy et al., 2016). Using a standardized, validated tool to screen adolescents for SU is crucial to obtain accurate results (AAP, 2016; Levy et al., 2016; Shenoj et al, 2019). Clinical impressions based on the judgement alone leave room for bias and error, yet this is still common practice (Gray & Squeglia, 2018; Levy et al., 2016; Levy et al., 2017). The CRAFFT is a validated SU risk screening tool developed by Boston Children's Hospital designed for ages 12 to 18 (CeASAR, 2018). The CRAFFT 2.1+N, the most current version, screens for specific substance and nicotine use. Shenoj et al. (2019) found the CRAFFT to be

valid and reliable, able to predict risk for SUD according to the Diagnostic and Statistical Manual for Mental Disorders-5th edition (DSM-V) with scores of two and greater.

CRAFFT scores of one demonstrated sensitivity to indicate mild SU. These results were consistent for one, two, and three-year follow up surveys. Results from a cross-sectional survey of diverse adolescents ($N = 115$) investigating SU screening methods revealed privacy from parents or guardians, electronic platforms, and self-administration are preferred and yielded the most honest responses (Jasik et al., 2016).

There is evidence SBIRT is an effective intervention for adolescents. D'Amico et al. (2019) found SBIRT effective in a randomized controlled trial (RCT) demonstrating that cannabis use decreased and negative consequences from alcohol use improved at a one-year follow-up. This effect was greatest for mild alcohol and cannabis use. Sayegh et al.'s (2017) meta-analysis concurred and found the largest impact from BNIs for youth who reported mild use of cannabis, tobacco, and stimulant, yet found less effect for more complicated polysubstance use. Another meta-analysis evaluated 185 studies to examine efficacy of BIs for adolescents who used alcohol and found significant reductions in consumption and use-related problems up to one year (Tanner-Smith & Lipsey, 2015). Sterling et al.'s (2017) RCT ($N = 57$) investigated whether clinicians administering SBIRT were more successful helping youth initiate SU treatment. They found four times more youth from the intervention arms engaged in treatment compared to those who received usual care.

Sterling and colleagues went on to publish two corollary studies exploring SBIRT's improvement on outcomes. The BI delivered to the adolescents was found to reduce comorbid depression symptoms 6-12 months later (Sterling et al., 2018). The

group receiving SBIRT interventions compared to usual care ($N = 1871$) was found to be less likely to have a psychiatric diagnosis or chronic condition after one year; the SBIRT group had significantly fewer outpatient (OP) psychiatric visits ($p < .05$), was less likely to have a SUD, and more likely to engage in SU treatment upon a three year follow up (Sterling et al., 2019). Tait et al., (2016) supports the longevity of SBIRT's impact in a ten-year longitudinal RCT following adolescents receiving the intervention in an Emergency Department (ED), reporting statistically significant lower costs (\$22 for intervention versus \$277 without) and subsequent ED visits for SU ($p = .01$). The results showed clinically significant lower overall mean health costs (saving \$6087), lower costs associated with hospitalization (saving \$1991), and OP mental health services (saving \$3223).

Sayegh et al. (2017) found Motivational Interviewing (MI) strategies were most effective in reducing SU in the short-term. BI modalities using MI have shown greater effect size in outcomes over other modalities (Tanner-Smith & Lipsey, 2015). Li et al. (2016) presents somewhat contrary evidence when investigating MI's efficacy in behavior change, finding positive impact on SU attitudes yet little change in actual use. Miller & Rollnick (2014) highlight the importance of delivering MI with fidelity to be effective, explaining "what therapists are trained and expected to do, and what they *actually* do, is not always the same." Ultimately, when weighing risk versus reward, Levy et al., (2016) asserts the SBIRT model offers greater potential benefit to mitigate adolescent SU than possible harm.

For moderate to severe SUD, the appropriate intervention is referral to treatment (Levy et al., 2016). According to NSDUH (2021), 90% of adolescents with a SUD

received no treatment in 2020. SAMHSA (2017) estimated 37,000 (8%) Missouri children ages 12 to 17 needed but did not receive treatment for SU. Ineffective screening by healthcare providers allows adolescents with risky SU to remain vulnerable, undetected, and untreated.

Barriers and Solutions

Rates of SU screening by pediatric providers have improved between 2008 and 2014, yet fewer than half use validated SU screening instruments (Gray & Squeglia, 2018; Levy et al., 2017). Levy et al. (2017) found 96.2% of primary care providers (PCPs) surveyed were screening for adolescent SU in 2014, but 56.2% relied only on clinical impressions. Providers reported lack of time, staff, or resources prevent the use of SBIRT (Levy et al., 2017; Palmer et al., 2019). Confidence and training in SBIRT vary, but some providers felt their lack of education was becoming less of an obstacle than in years prior (Levy et al., 2017), while other providers still felt underprepared (Palmer et al., 2019). Additional barriers to SBIRT indicated by PCPs included hesitancy to navigate discussions with parents while upholding patient confidentiality, lack of time needed to deliver SBIRT, difficulty referring to treatment, and the need for better reimbursement (Palmer et al., 2019; Levy et al., 2017). Enhanced resources and reimbursement strategies were shown to increase SBIRT practice (Palmer et al., 2019).

Palmer et al. (2019) found lack of training, resources, and difficulty making referrals as barriers to using SBIRT, and suggested that specialized, dedicated behavioral health (BH) staff as a solution to improve SBIRT delivery. When Mitchell et al. (2020) compared SBIRT delivery by PCPs with specialized BH counselors, they found PCPs were five times more successful delivering SBIRT than the BH counselors. However, it

was concluded this was due to workflow issues. Several studies offer insight into practical implementation of SBIRT utilizing co-located BH workers as proposed solution, underscoring the necessity to consider workflow's impact on efficacy (Mitchell et al., 2020; Monico et al., 2019; Palmer et al., 2019; Sterling et al., 2017).

