DETECTION OF PSYCHOLOGICAL DYSFUNCTION AND SUICIDE RISK AMONG POST-PARTUM WOMEN

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By

Haley Grace Goller

Director: Dr. David McCord
Emeritus Professor of Clinical Psychology
Psychology Department

Committee Members: Dr. Nathan Roth, Psychology
Dr. Thomas Joiner, Psychology

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ABSTRACT

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Haley Grace Goller, M.A.

Western Carolina University (September 2023)

Director: Dr. David McCord

Prevalence rates of perinatal mood disorders range from 5% to 25%. Furthermore, suicide is a leading cause of death in post-partum women. Although the symptoms of mental health dysfunction that arise during the post-partum period (birth to1-year) vary significantly, they are typically conceptualized using the term "post-partum depression." Various factors have been associated with an increased risk of suicide in postpartum women including co-occurring mental health disorders, lack of mental health care, and substance use. Since women are most commonly seen during this time-period in medical settings, it is important for mental health screening and psychological assessment used within OB-GYN settings to be current with regard to post-partum mood dysfunction and suicide risk assessment. We collected data from a sample of 78 post-partum women (0–6 months post-delivery), focusing specifically on patterns of emotional/internalizing dysfunction, using several different screening measures. Our sample did not produce significant elevations on target MMPI-3 Scales. Although the MBHS was better at capturing MMPI-3 elevations, when compared to the EPDS and PHQ-9, these comparisons were largely non-significant. Formal statistical analyses were challenged by our extremely low base-rate for elevated suicide risk. Despite this, the MBHS performed better than the EPDS and PHQ-9 at accurately capturing elevated suicide risk. Limitations and future directions are discussed.

DETECTION OF PSYCHOLOGICAL DYSFUNCTION AND SUICIDE RISK AMONG POST-PARTUM WOMEN

Mental health dysfunction is common and impacts nearly all aspects of life. Despite this, it is estimated that only 50% of patients with major depressive disorder are identified (Wang et al., 2007) and, of those 50%, only 35% receive treatment within the first year of symptom onset (Strakowski et al., 2003). One potential correlate to depressive symptomology is suicidal ideation and actions. Tragically, suicide was the 10th leading cause of death for adults in the United States during 2019 (CDC, 2020). Although individuals who are depressed might not be receiving mental health treatment for depressive symptomology, it is estimated that individuals are in fact being seen by other medical professionals, such as primary care physicians. For example, of those individuals who died by suicide, 83% were seen by their primary care physician during the year leading up to their death (Ahmedani et al., 2014).

Distressing symptoms related to mood and affect impact individuals differentially, across the lifespan. These disorders can sometimes accompany difficult life changes. Furthermore, affective disorders (depression, anxiety, etc.) are the most commonly reported pregnancy and post-partum related complications (Khanlari et al., 2019). These mood disturbances, primarily comprised of depressive symptoms, are reported in approximately 5%-25% of women during the perinatal period (pregnancy to 1 year after birth; Gaynes et al., 2005). The wide range in prevalence rates can be attributed to variations in data collection methods, definitions of the post-partum period, and diagnostic criteria (Gaynes et al., 2005). Similarly, prevalence rates vary across cultures, ranging from 4% to 45% (Binti Mohd Arifin et al., 2018). Although perinatal psychological dysfunction is evidenced by a heterogeneous array of symptoms, including depressive, obsessive compulsive, psychotic, suicide-related, and anxiety-related symptoms,

these reactions are typically described under the umbrella term, "post-partum depression" (Khanlari et al., 2019).

According to O'Hara (2013), the time immediately following delivery represents a high-risk time for the onset of depression. Research indicates that between 13% and 19% of birthing parents meet *Diagnostic and Statistical Manual of Mental Disorders – 5th Edition*'s (DSM-5; American Psychiatric Association, 2013) criteria for a depressive disorder through the first year following the delivery. Many of the psychosocial risk factors for developing post-partum depression are similar to those associated with the onset of a major depressive episode, with the exception of hormone reactivity (O'Hara, 2013). The rapid shift in hormones is unique to the postpartum period and is thought to play a significant role in mood shifts following the birth of a baby. Several social/environmental factors, such as lack of sleep and shifting social roles, are also unique to the perinatal period.

The *DSM-5* does not have a specific diagnostic label to account for post-partum mood disturbances. However, the *DSM-5* does allow for a "peripartum onset" specifier for depressive episodes that begin within the first four weeks following delivery (APA, 2013). Individuals who have experienced a previous post-partum depressive episode have a 30-50% likelihood of reoccurrence with subsequent deliveries (APA, 2013). Additionally, individuals who meet the criteria for a *DSM-5* diagnosis of a peripartum depressive episode typically also experience symptoms of severe anxiety and panic attacks (APA, 2013).

