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Examining the Warm Handoff in Rural Integrated Care

Jamie Tedder
East Tennessee State University

Examining the Warm Handoff in Rural Integrated Care

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Jamie A. Tedder

Julia Dodd, PhD, Chair

Jill Stinson, PhD

Matthew McBee, PhD

Diana Morelen, PhD

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ABSTRACT

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An ever-growing body of evidence supports the efficacy of integrated care as a treatment approach; however, less is known about what specific components of integrated care are most effective. This is especially true of warm handoffs, which are an often discussed but understudied process in integrated care. A total of 246 patient charts were reviewed to determine if type of referral (warm handoff or traditional) increased the likelihood of follow-up with behavioral health services as well as factors that might impact this relationship. There were no significant differences between type of referral and likelihood of follow-up with behavioral health services. Only previous number of visits with referring provider significantly increased the likelihood of patients attending a subsequent behavioral health appointment. More research is needed to better understand the efficacy, if any, of the warm handoff as a component of integrated care.

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Chapter 1: Introduction

Mental health concerns are prevalent among patients presenting to primary care clinics. In one study, among 7,936 primary care patients sampled, 53.6% had at least one mental health diagnosis (Roca et al., 2009). Another study found that 31% of patients presenting in primary care met diagnostic criteria for a mood disorder, 19% met criteria for an anxiety disorder, and 10.1% met criteria for an alcohol use disorder (Ansseau et al., 2004). The prevalence of mental health problems in primary care settings has prompted the integration of behavioral health and primary care in order to better address the mental health needs of patients seeking treatment.

Integrated Care as a Treatment Approach

Integrated care is often discussed as a viable means of health care delivery. However, there is not a universally applied framework for how integrated care should look in practice. Collaboration between medical and behavioral health providers can range from co-location, in which providers share space but do not necessarily collaborate in any other way, to a more fully integrated system in which all providers (e.g., medical, mental health) work together to create one shared treatment plan for the patient (Blount, 2003).

There are many potential advantages to an integrated system of healthcare. One such advantage is increased access to behavioral health services. Research indicates that patients prefer to seek mental health treatment in primary care settings as opposed to traditional mental health clinics (e.g., Gonzalez, Williams, Noel, & Lee, 2005), and individuals who are referred to specialty mental health facilities are less likely to follow through with treatment. One study found that only 18% of patients who were referred to specialty mental health by a medical provider followed up with an in-person visit (Hacker et al., 2014).

Additional factors have been shown to affect behavioral health service utilization including both female gender and symptom severity, which have been shown to be positively correlated with behavioral health service utilization (Mills, Van Hooff, Baur, & McFarlane, 2012; Mechanic, Angel, & Davies, 1991). Age has been shown to be negatively correlated with utilization (Robb, Haley, Becker, Polivka, & Chwa, 2003; Mechanic et al., 1991). In a qualitative analysis of patient interviews, Horevitz and colleagues (2015) found that a feeling of connectedness with their primary care provider/clinic also appeared to impact behavioral health utilization.

Individuals' reluctance to seek treatment at specialty mental health facilities may be partially due to stigma associated with mental illness. As such, integrated care has been proposed as a way of reducing stigma around seeking mental health treatment (Collins et al., 2010). Finally, integration allows medical and behavioral health providers to work together to better develop and coordinate more comprehensive treatment plans, thus providing more holistic care for patients. This "whole-person" care has been consistently shown to improve patient outcomes, as is discussed further below.

There is solid evidence for the effectiveness of integrated or collaborative healthcare systems in improving patient outcomes across a variety of measures. Integrated or collaborative care has been found to be effective in treating a variety of mental health conditions. For example, Richards and colleagues (2013) found that patients receiving a collaborative care intervention for depression showed a greater reduction in PHQ-9 scores in comparison with patients receiving usual care. A review of thirty-seven trials of collaborative care interventions for depression found that patients assigned to the collaborative care condition showed decreases in depressive symptoms and better adherence with antidepressant medications (Katon & Selig, 2008).

Collaborative care has also been shown to effectively manage anxiety. One study found that patients with Generalized Anxiety Disorder and/or Panic Disorder showed reduced anxiety symptoms and improved quality of life following a telephone-based intervention by care managers (Rollman et al., 2005). Another study following patients with Panic Disorder found that a collaborative care intervention (psychoeducation combined with enhanced follow-up) significantly reduced anxiety symptoms (Roy-Byrne, Katon, Cowley, & Russo, 2001). Collaborative or integrated care models have been found to be effective in treating a variety of other problems commonly found in primary care, including substance use (e.g., Bernstein et al., 2005), chronic pain (e.g., Ahles et al., 2006), and smoking (e.g., An et al., 2006).