Every care encounter with adolescents presents an opportunity to prevent harmful consequences of SU for this vulnerable population. Monico et al. (2019) compared SBIRT practices in regular well-child with acute care visits, finding 95.1% received SBIRT during well child visits and 61.2% acute care visits; positive results were more likely in well child (9%) visits than an acute encounter (7.8%). However, acute care screenings served as a safety net, catching nearly 10% of adolescents who had not been screened in their PCP office, illustrating the impact of SU screenings in each setting.

Summary

SU among adolescents continues to be a concern in the U.S. and Missouri due to immediate and long-term risks. Screening and engagement in treatment needs improvement. Evidence supports the efficacy of SBIRT using validated screening tools like the CRAFFT, BNI using MI strategies delivered with fidelity, and referral to treatment when indicated. Further investigation into barriers using SBIRT with adolescents in a variety of settings could illuminate strategies to support providers. The IHI's PDSA cycle guided this program evaluation of implementation of the SBIRT model to improve healthcare delivery and outcomes.

Methods

Design

This quality improvement project utilized a prospective record review of quantitative and qualitative data to evaluate the initial implementation using SBIRT with all adolescent patients at a BHUC. Baseline data was obtained for three months prior to implementation during the initial three months of SBIRT implementation.

Setting

The setting for this QI project was a BHUC sponsored by a large, multi-state hospital system located in a midwestern suburb of a large metropolitan area. This walk-in clinic is a unique urgent care model specializing in behavioral healthcare treatment. The BHUC is supported by multiple collaborative community partnerships, including mental health safety net providers and substance use disorder providers. Clients across the lifespan present for a wide range of BH acuities and needs, such as an alternative to the Emergency Department, short term medication management, and connection to long term OP psychiatry and psychotherapy services. The clinic opened two years ago, and during the first year of service saw 2320 patients, with 256 of these between ages 13 and 17.

Sample

This was a convenience sample of patients ages 12 to 18 seeking episodic care at the BHUC, as well as a convenience sample of BH therapists delivering SBIRT to these patients. Data for every patient within this age range who received SBIRT was included; those outside this age range or whom clinicians deem inappropriate were excluded.

Data Collection and Analysis

Baseline data collected included the total number of patients seen at the BHUC and amount of SU referrals to treatment made for ages 12 to 18 during three months prior

to SBIRT implementation. These totals were collected by data specialists at the institution obtained from the EMR and from community partners who coordinate the referral programs. Prospective data was collected from anonymous, self-administered screening forms, which included the CRAFFT 2.1+N SU screening tool, self-reported demographics, and SBIRT interventions reported by the delivering BH therapist.

Data was analyzed with descriptive statistics using the Statistical Package for Social Science (SPSS), Version 27. Descriptive statistics were used to analyze demographics and CRAFFT scores. Percentages of specific SBIRT interventions delivered, including the six steps using MI within the BNI, were calculated. Appropriate interventions delivered per screening identified risk level were analyzed with descriptive statistics. Lastly, qualitative data reported by BH therapists administering SBIRT was used to identify barriers to delivery and was coded and analyzed for themes.

Approval Process

The protocol for this program evaluation was submitted to the site's Institutional Review Board (IRB) and financial business review board to ensure ethical approbation and was approved as an exempt review. Additional approval was obtained from the University of Missouri-St. Louis (UMSL) IRB.

Procedures

Project stakeholders (i.e. community partners and BHUC leadership) identified the SBIRT model using CRAFFT 2.1+N screening tool as a priority program to be implemented. Stakeholders met to establish goals for the program evaluation and determine primary and secondary outcomes. A plan to collect and analyze data was developed. Patients who met inclusion criteria completed self-administered screening

forms used during SBIRT delivery by BH therapists in the BHUC. After delivery of interventions, data describing interventions was added to the form by the BH therapist and locked in a secure cabinet. This cabinet was located in the BH therapist office and was accessible only by BH therapists and select BHUC staff. Data was collected and entered into an electronic data collection tool which was stored on a personal, password secured laptop in the Primary Investigator's (PI) possession and all forms were shredded. Data collected during the initial three months of implementation was used to evaluate this first PDSA cycle of the program.

Results

Demographics

During the first three months of SBIRT implementation at the BHUC, 50.2% ($N = 235$, $n = 118$) of adolescents ages 12 to 18 were screened using the CRAFFT 2.1+N (see Figure C1). Self-reported sociodemographic data ($n = 116$) indicated an average age of 15.1 ($SD = 1.917$), the mode age was 17 (17.8%) (see Figure A1). Greatest gender identities reported were female (49.9%), followed by male (37.3%), then non-binary (8.5%) (see Figure A2). Over half of the sample reported Caucasian/white ethnicity (51.7%), followed by African American/black (18.6%), and bi-racial/multi-racial (15.3%) (see Figure B1).

Reported zip code distribution was slightly concentrated around the metropolitan area of the BHUC's location (see Figure B2), including some clients from rural areas and geographic outliers including one from another part of the state and two from states in the Eastern region of the U.S. However, no single area represented more than 5.4% screenings.

Screening

Three months prior to program implementation, 188 clients ages 12 to 18 presented to the BHUC. After SBIRT implementation, between January 24, 2022, and April 24, 2022, 235 adolescents sought care. Of these, 118 (50.2%) were screened using the CRAFFT 2.1+N (see Figure C1), although of note, only 79 (33.6%) were recorded by the therapist in the EMR. Of the CRAFFT 2.1+N screenings delivered, over half (52.5%) scored 0 and 20.3% scored 1, indicating little to no risk (see Figure C2). Notably, 32 adolescents (27%) scored 2 or higher (10.2% scored 2, 5.9% scored 3, 4.2% scored 4, 4.2% scored 5, 2.5% scored 6), indicating problematic substance use. Problematic scores were more common in zip codes near the BHUC, but no clinically significant trends were identified (see Appendix D).