Various hypotheses have been developed to explain the etiology of perinatal mood disorders. As discussed above, many of these hypotheses include hormonal fluctuations as well as social and environmental changes, including increased stress and lack of sleep (Ross et al., 2005). The impact of post-partum mood dysfunction can be widespread. Post-partum mood

disturbances affect many members within the birthing parent's social network, including their infant(s), partner, parents/grandparents, friends, and other children. Post-partum mood disturbance has been associated with a variety of negative outcomes for the birthing parent and their baby. More specifically, these disturbances of negative affect are associated with serious health concerns such as hypertension, preterm delivery, low birth weight, impaired psychosocial functioning, impaired bonding, and future psychopathology (as reviewed in Khanlari et al., 2019).

Depression Screening in Post-Partum Patients

Due to the high prevalence rates of post-partum mood disorders/depressive symptomatology, screening birthing parents for mood disturbances (primarily symptoms related to depression) has become routinized during perinatal visits to care providers such as midwives, obstetrics clinics, and even at their infant's pediatric appointments (Cochran et al., 2020). Research further suggests that this screening has resulted in reduced symptoms of depression and a decreased suicide risk (Miller & Coffey, 2021). A widely used screener for post-partum depression is the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). This screener uses face-valid constructs to inquire about DSM-based diagnoses related to depression (with perinatal onset), while also accounting for some anxiety-related symptoms.

Screening for mood disorders in this way is similar to the manner in which the Patient Health Questionnaire-9 (PHQ-9; Spitzer et al., 1999) screens for depression within the primary care setting. Patients are presented with a list of several different, discrete symptoms and are asked which symptoms they have experienced within a specified timeframe and the frequency with which they experience them. If the patient endorses a predetermined number of these

heterogenous symptoms, they are said to have the syndrome of "depression," warranting further follow-up.

Wisner and colleagues (2013) screened 10,000 women who delivered a live infant using the EPDS at 4-6 weeks post-partum. Results of their study indicated that more instances of depression, as indicated by a score of 10 or higher on the EPDS, began in the post-partum period when compared to during pregnancy. Additionally, 3.2% of the women in this sample endorsed thoughts of self-harm. As part of their study, women who screened positive for post-partum depression using the EPDS were invited to participate in a follow-up diagnostic interview using the *DSM-IV* criteria for diagnoses. Of these women who tested positive (n = 1396), nearly 60% (n = 826) completed the follow-up interview. Results of this interview indicated that 68.5% met *DSM-IV* criteria for a depressive disorder. Of this 68.5%, two-thirds of them also met criteria for an anxiety disorder. Surprisingly, 22.6% met criteria for a bipolar disorder. These findings speak to the heterogeneity of symptoms captured within the EPDS as well as the DSM criteria for depressive disorders.

Mental health conditions are, of course, among the astonishingly wide array of issues about which primary care physicians are trained, though it would be fair to say that they are not typically specialists in the diagnosis and treatment of these conditions. Nevertheless, most people in the US who seek treatment for depression do so in a primary care setting (Marcus & Olfson, 2010). Depression is indicated as the main reason for a primary care appointment 10.4% of the time (Rui & Okeyode, 2015). Additionally, many birthing parents rely on their obstetrician-gynecologist (OB-GYN) clinic for all of their pregnancy and perinatal concerns, including mood/affective disturbances. Therefore, there is a need for a brief screening tool that can be easily and quickly administered in OB-GYN (and pediatric) setting.

Challenges with the Sydromal Model

The challenges associated with using screeners and diagnostic labels associated with the syndromal model of psychopathology are well known within the field. Many scholars and clinicals speak on the need for dimensional models of psychopathology as well as dimensional measures to capture these symptoms.

Indeed, there has been a recent shift within the field of psychology to move from discrete categorical models of psychopathology towards hierarchical dimensional models (McCord, 2020). This shift was precipitated, in part, by the National Institute of Mental Health's suggestion that the current diagnostic model is a major contributing factor in the lack of progress related to the diagnosis and treatment of mental health dysfunction (Insel et al., 2010). Dimensional models are designed to reflect the natural continuous distribution of various psychological facets, across the population, rather than identifying the presence/absence of a specific syndrome. As a result, several dimensional models of psychological (dys)function have emerged, including the PSY-5 model (Harkness et al., 2012), the alternative model of personality disorders (APA, 2013), the hierarchical taxonomy of psychopathology (HiTOP) model (Kotov et al., 2017), and the MMPI-3 (Ben-Porath & Tellegen, 2020a).