Integrated or collaborative care has been found to be effective across the lifespan. Studies have shown improved outcomes with both pediatric (e.g., Valleley et al., 2007) and older adult patients (e.g., Ogbeide, Stermensky, & Rolin, 2016). Patients' satisfaction with their care has also been shown to improve in collaborative care treatment conditions (e.g., Richards et al., 2013, Roy-Byrne et al., 2001, Funderburk, DeMartini, Fielder, & Flynn, 2012). Primary care providers also report increased satisfaction with integrated or collaborative care models, including that integrated care helps patients get behavioral health services more quickly and that patients benefit from the services (Funderburk et al., 2012).

Finally, there is evidence that integrated or collaborative care healthcare models are more cost-effective than traditional healthcare models. One report noted that integrated health care initiatives could save $38-$68 billion dollars in overall healthcare costs for commercially insured patients and patients participating in Medicare (Melek et al., 2018). Katon and colleagues (2012) found that patients with comorbid depression and physical health problems (diabetes and

hypertension) enrolled in a collaborative care intervention had lower average health care costs over a 12-month period than patients receiving treatment as usual.

Integrated Care in Rural Areas

The advantages of an integrated health care system may be even more applicable in rural areas. Research has shown that individuals living in rural areas suffer from mental health problems such as depression (e.g. Probst et al., 2006) and anxiety (e.g. Marks, Wegelin, Bourgeois, & Perkins, 2010). Research examining urban-rural differences in prevalence rates has been mixed. Some behavioral health problems like suicide (Eberhardt & Pamuk, 2004) and substance use (Blazer, George, & Landerman, 1985) have been found to be more prevalent in rural areas. However, a meta-analysis of studies examining differences in the prevalence rates of common mental health problems across rural and urban areas found higher prevalence rates in urban areas (Peen, Schoevers, Beekman, & Dekker, 2010). Nonetheless, characteristics of rural areas, including decreased access to mental health treatment and increased stigma for receiving mental health services, may exacerbate the mental health problems of those living in these geographic areas (Selby-Nelson, Bradley, Schiefer, & Hoover-Thompson, 2018).

Although research on rural integrated care is limited, there is some evidence that integrated care is effective in addressing the challenges facing individuals with mental health problems living in rural areas. For example, rural Appalachian women participating in a focus group identified integrated care as a facilitator to seeking mental health treatment (Hill, Cantrell, Edwards, & Dalton, 2016). Valleley and colleagues (2007) examined follow-through with behavioral health services in a rural pediatric clinic. Researchers found that 81% of patients who were referred to onsite behavioral health professionals presented for an initial visit (Valleley et al., 2007). However, more research is needed in the area of rural integrated primary care to better

understand if this type of health care model does adequately address the challenges unique to rural areas.

Patient Engagement with Integrated Care

As previously stated, one primary goal of integrated care is to increase patient access to behavioral health services. One method of assessing whether integrated care programs are achieving this goal is by measuring patient engagement with behavioral health services in integrated settings compared to traditional healthcare settings. Some researchers have examined patient engagement with behavioral health services following an integrated or collaborative care intervention as an indicator of effectiveness.

Krahn and colleagues (2006) found that only 49% of patients referred to specialty mental health kept their initial appointment as compared with 71% of patients in an integrated care setting. Kessler (2012) examined follow-through with referrals to onsite behavioral health providers in both rural and urban primary care clinics. In the rural clinic, 95.5% of patients (N=93) who scheduled a behavioral health appointment following a referral by their primary care provider attended their first appointment. In the urban clinic, 82% (N=256) of patients who were referred to a behavioral health provider by their primary care physician scheduled an appointment and 68.8% of those patients attended the appointment. Of note, patients referred to behavioral health services did not meet with the behavioral health provider on the same day as their medical appointment but instead received a referral and were scheduled with the behavioral health provider within one week.

Auxier and colleagues (2012) also found high patient engagement with behavioral health services across both rural and urban integrated care settings. In this study, 82% of patients referred to behavioral health attended an initial appointment. While authors did note that the

majority (71.2%) of behavioral health services were provided on the same day as the patient's medical visit, it is unclear if patients were introduced to behavioral health providers via a warm handoff or if whether the patient was seen on the same day (compared to a delayed referral) impacted patient engagement with treatment.

The warm handoff. While there is evidence that integrated care as a whole increases patient engagement with behavioral health services, less is known about what specific elements of this type of healthcare system are responsible for increased patient engagement. A common component of the integrated care healthcare system thought to increase engagement is the warm handoff (Robinson & Reiter, 2007). The Agency for Healthcare Research and Quality (AHRQ) defines a warm handoff as a referral approach in which the patient's primary care provider introduces the patient to the behavioral health provider in a face-to-face encounter. Typically, this meeting occurs during the course of the patient's medical appointment after a behavioral health concern has been identified. An advantage of this approach is that it more directly involves the patient in the referral process (AHRQ, 2017). It is also thought to be a more personable referral approach that will increase the likelihood that the patient will follow-up with behavioral health treatment.