Interventions

BH therapists reported interventions delivered at a rate of 84.7%, leaving 18 of 118 screenings with missing data (see Figure E1). Of these ($n = 100$), therapists reported delivering at least one BA or BNI intervention to 74 clients. Of BNIs delivered, 11% reported treatment fidelity and were delivered at least five of six steps of the BNI using MI strategies. The most consistent step of the BA delivered was “positive reinforcement/education” with 66% of interventions completing this step. The BNI steps “engagement” and “pros & cons” was delivered 19.5% and 19.5% of the time, respectively (see Figure G2). The BNI steps most seldom delivered were “readiness ruler” and “negotiate action plan” at 11% and 10%, respectively.

Of the 32 adolescents with at risk screening on the CRAFFT 2.1+N, 19 received at least one BA or BNI, nine received a BNI completed with fidelity, 15 received a

referral to treatment, and three were missing intervention data (see Figure E2). Of 11 positive endorsements of the “Car” question, four (36.4%) received the appropriate BA “educated on driving/riding in the car with someone intoxicated,” and seven did not (see Figure F1). Problematic CRAFFT screenings and total interventions delivered to each show a weak positive trend indicating possible clinical significance (see Figure G1).

Referral to Treatment

During the three months prior to SBIRT implementation, 188 adolescents were seen and zero referrals to the specialized SU treatment agency were made by BHUC clinicians. After SBIRT was implemented, 15 referrals were reported by BH therapists (see Figure F2). The remaining referrals included five acute inpatient admissions, general mental health outpatient or intensive outpatient providers, and three unspecified “others”.

Barriers

Six themes were identified as barriers to delivery from qualitative data: the client was seen by the NP only, no intervention needed, youth or family refused interventions, inpatient admission, client unable to participate due to altered mental status, and the adolescent already receiving SU treatment services. Analysis indicated that being “seen by the Nurse Practitioner (NP) only” was the greatest contributing barrier, indicating the greatest impact on delivery of care (see Appendix H).

Discussion

Successes

Within three months of implementing SBIRT at the BHUC, 118 adolescents (50.2%) were screened for SU using a validated, age-appropriate tool. At least 74 clients received an evidence-based intervention, meeting the program aim. Thirty-two patients

were identified to have SU risk. As risk increased, more interventions were delivered, and each screening and intervention represent improving access to care during the critical stage of adolescence.

Therapists reported three referrals to a specialized SU treatment provider after SBIRT implementation, an increase from zero referrals prior. Care delivered in the future will improve because the referral pathway to this agency was strengthened after issues with the referral method were identified.

Challenges and Limitations

Target aims to screen at least 60% of adolescents presenting and deliver BNIs with 85% fidelity were not met. Limitations that may have contributed to these results include high staff turnover and shortages coupled with increased patient volume, issues likely exacerbated by the global COVID-19 pandemic. Other barriers may include lack of time due to a quality metric to discharge clients within 120 minutes, lack of staff buy-in or consensus that this was a priority, safety issues presenting due to the wide range of acuities presenting, and insufficient SBIRT training.

Qualitative data from BH therapist feedback revealed a significant barrier when the client was “seen by the NP only.” This phrase indicates the current workflow may rely too heavily on therapists; if CRAFFT screening is not initiated by staff nurses who start the process by distributing the self-administered form, and not ensured by the NP who may be the only clinician assessing and treating the client, it is unlikely the therapist would have time or opportunity to engage the client in SBIRT in an efficient, meaningful way before discharge from the walk-in clinic. Furthermore, SBIRT documentation was

never integrated into EMR, an essential aspect of the workflow process which promotes accountability and accuracy.

Additional limitations of this program evaluation included time constraints and the dependence on reports provided on paper screening forms as opposed to the EMR, which may be unreliable in content and quantity.

Recommendations

To ensure future success for this program, barriers need to be addressed and the workflow must be corrected. Engaging the clinic's multi-disciplinary team of staff nurses, therapists, and NPs to support this new standard of care may be a strategy to promote higher compliance. Integrating the CRAFFT 2.1+N screening and delivered interventions into the required EMR documentation will encourage accountability. Offering further education and training for clinicians delivering the BNI using MI strategies will support treatment integrity.

Due to the nature of these patients, those with mental and behavioral health issues who have higher risk of problematic SU, a BHUC has potential for greater impact implementing such a program than other settings. Further research on the impact SBIRT has on SU, mental health, and economic outcomes when delivered in a BHUC setting is needed.

Conclusion

Metrics of the initial SBIRT implementation period of this new standard of care may not have met all program aims, but more than half of the adolescents seeking mental health treatment received evidence-based interventions to treat SU, a clinically significant success. Screening that revealed increased risk received greater interventions. Major

barriers encountered revolved around workflow issues. Recommendations to utilize a multi-disciplinary health care team approach, EMR integration, and additional education and training to support the SBIRT model may guide the next PDSA cycle to better strengthen the BHUC's ability to deliver quality, evidence-based care to adolescents with potential SU issues.