As noted above, there are several shortcomings with using assessments such as the PHQ-9 or EPDS as a front-line tool for assessing mental health concerns and suicide risk within a healthcare setting. The heterogeneity of the symptoms on such a measure (sleep, appetite, affect, etc.) make it difficult to understand much about the patient other than whether or not they "have a syndrome." In addition, these measures often have unclear or ambiguous instructions (i.e., in the past two weeks how often have you been bothered by …).

A newly developed instrument, the Multidimensional Behavioral Health Screen (MBHS; McCord, 2020), has been designed to help address some of these concerns. This brief screener presents 29 items related to nine areas of psychopathology. These areas are not constrained to the syndrome conceptualization of psychopathology and instead relate scores to a dimensional instrument, the Minnesota Multiphasic Personality Inventory–2–Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008/2011). The MMPI-2-RF is a well-normed and validated instrument that is one of the most widely used instruments for assessing psychopathology worldwide (see Sellbom, 2019).

Current research with the MBHS is linked to its associations with the most recent version of the MMPI, the MMPI-3 (Ben-Porath & Tellegen, 2020a). The MBHS screens for nine mental health dimensional constructs, four of which are directly related to depressive and anxiety-related symptoms. This is particularly relevant to the post-partum population as these are some of the most reported forms of psychological distress during this time. These include non-specific distress (demoralization), anhedonia, anxiety, and suicidal ideation. The most recent version of the MBHS includes an algorithm to consider multiple components in establishing level of suicide risk, an issue that is important in all primary care settings and, as documented above, especially in the OB-GYN setting.

Assessing for Suicide Risk in Post-Partum Patients

According to Oates (2003), suicide is one of the top three causes of death in post-partum women. Various factors have been attributed to an increased risk of suicide in post-partum women including co-occurring mental health disorders, lack of mental health care, and substance use (Sit et al., 2015). Of particular concern is the poor predictive ability of instruments, such as the PHQ-9 and EPDS to accurately identify suicide risk. The EPDS does not specifically inquire

about suicidality and refers only to self-harm ideation. Kim et al. (2015) found that of 22,118 woman who completed the EPDS, 3.8% indicated thoughts of self-harm. This ideation was determined after further screening women whose EPDS scores were in the clinically elevated range (score above 12; $n = 842$). Of these women, the researchers determined that 1.1% ($n = 6$) were at a high risk for dying by suicide demonstrated by active ideation, intent, and access to lethal means. Three of these six women also reported a suicide attempt after giving birth. These findings, coupled with the fact that the EPDS does not directly address constructs related to suicide, suggest that additional steps should be taken to screen perinatal women.

Many current approaches to suicide risk assessment and subsequent intervention derive from the interpersonal-psychological theory of suicide (see Van Orden et al., 2010). This model recognizes two main constructs (thwarted belonginess and perceived burdensomeness), coupled with the capacity for suicidal behavior, as integral components of predicting suicidal behavior. Together, these constructs are more accurate predictors of the risk of suicidal behavior, compared to using a single global measure of suicidal ideation alone (cite the study that indicates improved accuracy). Chu et al. (2015) developed a brief interview designed to capture the relevant constructs within the interpersonal-psychological theory of suicide. This interview helps designate an individual's suicide risk level ranging from Low/No Risk to Severe Risk.

Screening birthing parents for mood disorders and suicidality is an important component of perinatal healthcare. According to Earls (2010), "every year, more than 400,000 infants are born to mothers who are depressed, which makes perinatal depression the most under diagnosed obstetric complication in America" (p. 1032). Addressing this concern by identifying birthing parents who are experiencing a perinatal mood disturbance and treating them early could have long standing impacts on both their health and the health of their family. It is important the

mental health screeners used within primary care and OB-GYN settings reflect the most up to date research regarding mood disturbances and suicide risk assessment. More specifically, screening measures should focus on the unique and dimensional characteristics of affective disturbances (anxiety symptoms and general distress as separate from anhedonia, etc.) rather than on the syndromal model of diagnosis (Sellbom et al., 2008).