While the warm handoff is a familiar concept in integrated care, the actual process of the warm handoff has not been well studied in the empirical literature. For example, little research exists to demonstrate that the warm handoff increases the likelihood that patients will follow up with behavioral health treatment. There has also been little examination into whether the effectiveness of a warm handoff referral approach varies by patient population or presenting problem.

Berge and colleagues (2017) studied the implementation of an integrated healthcare system, including warm handoffs to behavioral health providers, in an urban family medicine clinic. Researchers in this study found that 60% of warm handoffs to behavioral health providers resulted in same-day or future billable behavioral health appointments (Berge et al., 2017). However, comparative analyses were not conducted as part of this pilot study; therefore, it is unclear if the warm handoff protocol implemented within this clinic increased engagement with behavioral health services more than a traditional referral process. Pace and colleagues (2018) conducted a retroactive chart review to determine if receiving a warm handoff increased attendance at a follow-up behavioral health appointment compared with patients who were scheduled by a receptionist without meeting the behavioral health provider. Researchers found no significant differences in attendance between patients who received a warm handoff and patients who did not (Pace et al., 2018).

Davis and colleagues (2016) examined veterans' utilization of specialty mental health services following contact in the VA's Primary Care Mental Health Integration (PCMHI) program at a large VA healthcare site. Authors found that a high percentage of veterans (87.1%) followed through with referrals to specialty mental health following contact in the PCMHI program. Interestingly, whether veterans were seen via a warm handoff did not have a significant impact on whether veterans followed through with a specialty mental health referral or continued in specialty mental health services.

Another study examined the warm handoff approach in a population of Latino patients in an integrated primary care setting (Horevitz, Organista, & Arean, 2015). Researchers found that type of referral (warm handoff vs. prescribed referral) had no significant effect on patients' engagement in behavioral health treatment. However, the authors did find that patients' primary

language did impact follow up with treatment. English-speaking Latino patients were 75% less likely to follow up with behavioral health services following a warm handoff than Spanish-speaking Latino patients. Further, qualitative interviews with patients in the study suggested many patients found the warm handoff approach rushed and confusing. This evidence suggests the warm handoff may not be equally effective in all patient populations.

It is unclear if factors that have previously been shown to influence behavioral health service utilization such as gender (Mills et al., 2012), symptom severity (Mills et al., 2012), age (Robb et al., 2003), and a sense of connectedness with one's provider (Horevitz et al., 2015) also apply to the warm handoff. More research is needed to understand the interaction between patient and practice-related characteristics, referral type, and behavioral health follow-up.

It is also unclear if what occurs during the warm handoff impacts the likelihood the patient will engage in behavioral health treatment. While a hallmark of the warm handoff is that it is a face-to-face encounter, the extent to which the behavioral health provider engages with the patient during this meeting is less prescribed. For instance, behavioral health providers may use the warm handoff as an opportunity to meet the patient and schedule their follow-up appointment, or they may use the encounter as an opportunity to initiate treatment by performing some sort of intervention (e.g. psychoeducation, CBT). It is not known whether what the behavioral health provider does with the patient during the warm handoff impacts the likelihood the patient will engage in future treatment. More research is needed to better understand the nuances of the warm handoff referral so that the approach can be better tailored to serve different patient populations and clinical contexts. Further, the vast majority of research on warm handoffs has been conducted in large and/or urban settings. As previously discussed, access to behavioral health services is an even greater challenge in rural areas. Developing a better understanding of

how different components of integrated care programs lead to increased access to behavioral healthcare will be especially informative to rural integrated care research and practice.

In sum, while an ever-growing body of evidence supports the efficacy of integrated care as a treatment approach, less is known about what specific components of integrated care are most effective in increasing access, improving outcomes, etc. This is especially true of warm handoffs, which are an often discussed but understudied process in integrated care programs. This study seeks to: 1) add to the literature on the efficacy of warm handoffs as a process for increasing patient engagement with behavioral health services, 2) provide a more in-depth analysis of how components of the warm handoff process impact patient engagement with behavioral health services, and 3) add to the nearly nonexistent literature on warm handoffs and patient engagement in rural integrated primary care settings.

Chapter 2: Methods

Sample

Participants in the study were sampled from adult (aged 18+) patients who presented to a group of primary care clinics in a rural, Appalachian county in middle Tennessee. Participants were included in the study if they received a behavioral health referral between December 2014 and December 2018.

Practice setting. The organization participating in this study is a community health center located in a rural, Appalachian county. It is a Federally Qualified Health Center (FQHC) and Patient-Centered Medical Home (PCMH). The organization is comprised of five clinics (i.e., two "hub" clinics and three satellite clinics), located in communities throughout the county. Medical staff members include physicians, family nurse practitioners (FNPs), and physician assistants (PAs). Behavioral health staff members include licensed clinical social workers (LCSWs).