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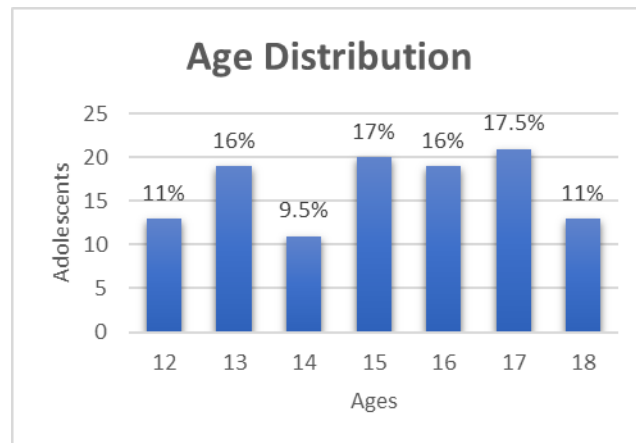
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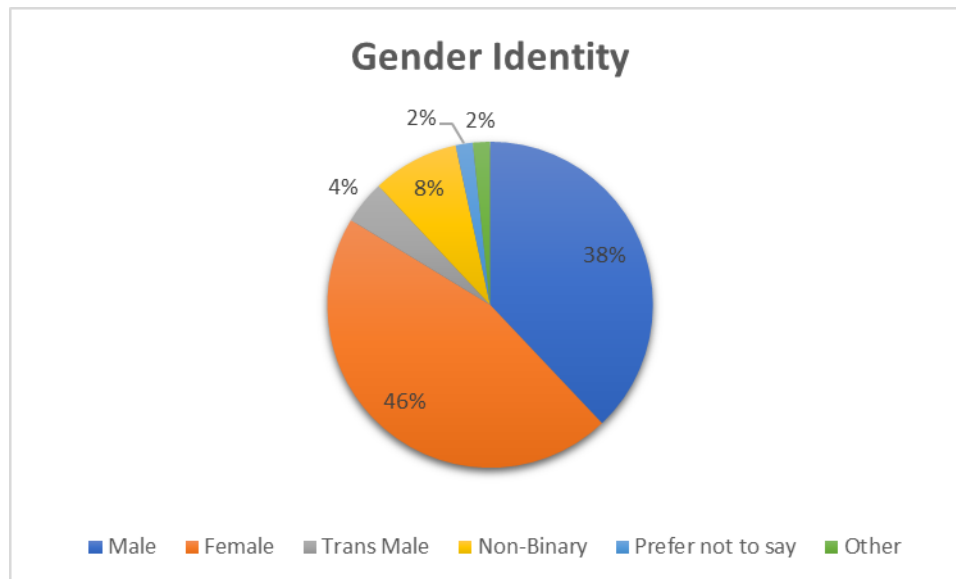
Appendix A

Figure 1



Note. ($N = 118$); clients were mean of 15.1 years old ($SD = 1.917$); unreported data 1.7% ($n = 2$).

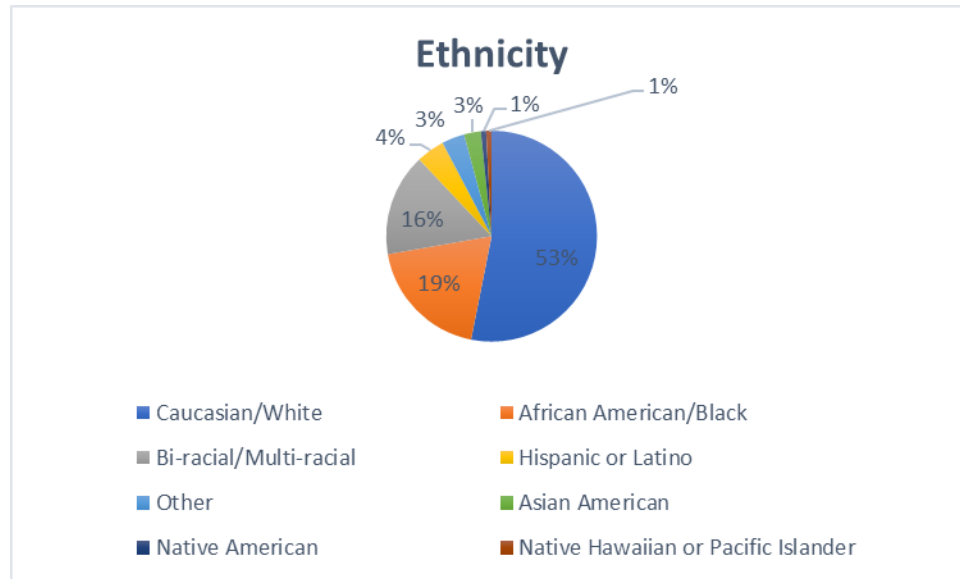
Figure 2



Note. ($N = 118$); unreported data 1.7% ($n = 2$); gender identity was self-reported.

Appendix B

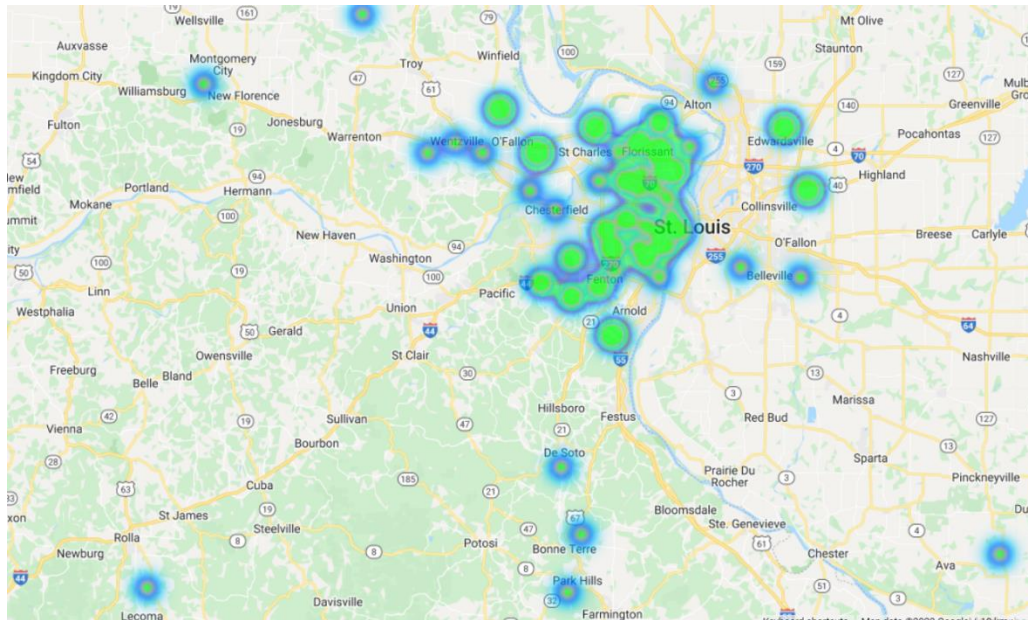
Figure 1



Note. (N = 118); unreported data 1.7% (n = 2); ethnicity was self-reported.