CURRENT STUDY

Overall, there are two main goals of this research. At a broad level, we aimed to gain a better understanding of internalizing dysfunction, including depressive and anxiety symptomatology, during the post-partum period (0-6 months). This goal was achieved by using the MMPI-3 to assess psychological dysfunction in a way that reflects the dimensionality of psychopathology rather than focusing on syndromal models. Second, and more specifically, we focused on suicide risk assessment within this population. This was be achieved by comparing the accuracy of the currently used categorical screening instruments (PHQ-9 and EPDS) to the recently developed dimensional screener, the MBHS 2.0, at predicting suicide risk. Suicide risk levels were determined by conducting a semi-structured suicide risk assessment, using the interpersonal-psychological theory of suicide (Chu et al., 2015). This research could ultimately lead to improved identification and treatment for at-risk mothers, resulting in improved outcomes for them and their babies.

Hypotheses:

1. We hypothesized that this sample would produce mean T-scores on the MMPI-3 that are at least 5 points higher than the general population on emotional/internalizing dysfunction scales (EID-Emotional/Internalizing Dysfunction, RCd-Demoralization, RC2-Low Positive Emotions, and RC7-Dysfunctional Negative Emotions). Further, compared to the 8% of the

general population producing a T-score of 65 or higher, we predicted that this post-partum population would at least double that, with at least 16% of the sample producing a T-scores of 65 or higher on the scales listed based on the high prevalence rates of post-partum mood dysfunction (e.g. APA, 2013; Binti Mohd Arifin et al., 2018; Gaynes et al., 2005; Khanlari et al., 2019).

2. We hypothesized that the three MBHS 2.0 internalizing dysfunction scales (Demoralization, Anhedonia, and Anxiety) would be better predictors of specific forms of internalizing dysfunction, as measured by the MMPI-3 RCd, RC2, and RC7 scales, respectively, than the total PHQ-9 score or the total EPDS score in this post-partum population. Specifically:
    a. The Pearson correlation between MBHS Demoralization and RCd would be significantly greater than the correlation between the PHQ-9 total and RCd and the correlation between the EPDS total and RCd.
    b. The Pearson correlation between MBHS Anhedonia and RC2 would be significantly greater than the correlation between the PHQ-9 total and RC2 and the correlation between the EPDS total and RC2.
    c. The Pearson correlation between MBHS Anxiety and RC7 would be significantly greater than the correlation between the PHQ-9 total and RC7 and the correlation between the EPDS total and RC7.
3. We hypothesized that the MBHS 2.0 suicide risk algorithm would be more accurate than the PHQ-9 and the EPDS in determining risk level as ascertained by the Chu et al. (2015) semi-structured interview. A series of classification accuracy analyses (e.g., sensitivity, specificity, etc.) were conducted in these comparisons, as there are no well-established systematic criteria for either the PHQ-9 or EPDS in determining suicide risk.

Method

Participants

Participants were recruited via Mountain Area Health Education Center (MAHEC); all participants were at least 18 years of age, female, English proficient, of child-bearing age, and must have given birth within the past 6 months. We collected data from 78 participants. The final sample consisted of 75 participants, after applying protocol invalidity criteria of the MMPI-3 (VRIN $\geq$ 80, TRIN $\geq$ 80, CRIN $\geq$ 80, F = 100, Fp $\geq$ 100, or CNS $\geq$ 15). As compensation for their participation, subjects received a $50 Amazon gift card. Compensation amount was agreed upon by relevant Institutional Review Boards (MAHEC and Western Carolina University).

Measures and Materials

Multidimensional Behavioral Health Screen 2.0 (MBHS 2.0). The Multidimensional Behavioral Health Screen (MBHS; McCord, 2020) is a recently developed instrument used to estimate at a screening level of precision clinically relevant personality and psychopathology constructs in primary care medical settings (Mitchell, 2020). The MBHS was updated to its current version to include a suicide risk algorithm based on the suicide risk rating system detailed in the interpersonal-psychological theory of suicide (Dodge et al., 2023). The MBHS 2.0 contains 29 short items measuring Somatization, Cognitive Issues, Demoralization, Anhedonia, Anxiety, Suicidal Ideation, Activation, Disconstraint, and Substance Misuse. These scales replicate constructs measured by the MMPI-3, and Dodge and colleagues (2023) found evidence of good convergent and discriminant validity between the MMPI-3 scales and their counterpart scales on the MBHS 2.0 – with the exception of the Activation scale on the MBHS. Within the current sample, the MBHS scales exhibited Cronbach's alpha scores ranging from .25 to .81; however, the scale with the lowest alpha score was the Suicidal Ideation scale, and it was

affected by the lack of variance on some of the scale items. Excluding the Suicidal Ideation scale, the scale with the lowest alpha value was the Substance Misuse scale (.48). See Appendix A for a copy of the MBHS 2.0. See Figure 1 for a sample MBHS output graph.