The two larger hub clinics each have one full-time behavioral health provider on-site who is able to offer same-day services via warm-handoffs from providers. While there are no on-site behavioral health providers at the three satellite clinics, providers at these clinics are able to make referrals to either behavioral health provider at one of the hub clinics. There are two behavioral health case managers on staff to facilitate behavioral health referrals to the hub clinics. One case manager is primarily located at a hub clinic but spends one day per week at a satellite clinic. The other case manager floats between the other two satellite clinics. Behavioral health providers also provide same-day, crisis intervention services to satellite clinics as needed.

Table 1

Clinic Descriptions

Clinic	Number of Primary Care Providers	Number of Patients Seen During Study Period	Number of Patient Encounters During Study Period	Behavioral Health Onsite?
Clinic 1	4	60,886	13,510	Yes
Clinic 2	2	34,331	7,817	Yes
Clinic 3	2	26,878	5,232	No
Clinic 4	2	26,064	4,014	No
Clinic 5	1	14,652	1,852	No

Procedure

A retrospective chart review of the organization's electronic health record (EHR) was performed to gather necessary data for the study. The procedure for data collection was adapted from a systematic methodology for conducting retroactive chart reviews of medical records described by Gearing and colleagues (2006). The study was approved by the ETSU Institutional Review Board.

Sampling. The organization's population health management software (i2i) was used to identify charts that met study parameters (i.e., all patients over the age of 18 who had received a behavioral health referral, whether traditional or warm handoff, within the specified time frame). Patients were excluded from the study if they were in crisis at the time of visit, if they were referred to an outside behavioral health agency for treatment, or if it was not recommended that they follow-up with behavioral health services. This information was interpreted from narrative text within the behavioral health provider's documentation.

Data Abstraction. Data abstraction was conducted by the principal investigator who is employed by the organization and therefore had established access to the EHR. Data extracted from each patient's chart included age, gender, clinic, total number of previous visits with referring provider, PHQ-9 score from office visit (if available), type of referral (warm handoff or traditional), service(s) performed during warm handoff referral, and whether patient attended a follow-up behavioral health appointment. Type of referral was determined by looking at type of referral order placed by the referring provider within the office visit note in which the referral occurred. A traditional referral was labeled as "Other Behavioral Health Referral" within the chart while a warm handoff was labeled as "Warm Handoff Referral". The referring provider selected the referral type from a list of referral types already populated within the EHR. Warm handoff referrals occurred immediately following or during the office visit with the referring provider. Patients who received traditional referrals were given the option of scheduling an appointment with a behavioral health provider. Patients could either schedule the appointment themselves (e.g. with front office staff at check-out following the visit with the referring provider) or they would be contacted by phone by the behavioral health provider who had been assigned the referral. Patients might receive a traditional referral because they were being seen at a satellite clinic that did not have a behavioral health provider onsite, or if the patient was being seen at a clinic with an onsite behavioral health provider but that provider was not available for a warm handoff during the patient's primary care office visit.

For this study, the behavioral health referral was defined as the first behavioral health referral received within the specified study time period. Categories for type of service performed during the warm handoff for the purposes of this study included "Meet & Greet", Assessment, Psychoeducation, Cognitive-Behavioral Intervention, and Psychoeducation in combination with

a Cognitive-Behavioral Intervention. Type of service performed was interpreted from narrative text within the behavioral health provider's documentation. The service was coded as "Meet & Greet" if the behavioral health provider saw the patient but did not perform any type of assessment or intervention. The service was coded as Assessment if the behavioral health provider gathered historical information related to the presenting problem and/or assessed the patient's current symptoms but provided no further intervention. The service was coded as Psychoeducation, Cognitive-Behavioral Intervention, or Psychoeducation in combination with a Cognitive-Behavioral Intervention if that service was indicated in the "Intervention" section of the behavioral health provider's documentation. Finally, the patient's visit history was reviewed within their chart to determine if they attended a subsequent follow-up behavioral health appointment.

After study variables were abstracted from each selected chart they were entered directly into an electronic dataset (Microsoft Excel). All personal health information was de-identified when entered into the dataset. The dataset was uploaded to SPSS for statistical analysis.

Aims, Hypotheses, and A**nalyses**

Aim 1. The first aim of the study was to examine if patients who were initially seen via a warm handoff were more likely to follow-up with behavioral health services than patients who received a traditional referral.

Hypothesis. It is hypothesized that patients who receive a warm handoff will be more likely to have a subsequent behavioral health visit than patients who received a traditional referral.

Analysis. Chi-squared analysis using SPSS statistical software was conducted to determine if type of referral effects whether patients follow-up with subsequent behavioral health services.

Aim 2. The second aim of the study was to examine factors (age, gender, duration of patient/provider relationship, and severity of depression score) that might impact the relationship between type of behavioral health referral and follow-up with behavioral health services.

Hypotheses. Based on prior research on mental health service utilization, I predicted that patients who were younger, female, had seen their provider more times, and had higher depressive symptoms would be more likely to present for a subsequent behavioral health visit.