Figure 2

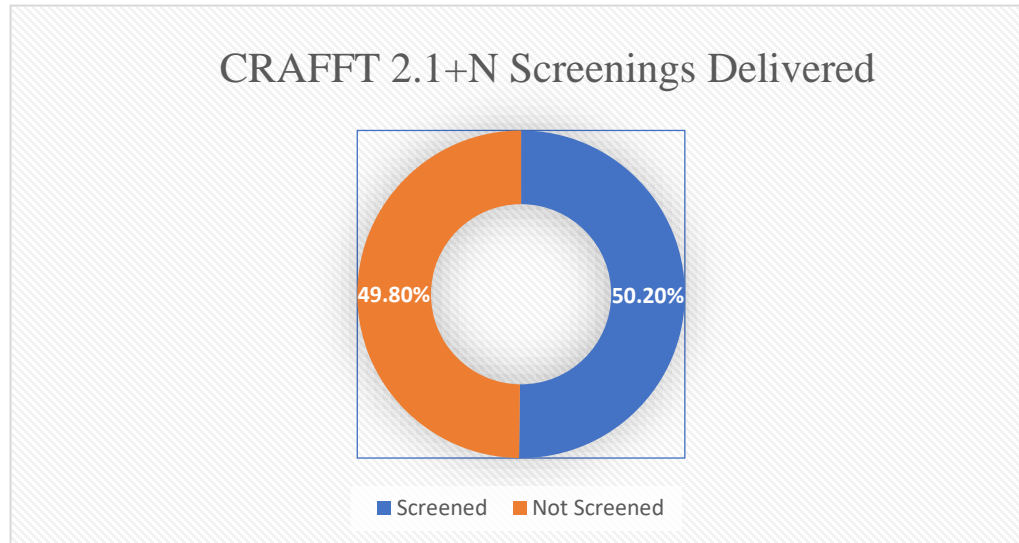
Heat Map of Zip Code Distribution of Reported Sample



Note. (N = 118); geographic outliers (n = 3); missing data (n = 26)

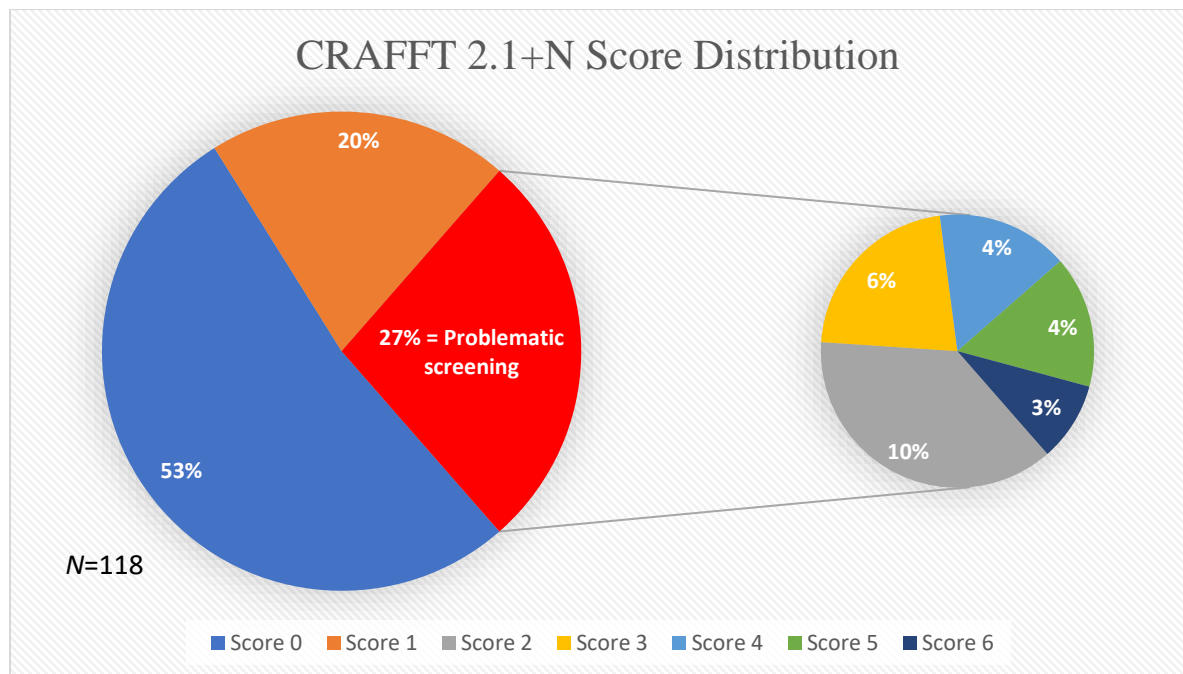
Appendix C

Figure 1



Note. Total adolescent seeking care at the BHUC (N = 235).