Minnesota Multiphasic Personality Inventory-3 (MMPI-3; Ben-Porath & Tellegen, 2020a). The MMPI-3 is a frequently used tool for assessing psychopathology. The MMPI-3 consists of 335 self-report questions designed to conceptualize a person's psychological state and personality, organized into 10 Validity Scales and 42 scales that measure clinical content. These scales are organized hierarchically and include the: Higher Order Scales, Restructured Clinical Scales, Specific Problems Scales, and Personality Pathology Five (PSY-5) Scales. For the present study, 4 scales (EID – Emotional/Internalizing Dysfunction, RCd-Demoralization, RC2-Low Positive Emotions, RC7-Dysfunctional Negative Emotions,) will be used as target criteria in evaluating the corresponding scales of the MBHS 2.0, EPDS, and PHQ-9. For the purposes of correlational analyses, raw scores were utilized instead of T-scores. The reliability and validity of the MMPI-3 have been extensively supported, across settings (Ben-Porath & Tellegen, 2020b).

Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). The EPDS is a 10-item scale designed to identify women suffering from postnatal depression. It asks women to rate how they have felt in the past 7 days based on a scale from 0 (No, not at all) – 3 (Yes, very often). Higher scores indicate more severe symptoms (maximum score = 30). Although thresholds for a depressive illness vary across settings (Gibson et al., 2009), a cutoff score of 12/13 typically indicates that clinical depression is present. The EPDS can be found in Appendix B. Cronbach's alpha?

Patient Health Questionnaire-9 (PHQ-9; Spitzer et al., 1999) The PHQ-9 is a commonly used tool to assess for depression both in mental health and primacy care settings. The PHQ-9 is a 9-item self-report scale that reflects the *DSM-5* criteria for major depressive disorder. For each item, participants answer on a scale of "0" (not at all) to "3" (nearly every day) how often they experience each of the 9 symptoms. Internal reliability coefficients of the PHQ-9 are close to .90, and validity coefficients (with respect to *DSM-IV* diagnosis of major depressive disorder) fall between .80-.90 (Kroenke et al., 2001). Total scores range from 0 to 27, and the authors characterize a total score of 5 as indicating mild depression, 10 as moderate, and 15 as severe. The PHQ-9 can be found in Appendix C. Cronbach's alpha?

Structured Suicide Risk Interview (Joiner et al., 1999; Chu et al., 2015). This structured interview focuses on suicidal thoughts/actions within the framework of the interpersonal-psychological theory of suicide (Van Orden et al., 2010). This includes constructs such as thwarted belongingness, perceived burdensomeness, and the capacity for suicide. Interviewers assess risk using several factors including the *Risk Assessment Decision Tree* and clinical judgment. Risk levels can range from Low Risk to Extreme Risk based on a patient's current mental status and/or past suicide attempts.

At the conclusion of data collection, three raters, who were not involved with data collection, were provided with the recorded responses for each participant's risk interview. The raters coded all the responses and provided risk levels corresponding to criteria described by Chu and colleagues (2015). The raters achieved an overall agreement rate of 96.57% percent across all coded responses; agreement for the raters assigned risk level was poor (Fleiss's $\kappa = .32$). It should be noted that the low κ value was significantly influenced by the lack of variability in risk level value across raters. For example, one rater assigned Low Risk to all participants, the second

rater assigned Low Risk to all but 1 participant, and the third rater assigned Low Risk to all but 2 participants. Indeed, for participants who were rated as low risk, the raters achieved a Fleiss's κ of above 99%. The questions found in the Structured Suicide Risk Interview and *Risk Assessment Decision Tree* can be seen in Appendix D and E, respectively.

Demographic and Pregnancy/birth outcome questionnaire: The demographic and pregnancy related questions address several aspects of pregnancy and childbirth and include information related to the number of weeks gestation at time of delivery, maternal and infant health immediately following birth, relationship status, maternal age, and number of living children. Additional questions also address perceived social support and ability to financially provide for their infant.

General Procedure

Data were collected during individual Zoom sessions that took approximately 60-90 minutes to complete. Participants were scheduled for individual time slots by one of the three researchers during MAHEC's normal business hours.