Analysis. A series of moderated logistic regression analyses were used to test the relationship between type of referral and engagement with behavioral health services, with the moderating variables of age, gender, number of visits with PCP, and depression score.

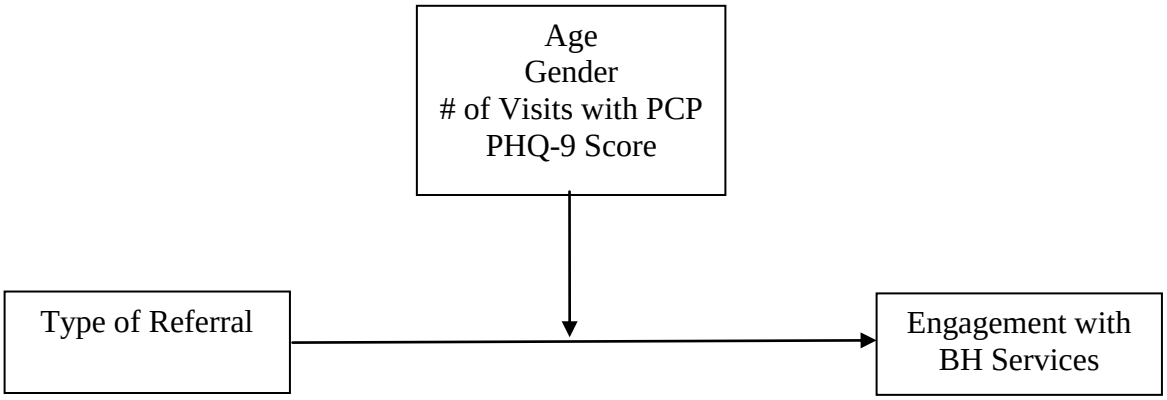

*Figure 1***.** Moderation model

Aim 3. The third aim of the study examined if type of service performed during a warm handoff visit might impact the likelihood of following-up with behavioral health services.

Hypothesis. Based on this researcher's clinical experience it was hypothesized that patients who received an intervention during their warm handoff would be more likely to present for a subsequent behavioral health visit.

Analysis. Chi-squared analysis using SPSS statistical software was conducted to determine if type of service performed during a warm handoff visit impacted whether patients followed-up with subsequent behavioral health services.

Chapter 3: Results

Sample Characteristics

A total of 246 patients were identified through chart review who had received a behavioral health referral during the specified time period. 67.5% of participants were female and 32.5% were male. The mean age for participants was 42.48 (*SD* = 15.66; Min=18, Max=84).

Clinical Characteristics

The average number of visits with the referring provider was 7.04 (*SD* = 9.8; Min=1, Max=60). The average PHQ-9 score for the sample was 15.79 (*SD* = 6.57; Min=0, Max=27), which falls in the moderately severe range. The majority of referrals to behavioral health came from hub clinics (60.5%), while 39.4% of referrals came from satellite clinics. Of patients who were referred to behavioral health, only 23.2% attended their first behavioral health appointment.

Of patients who were referred to behavioral health, 50% (N=123) scheduled a follow-up behavioral health appointment while 50% (N=123) did not schedule an appointment. Of patients who scheduled an appointment, 54.7% (N=66) did not keep that scheduled appointment. Warm handoff referrals accounted for 41.9% (N=103) of overall behavioral health referrals, while 58.1% (N=143) were traditional referrals. Within warm handoff visits, services rendered included "Meet & Greet" (*n* = 1), Assessment (*n* = 24), Psychoeducation, (*n* = 59), Intervention (*n* = 7), and Psychoeducation plus Intervention (*n* = 7). Due to low frequency of occurrence, the "Meet & Greet" category was excluded from study analyses and the Psychoeducation, Intervention, and Psychoeducation plus Intervention categories were combined into one broad Intervention category; therefore, all services rendered during a warm handoff visit were coded as either Assessment (*n* = 24) or Intervention (*n* = 73).

Aim 1 Results

I hypothesized that patients who received a warm handoff referral would be more likely to follow-up with a subsequent behavioral health visit than patients who received a traditional referral. A chi-squared test was performed to examine the relationship between type of behavioral health referral and patient's engagement with behavioral health services. The relationship between these variables was not significant, X^2 (1, N = 246) = 1.40, p = 0.284, indicating there were no significant differences in follow-up with behavioral health services for patients who received a warm hand-off versus patients who were traditionally referred to services.

Aim 2 Results

I predicted that patients who were younger, female, had seen their provider more times, and had higher depressive symptoms would be more likely to present for a subsequent behavioral health visit. A series of logistic regressions with interaction terms were conducted to determine if relationship between type of behavioral health referral and follow-up with behavioral health was moderated by the variables of age, gender, number of previous visits with referring provider, and PHQ-9 score.