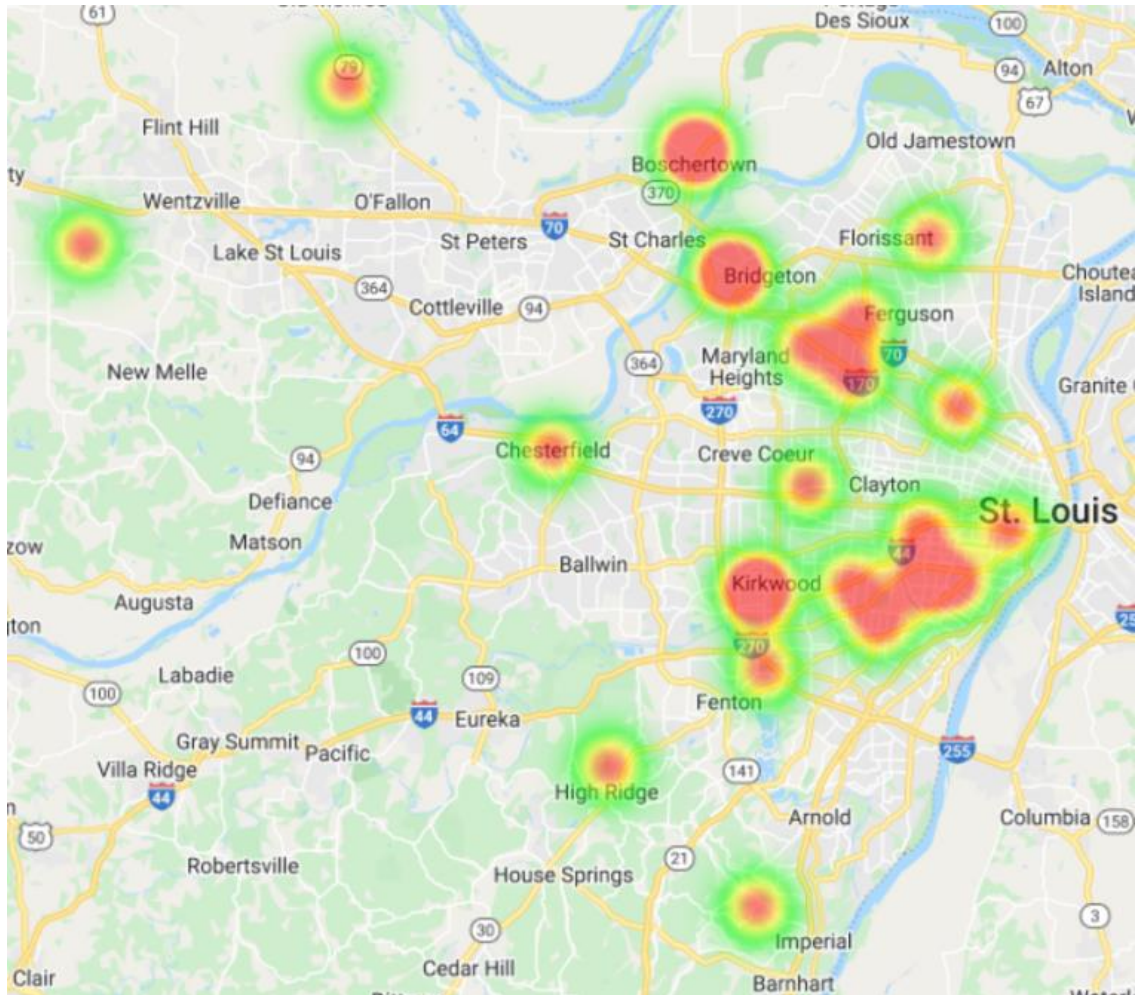
Figure 2



Appendix D

Figure 1

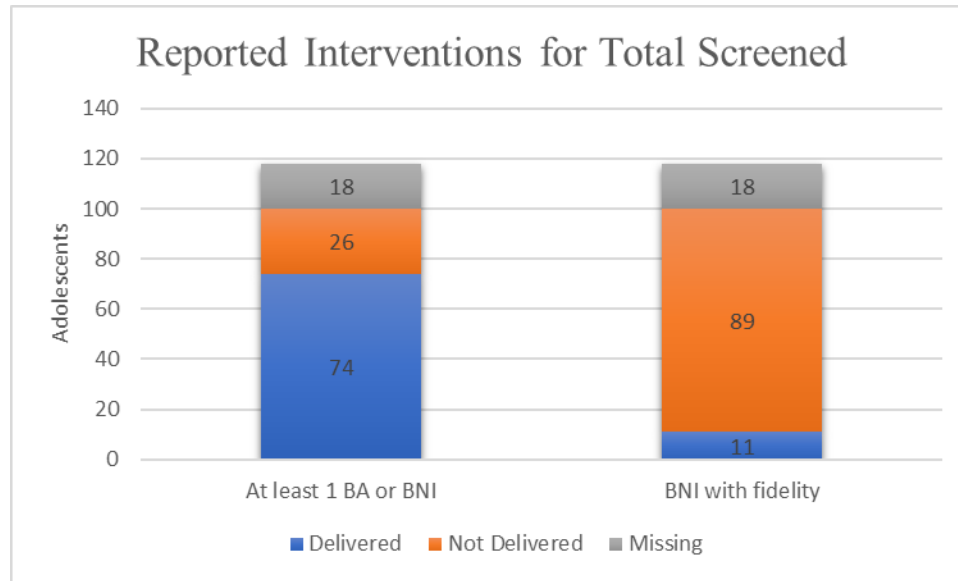
Heat Map of Zip Codes with Problematic Screenings



Note. ($N = 118$, $n = 32$); geographic outliers excluded ($n = 3$); missing data ($n = 6$); problematic screening defined as CRAFFT score of 2 and greater.

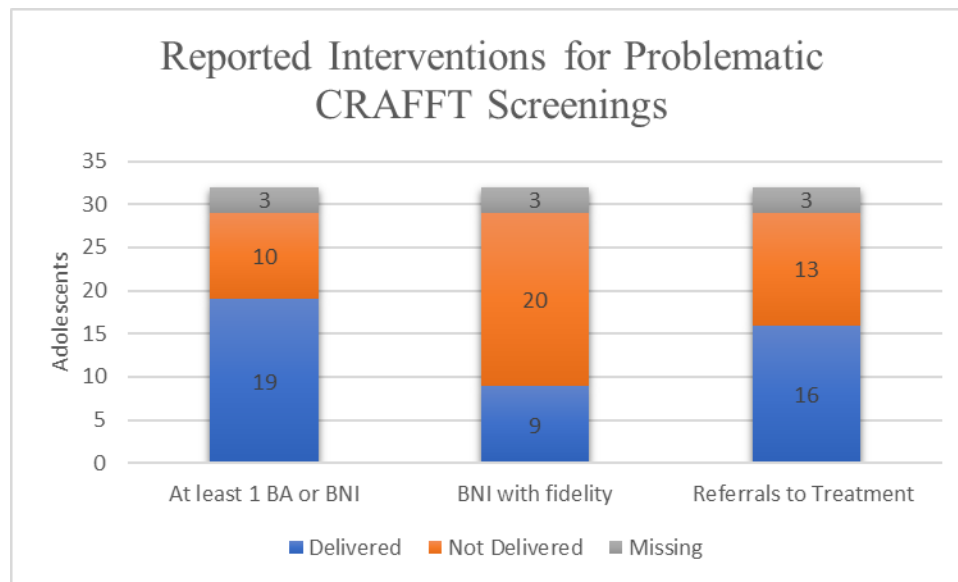
Appendix E

Figure 1



Note. (N = 118, n = 100); BNI with fidelity of 85% of MI steps delivered.