Each participant received an email that contained the link to a unique Zoom (HIPAA compliant version) session with a copy of the informed consent form and resource documents. The resource document can be referenced in Appendix F. Once the participant joined the Zoom session and provided verbal consent (see above), the researcher asked for them to provide their current location and contact information in case of an emergency situation (i.e., elevated suicide risk); this information was stored in a separate and temporary location in OneDrive and was deleted at the conclusion of the study. After providing this information, participants started the Qualtrics portion of the study (MBHS, MMPI-3, PHQ-9, EPDS, and demographic questionnaire) by taking remote control of a study designated laptop monitored by the researcher that scheduled

them. Following the completion of the Qualtrics survey, participants completed the structured suicide risk interview, via Zoom, which was administered by the researcher who scheduled their session. If a participant had an elevated risk level, they were transferred to the Behavioral Medicine provider on duty on that day, which was consistent with standard MAHEC suicide risk management protocols.

Results

Of the 75 women who produced valid MMPI-3 profiles, 8% produced elevated EPDS profiles (total score ≥ 12), 20% produced a mildly elevated PHQ-9 (total score between 5 and 9), 2.7% produced a moderately elevated PHQ-9 (total score between 10 and 14) and 1.3% produced a severely elevated PHQ-9 (total score ≥ 15).

Hypothesis 1

When comparing the current sample to the normative population across our target scales MMPI-3 (EID, RCd, RC2, and RC7), my hypotheses were not supported. Specifically, no target scale had a mean T score of 55 or higher; in fact, all target scales in my sample had T scores less than the 50. Furthermore, my hypotheses concerning the frequency of scale elevation rates for these targets scales were also not supported. In my sample, EID, RCd, and RC2 had elevations lower than the normative population (8%), and RC7 elevations (12%) fell short of my hypothesized 16%.

It should be noted that the analyses associated with scale elevation frequency comparison were underpowered, as *ad hoc* power analyses for equivalent statistical analyses indicated a sample of 190 or greater would be necessary to detect my hypothesized differences. See Table 1 for descriptive statistics for these target MMPI-3 scales, including elevation rates; also, see Appendix G for descriptive statistics for the remaining MMPI-3 scales.

Table 1

Descriptive Statistics for Target MMPI-3 Scales

MMPI-3 Scale	N	Mean T	Standard Deviation	Percent Elevation
Emotional/Internalizing Dysfunction (EID)	75	47.9	9.2	5.3%
Low Positive Emptions (RC2)	75	49.1	8.8	2.7%
Demoralization (RCd)	75	46.0	8.9	5.3%
Dysfunctional Negative Emotions (RC7)	75	49.9	11.6	12.0%

Hypothesis 2

Table 2 presents correlations between key internalizing scales of MMPI-3 (RCd, RC2, and RC7), specific MBHS scales (Demoralization, Anhedonia, Anxiety), and the total scores of the PHQ-9 and EPDS. Steiger's Z (1980) was used to evaluate the significance of differences between correlation coefficients across each row. In predicting the MMPI-3 RCd-Demoralization score, the MBHS Demoralization scale did show a higher correlation coefficient than either the EPDS or PHQ-9, but not significantly so. Similarly, in predicting the MMPI-3 RC2-Low Positive Emotions score, the MBHS Anhedonia scale had a higher correlation than the EPDS or PHQ-9, but not significantly so. In the case of predicting the MMPI-3 RC7-Dysfunctional Negative Emotions score, the MBHS Anxiety scale had a significantly higher correlation than the EPDS and PHQ-9. Of note, the correlation comparison analyses were likely underpowered, as *ad hoc* estimations indicated a sample of 657 would be needed.

Table 2

MBHS, EPDS, and PHQ-9 Correlations with Target MMPI-3 Scales

MMPI-3 Scale	MBHS Demoralization	MBHS Anhedonia	MBHS Anxiety	EPDS Total	PHQ-9 Total
RCd	**.746**[a]	.741	.650	.659[a]	.644[a]
RC2	.615	**.564**[a]	.443	.416[a]	.485[a]
RC7	.346	.616	**.651**[a]	.572[b]	.490[b]

Note: N=75. RCd=Demoralization; RC2=Low Positive Emotions; RC7=Dysfunctional Negative Emotions. Significance levels $p < .001$ for all correlation coefficients shown. For each row, correlations sharing the same superscript do not differ significantly from each other. For MBHS scales, the target scale for each row comparison is bolded.

Hypothesis 3

When examining the sensitivity and specificity of the PHQ-9, EPDS, and MBHS to detect elevated suicide risk, three participants' suicide risk forms were lost due to technological errors, leaving a total sample of 72. Of these 72 participants, only one had an elevated risk for suicide based on Chu et al. (2015) criteria, meaning my sample had a 1.39% base rate. I analyzed chi-square tables to obtain values to calculate sensitivity and specificity values for all of these analyses.