Age as a moderator between referral type and follow-up with behavioral health services. Overall, this model was not significant X^2 (3, N = 246) = 2.86, Nagelkerke's pseudo-R^2 = .02 p = .413. The combined effects of referral type and age on behavioral health follow-up were not significant (OR = .99, p = .585, CI [.95, 1.03]). The interaction between age and behavioral health referral type was not associated with increased likelihood of behavioral health follow-up. The main effects of age (OR = .99, p = .286, CI [.97, 1.01]) and referral type (OR = 1.51, p = .197, CI [.81, 2.87]) were also not significant. Please see Table 2.

Table 2

Effect of Referral Type and Age on Likelihood of Behavioral Health Follow-Up

	B	***SE***	**Wald X^2**	***p***	**OR**
Age	-.01	.01	1.14	.286	.99
Referral Type	.41	.32	1.66	.197	1.51
Age*Referral Type	-.01	.02	.30	.585	.23

Gender as a moderator between referral type and follow-up with behavioral health services. Overall, this model was not significant X^2 (3, N = 246) = 2.77, Nagelkerke's pseudo-R^2 = .02 p = .428. The combined effects of referral type and gender on behavioral health follow-up were not significant (OR = 1.77, p = .393, CI [.48, 6.60]). The interaction between gender and behavioral health referral type was not associated with increased likelihood of behavioral health follow-up. The main effects of gender (OR = 1.125, p = .828, CI [.389, 3.250]) and referral type (OR = 1.189, p = .653, CI [.559, 2.529]) were also not significant. Please see Table 3.

Table 3

Effect of Referral Type and Gender on Likelihood of Behavioral Health Follow-Up

	B	***SE***	**Wald X^2**	***p***	**OR**
Gender	.12	.54	.05	.828	1.13
Referral Type	.17	.38	.20	.653	1.19
Gender*Referral Type	.57	.67	.73	.393	1.77

Number of visits with referring provider as a moderator between referral type and follow-up with behavioral health services. Overall, this model was not significant X^2 (3, N =

246) = 7.64, Nagelkerke's pseudo-R^2 = .05 p = .054. The combined effects of referral type and number of visits with referring provider on behavioral health follow-up were not significant (OR = 1.00, p = .948, CI [.94, 1.06]). The interaction between number of visits with referring provider and behavioral health referral type was not associated with increased likelihood of behavioral health follow-up. However, the main effect of number of visits with referring provider on likelihood of behavioral health follow-up was significant (OR = 1.04, p = .012, CI [1.01, 1.06]), such that patients who had seen their referring provider a greater number of times were more likely to follow up with a behavioral health referral. Please see Table 4.

Table 4

Effect of Referral Type and Number of Previous Visits on Likelihood of Behavioral Health Follow-Up

	B	***SE***	**Wald X^2**	***p***	**OR**
Visits	.03	.01	6.36	.012	1.04
Referral Type	.40	.32	1.55	.213	1.49
Visits*Referral Type	-.00	.03	.00	.948	1.00

Depression score as a moderator between referral type and follow-up with behavioral health services. Overall, this model was not significant X^2 (3, N = 246) = 0.47, Nagelkerke's pseudo-R^2 = .00 p = .925. The combined effects of referral type and PHQ-9 score on behavioral health follow-up were not significant (OR = .964, p = .550, CI [.853, 1.088]). The interaction between PHQ-9 score and behavioral health referral type was not associated with increased likelihood of behavioral health follow-up. The main effects of PHQ-9 score (OR = 1.02, p =

.644, CI [.95, 1.08]) and referral type (OR = .91, p = .819, CI [.41, 2.00]) were also not significant. Please see Table 5.

Table 5

Effect of Referral Type and Depression Score on Likelihood of Behavioral Health Follow-Up

	B	***SE***	**Wald X^2**	***p***	**OR**
PHQ-9	.02	.03	.21	.644	1.02
Referral Type	-.09	.40	.05	.819	.91
PHQ-9*Referral Type	-.04	.06	.36	.550	.96

Aim 3 Results

I hypothesized that patients who received an intervention during a warm handoff visit would be more likely to have a subsequent visit with a behavioral health provider. A chi-squared test was performed to examine the relationship between type of service provided during the warm handoff visit (Assessment or Intervention) and patient's engagement with behavioral health services. The relationship between these variables was not significant, X^2 (2, N = 103) = .63, p =.731. Type of service performed during warm handoff visit was not associated with increased likelihood of following up with behavioral health services.

Chapter 4: Discussion

While an ever-growing body of evidence supports the efficacy of integrated care as a treatment approach, less is known about what specific components of integrated care are most effective in increasing access, improving outcomes, and the like. This gap in the literature is especially true of warm handoffs, which are an often discussed but understudied process in integrated care programs. This study sought to: 1) add to the literature on the efficacy of warm handoffs as a process for increasing patient engagement with behavioral health services, 2) provide a more in-depth analysis of how components of the warm handoff process impact patient engagement with behavioral health services, and 3) add to the nearly nonexistent literature on warm handoffs and patient engagement in rural integrated primary care settings.