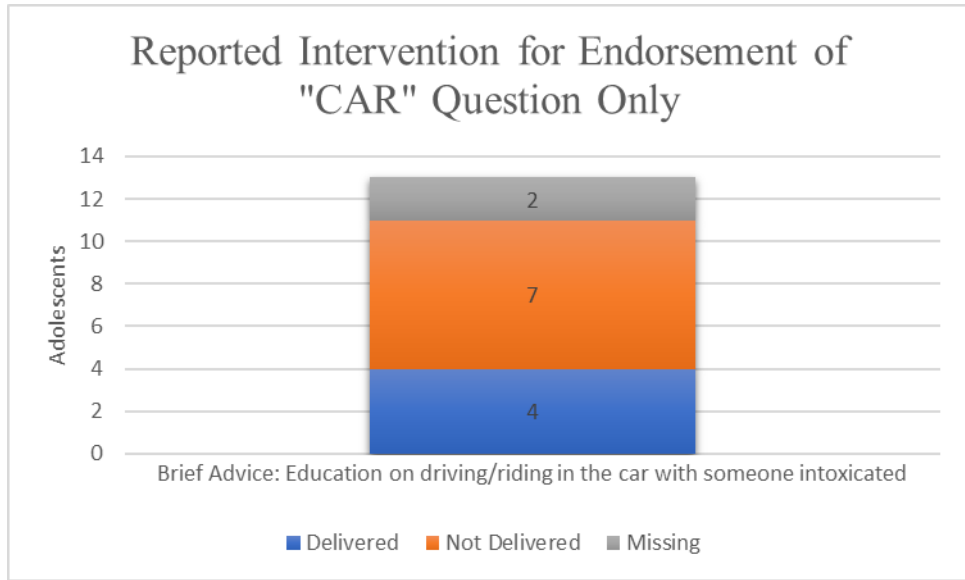
Figure 2



Note. (N = 118, n = 32); problematic CRAFFT screening defined as score of 2 and greater; referrals to treatment include inpatient admission and could be for any BH reason.

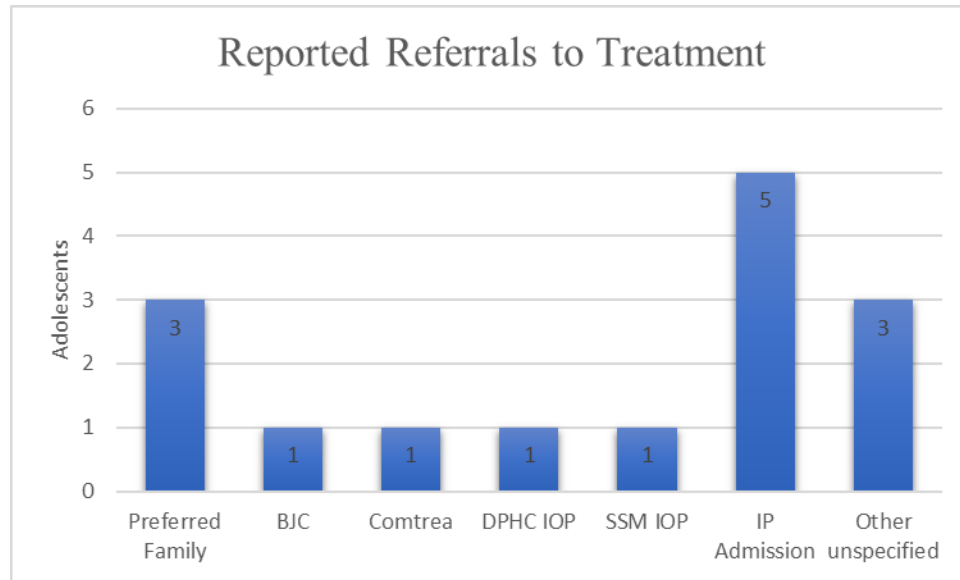
Appendix F

Figure 1



Note. N = 118

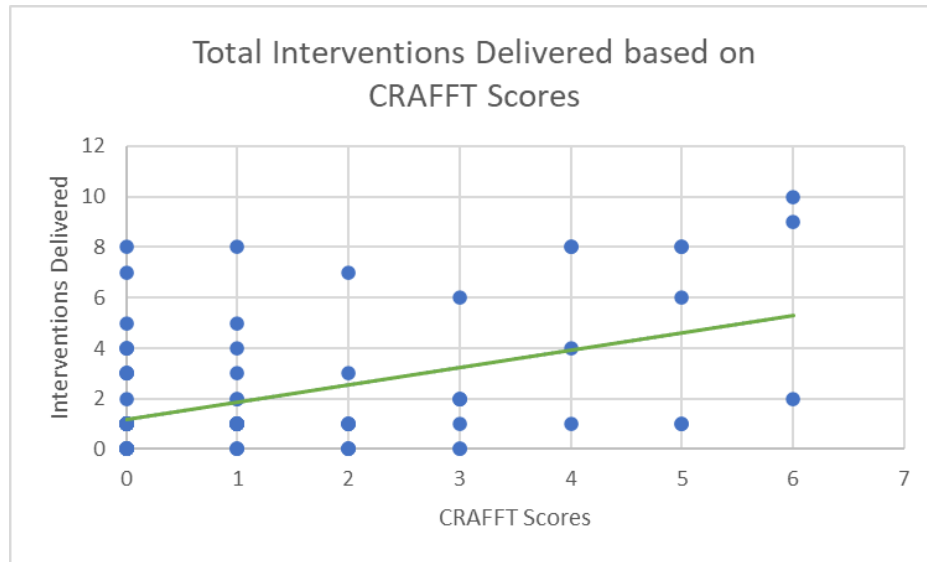
Figure 2



Note. (N = 118, n = 100); referrals may not be for SU as the primary concern.