There are currently no set criteria for either the PHQ-9 or the EPDS in establishing a person's risk for suicide; thus, I took two approaches in examining the utility of these measures. First, each scale has one item that is at least tangentially associated with suicide risk (the final item on each scale), so I dichotomized participants based on whether they responded as anything except "not at all" to the corresponding item. Second, I ran Receiver Operating Characteristic (ROC) analyses to find the optimal cut point for the total scores for both the PHQ-9 and EPDS and created dichotomous variables based on these cut scores (PHQ-9 cut score was 8 and EPDS cut score was 7). I dichotomized each variable based on the cut score. Concerning the MBHS, I also utilized two different approaches to measuring its sensitivity and specificity. Specifically, the MBHS suicide risk algorithm classifies people as low, mild, or at least moderate. So, I

created one comparison dichotomizing the MBHS risk based on low risk versus mild and higher, and another dichotomizing low/mild versus at least moderate. Thus, in summary, I calculated six different sensitivity and specificity values in total, two for each measure (MBHS, PHQ-9, and EPDS).

When examining the PHQ-9, the total score dichotomous method yielded a sensitivity of 100% and a specificity of 84.51%. For the single item dichotomous method, the PHQ-9 yielded a sensitivity of 0% and a specificity of 100%. When examining the EPDS using the dichotomous total score method, sensitivity was 100% and specificity was 61.97%. For the single item dichotomous method, the EPDS provided a sensitivity of 0% and a specificity of 91.55%. When examining the MBHS risk algorithm using the low versus mild/at least moderate method, sensitivity was 100% and specificity was 94%. For the mild/low versus at least moderate risk on the MBHS, sensitivity was 100% and specificity was 100%. See Table 3 for a side-by-side comparison of these various methods.

Table 3

Side-by-Side Comparison of Suicide Risk Level Classification Method

Predictor	Sensitivity	Specificity
PHQ-9		
Total Score – Dichotomous	100%	84.51%
Single Item Dichotomous	0%	100%
EPDS		
Total Score – Dichotomous	100%	61.97%
Single Item Dichotomous	0%	91.55
MBHS		
Low vs. Mild/ at least Moderate	100%	94%
Mild/low vs. at least moderate risk	100%	100%

DISCUSSION

The primary purpose of this study was to investigate the effectiveness of the MBHS compared to the PHQ-9 and EPDS, at detecting symptoms of internalizing dysfunction and suicidality in a post-partum sample. Our results indicated that the birthing parents who were 0-6 months post-partum did not produce elevations on the MMPI-3 related to internalizing dysfunction (EID), low positive emotions (RC2), demoralization (RCd), and dysfunctional negative emotions (RC7) that were at least double that (16%) of the normative sample. Elevations within our sample on RC7 (12%) approached our hypothesized elevation level. One potential explanation for this finding could lie in the research constructs themselves. More specifically, population estimates related to perinatal mental health conditions often rely on the syndromal model of mental health dysfunction. A dimensional measure, such as the MMPI-3, does not.

Although the MBHS was generally better at predicating hypothesized MMPI-3 elevations, it did not differ significantly from the EPDS or PHQ-9, with the exception of the Anxiety scale being a better predictor of RC7 than the EPDS or PHQ-9. While this is a positive finding for the scope of our research, it is expected given that the MBHS was designed to capture MMPI elevations. More generally, the results shown in Table 2 suggest that both the EPDS and PHQ-9 may be described as rather general measures of demoralization, whereas the MBHS allows reasonably accurate disaggregation of these three clinically relevant major components of internalizing dysfunction.

Based on our analyses, the MBHS performed significantly better than the EPDS and PHQ-9 when capturing suicide risk. Additionally, the MBHS risk algorithm allowed for high sensitivity and specificity, neither over nor under identifying risk. This finding generally

suggests that the PHQ-9 and EPDS are not providing medical staff with vital clinical information related to a patient's level of risk, especially in samples with low base rates of suicide risk. This finding is congruent with research that suggests that one-item questions are not effective at accurately identifying suicide risk (Horn et al., 2016). However, given the low base rate of elevated suicide risk in our sample and inadequate power, these interpretations should be interpreted with considerable caution.