The first aim of this study examined whether receiving a warm handoff increased the likelihood of further engagement with behavioral health. Results showed no differences in engagement with behavioral health between patients receiving a warm handoff and patients who received a traditional referral. Although unexpected, these results are somewhat consistent with prior research. Both Davis and colleagues (2016), Horevitz and colleagues (2015), and Pace and colleagues (2018) found that receiving a warm handoff did not significantly impact patients' future engagement with behavioral health services. While findings from this study combined with previous literature indicate warm handoffs might not be effective at increasing likelihood of future engagement with behavioral health services, it does not necessarily mean that warm handoffs do not serve any useful clinical purposes. For example, it is possible that patients do not follow-up with future behavioral health services because there was a therapeutic effect from the warm handoff visit itself and the patient no longer felt it was necessary to pursue additional behavioral health services.

There may have also not been significant differences between referral types due to some overlap in clinical characteristics between both traditional and warm handoff referrals. For instance, most patients who receive a traditional referral are contacted by phone by the behavioral health provider in order to schedule the initial appointment. This interpersonal communication with the behavioral health provider prior to the behavioral health appointment (similar to what typically occurs during a warm handoff) might be enough to increase the likelihood that the patient engages with behavioral health services regardless of whether this communication occurs during or following their office visit (i.e. via a warm handoff) or during a later follow-up telephone call.

Interestingly, engagement with behavioral health services (regardless of referral type) in the current study's sample was lower than what has been found in prior research within integrated care settings. The present study found that only 23.2% of patients who received a behavioral health referral attended their follow-up appointment. Prior research conducted within integrated care settings found much higher rates of engagement (60-95.5%; Kessler, 2012; Auxier et al., 2012; Berge et al., 2017). The engagement rate found in this study was more consistent with findings from the literature on referrals from primary care providers to outside specialty mental health clinics (e.g. 18%, Hacker et al. 2013; 49%, Krahn et al., 2006).

The low rate of engagement with behavioral health services may be reflective of several factors that could influence help-seeking behaviors including stigma toward receiving mental health services. While some external sources of stigma around seeking mental health services (e.g. fear of being seen at mental health facility) may have been reduced because the data collection site was integrated, more internal sources of stigma around seeking help for mental health problems (e.g. belief that one should be able to fix mental health problems on their own)

might still be present. Additional barriers often found in rural areas such as poverty and lack of resources like transportation might also explain a lower engagement rate with behavioral health services. However, other studies conducted in rural clinics did find high higher rates of service utilization (e.g. Kessler, 2012). One explanation for these discrepancies might be due to methodological differences between studies. For example, Kessler (2012) found that 95.5% of patients who *scheduled* a subsequent behavioral health appointment kept that appointment. It is possible that patients who are willing to schedule an appointment are more likely to seek and follow-up with behavioral health services regardless. This study looked at follow-up with behavioral health across all referrals, not just among patients who scheduled an appointment. Kessler and colleagues' study was also conducted in the northeast region of the Unites States. The low rate found in this study may reflect the influence of Appalachian culture on help-seeking behaviors for mental health problems. One approach to determine if these findings are reflective of the area in which data was collected would be to compare engagement with behavioral health services to engagement with medical services within the organization.

The second aim of the study considered factors that might impact the relationship between type of referral and engagement with behavioral health services. Of all patient and provider-related factors examined, only increased number of previous visits with the referring provider significantly increased likelihood of engagement with behavioral health. This relationship did not differ by referral type. This finding is consistent with qualitative research conducted by Horevitz and colleagues (2015), which indicated that feeling connected to their primary care provider/clinic impacted patients' behavioral health utilization. This finding may indicate that having a stronger relationship with the referring provider (as indicated by increased number of visits) may help facilitate engagement with behavioral health services. However, this

relationship may be indicative of other factors such as patient compliance with keeping their scheduled appointments.

Patients' age, gender, and depression severity score did not impact likelihood of engagement with behavioral health services, for either referral type. This finding is inconsistent with prior research that found gender and symptom severity were positively correlated with behavioral health service utilization (Mills, Van Hooff, Baur, & McFarlane, 2012), while age was negatively correlated with utilization (Robb, Haley, Becker, Polivka, & Chwa, 2003). However, both of these studies had much larger sample sizes than the present study. It is plausible this study lacked the power to detect any differences in behavioral health follow-up based on gender, symptom severity, or age.

With regards to depression score, within the studied organization it is the referring provider's discretion whether or not patients are given the PHQ-9 to complete during that visit. Therefore, not all patients who receive a behavioral health referral complete a PHQ-9. It is possible this might have impacted findings. We may have been able to detect an effect for depression score if there was more uniformity in how the PHQ-9 was administered across patients and providers.