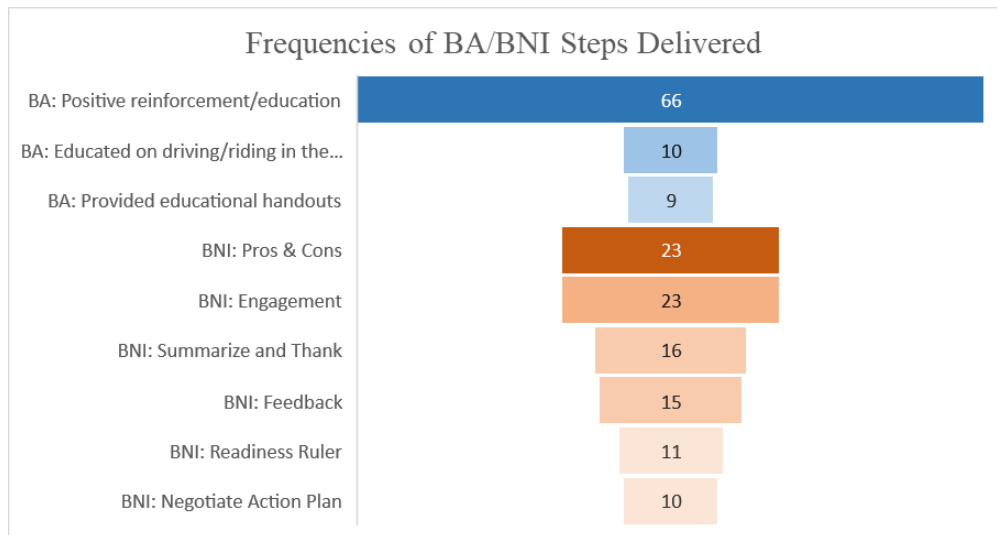
Appendix G

Figure 1



Note. (N = 118, n = 100); interventions include each step of the BA, BNI, and a referral to treatment (for any reason, including inpatient admission).

Figure 2

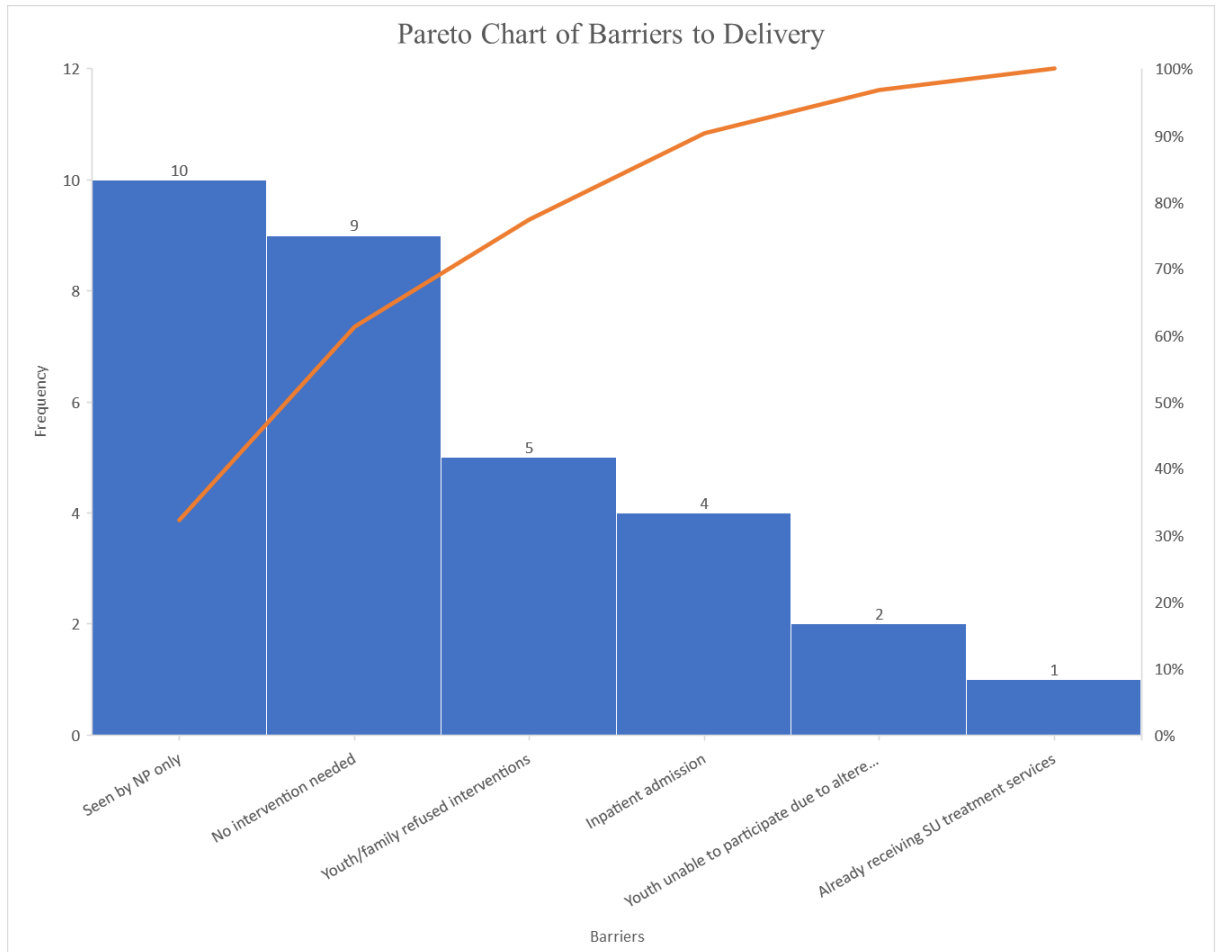


Note. (N = 118, n = 100); total BA steps delivered = 85, total BNI step delivered = 98.

Each step could be delivered once to each patient, depending on what screening indicated.

Appendix H

Figure 1



Note. ($N = 118$, $n = 100$); surveys listing up to three barriers ($n = 3$); missing data/no barrier reported ($n = 72$).