The final aim of this study examined whether type of service (assessment or intervention) provided during the warm handoff impacted follow-up with behavioral health services. Type of service received did not significantly impact patients' likelihood of following up with behavioral health services. One explanation for this is that, consistent with the findings of Aim 1 of this study, being seen via warm handoff does not increase likelihood of future engagement with behavioral health; therefore, what clinical tools are utilized during the warm handoff are not as relevant as we hypothesized. It is also possible that any increase in likelihood of follow-up with

behavioral health services could be explained by the shared component of interpersonal interaction that would be found in both assessment and intervention. Future research might examine if there are differences between warm handoff visits with assessment or intervention services compared to warm handoff visits with less patient-provider interaction (e.g. "Meet & Greet" visits).

Study Limitations

The study has some limitations which need to be considered when interpreting results. First, the study was limited by its use of archival data. Using archival data limited researchers' freedom in selection of study variables. Further, since archival data was used researchers had no control over the fidelity of the provider's documentation in the patient's chart. It is possible that different providers may have used different criteria in documenting "assessment" versus "psychoeducation", for example, when recording what services were provided during warm handoffs.

Also, this study sampled the population of just one primary care organization within one rural county. Due to the variability among integrated care programs across organizations, results may not generalize to other clinics or integrated care programs. This study also did not compare the findings across both integrated and non-integrated sites. While much of the primary care literature agrees generally on what constitutes a warm handoff, the fidelity with which warm handoffs are implemented across different organizations, and even by different providers within an organization, is likely to differ, possibly resulting in discrepant findings.

Implications for Future Research

More stringent research is needed to examine the efficacy and utility of the warm handoff in order to better understand its place as a component of integrated care programs. The findings

of this study, coupled with prior research, indicate that the warm handoff might not increase likelihood of further engagement with behavioral health services as has been previously thought. More research is needed to clarify if there are other benefits to receiving a warm handoff, as well as what components of the warm handoff may be beneficial for patients. For example, future research might examine other indices of efficacy for warm handoffs, such as symptom reduction following warm handoff visit or increased behavioral health literacy. Further, this study only examined follow-up with behavioral health services immediately following the warm handoff visit. Future research might examine if receiving a warm handoff may increase an individual's openness to receiving behavioral health services in the future, even if he or she doesn't immediately seek out services following the warm handoff visit. More research is needed to determine what, if anything, the warm handoff adds to the overall patient experience as well as how it might improve patient care.

Future research should also continue to explore the patient-provider relationship as a facilitator for helping patients access behavioral health services. Findings from this study and prior research indicate that patients may be more likely to follow-up with behavioral health services if they have a stronger relationship with the referring provider. This may be especially true in rural areas given the importance of interpersonal relationships in these communities. However, more stringent methodology is needed to determine the extent of the impact of patient-provider relationship on behavioral health service utilization.

Finally, research should continue to examine both patient, provider, and practice-related factors that increase the likelihood of following up with behavioral health services in integrated care settings. While patient-related factors like age and gender may not be amenable to change, researchers should examine strategies to help different population groups access needed

behavioral health services. Researchers might examine how provider characteristics such as level of warmth, approachability, and therapeutic orientation might impact how patients benefit from a warm handoff visit. Researchers might also examine how practice-related factors such as the warm handoff workflow, delivery modality (e.g. telehealth), how the patient gets scheduled for their follow-up behavioral health appointment, and the like might impact likelihood of engagement with behavioral health services.

In conclusion, the warm handoff is a well-known component of many integrated care programs; however, its efficacy has been understudied. This study sought to add to the literature by examining if warm handoff visits increased the likelihood of follow-up engagement with behavioral health services in a rural setting, and to look at factors (age, gender, depression score, number of visits with referring provider, and clinical service performed during warm handoff) that might impact that relationship. We hypothesized that being seen via a warm handoff would increase a patient's likelihood of follow-up with behavioral health services, and that patients who were younger, female, had seen their provider more times, and had higher depressive symptoms would be more likely to present for a subsequent behavioral health visit. Only patients who had seen their provider on more previous occasions were more likely to present for a subsequent behavioral health visit. More research is needed to continue to explore the efficacy of the warm handoff as a component of integrated care for behavioral health needs, and to determine how warm handoff visits could be better utilized in order to maximize therapeutic benefits to patients.

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VITA

JAMIE A. TEDDER

Education:

Ph.D. Clinical Psychology**,** East Tennessee State University, Johnson City, Tennessee, 2020

M.A. Clinical Psychology, East Tennessee State University, Johnson City, Tennessee, 2012

B.S. Psychology, East Tennessee State University, Johnson City, Tennessee, 2010

Professional Experience:

Director of Behavioral Health, Mountain People's Health Councils, Inc; Oneida, Tennessee, 2020-Present

Select Clinical Training:

Doctoral Intern, Alaska Family Medicine Residency/Providence Family Medicine Center; Anchorage, Alaska, 2015-2016

Practicum Student, Mountain Home Veterans Affairs Medical Center; Johnson City, Tennessee, 2014-2015