Recent recommendations made by U.S. Preventative Services Task Force (2023) point to screening for anxiety and depression in all adults 64 and younger, including pregnant and postpartum patients. Recommended anxiety screeners include the Generalized Anxiety Disorder Scale, the EPDS, and the Geriatric Anxiety Inventory. Screening measures recommended for depression include the PHQ-9, EPDS, and the Geriatric Depression Scale. This suggestion is based on findings that indicated 67% of individuals with a depressive disorder have a current anxiety disorder and a 75% chance of developing an anxiety disorder at some point in their lifetime (O'Connor et al., 2023). The Task Force does not specify the frequency at which individuals should be screened due to insufficient data. The current recommendation, absent the data, is to screen all adults who have not been previously screened. Re-screening should take places based on clinical judgments and an assessment of risk factors, with high-risk patients being screened more frequently (Barry et al., 2023).

Throughout the course of data collection for this project, maternal mental health took center stage on many new-media outlets with tragic stories such as that of Lindsey Clancy. Their deeply tragic stories highlight the importance of supporting parents as they enter the perinatal phases. Davenport (2020) reported that during the COVID-19 Pandemic, rates of maternal mental health disorders rose from 29% to 72%, likely due to social isolation and increased

financial strain. The U.S. Preventative Service Task Force is actively undergoing their review and research process to determine their recommendations for screening pregnant and postnatal individuals.

Despite recommending anxiety and depression screening for adults under 64, the task force does not recommend stand-alone suicide risk screening, acknowledging that some depression screening measures ask a question related to suicidality. Should a clinician deem a suicide risk assessment is necessary, the Task Force recommends using the Screening instruments for suicide risk including the SAD PERSONS Scale, the SAFE-T, and the Beck Hopelessness Scale. They further note that some depression screeners incorporate questions related to suicidal ideation. Specific recommendations related to perinatal populations are currently undergoing updates.

This new set of facts and recommendations highlights the importance of having an effective and efficient screener for use in healthcare settings. It is also important that the screener used in these settings reflect the current trends within our field. One such screener is the MBHS, as it has shown robust utility at capturing elevations in the domains of Somatization, Cognitive Issues, Demoralization, Anhedonia, Anxiety, Suicidal Ideation, Activation, Disconstraint, and Substance Use Problems (Dodge et al., 2023).

Limitations

A significant limitation of our study is sample size. Data collection for this project was extended several times, spanning more than two years, in an effort to recruit more participants. This effort was largely unsuccessful. One potential reason for this was the challenges that are generally experienced by birthing parents during the post-partum period. Generally speaking, these parents are sleep deprived, healing from birth, and managing many new responsibilities.

Their availability to participate in a 90-minute research study, during regular business hours, is understandably limited. Given that pregnant and post-partum individuals are a protected research population, active recruitment was also not allowable. Therefore, we relied on these parents to allocate their already depleted cognitive resources to actively seek out participation in our study. This proved to be difficult. While we were able to recruit enough participants to satisfy some of our more liberal power requirements, other analyses were underpowered.

Due to the safety concerns of identifying post-partum individuals who could be at elevated suicide risk, we were restricted to a cohort of parents at the MAHEC clinic. While this clinic arguably has the largest sample of birthing parents in our region, it also served as a potential source of sampling bias. This was further confounded by the fact that MAHEC serves many underserved individuals within our community who might not have had access to the technological means necessary to participate in our study.

Although the MBHS performed exceptionally well at capturing suicide risk within our sample, our participants only produced one suicide risk interview in the at-least-moderate range. One potential explanation for this is that elevated suicide risk within this population is truly a low-base rate event. This explanation is at least partially supported by the research of Kim et al. (2015) that showed that only 1.1% of individuals who produced an elevated EPDS score were at imminent risk for dying by suicide (0.03% of their total sample). Furthermore, recent research suggests that maternal suicide is most likely to occur 6-12 months post-partum (Goldman-Mellor & Margerison, 2019). It is possible that our sample of parents, who were 0-6 months post-partum, were less likely to experience suicidality compared to those who were further post-partum.

Future Directions

The challenges with conceptualizing mental health challenges are well known within the field. Broadly speaking, we utilize syndromal models, such as those listed in the *DSM-5-TR*, to categorize dimensional constructs. This tendency creates difficulties when researching symptoms and prevalence rates of "depression" or "anxiety."

Given this, it is important that research focus on a clear definition of variables and outcome measures. This is even more critical in a perinatal population, as this population experiences a wide range of physical and social stressors that place them at higher rates for challenges while simultaneously consuming resources. It is difficult to engage this population in research studies. It is our hope that researchers continue to investigate effective ways to adequately screen for and treat mental health challenges in a way that supports the intended populations while creating minimal strain on an already strained healthcare system.

REFERENCES

Ahmedani, B. K., Simon, G. E., Stewart, C., Beck, A., Waitzfelder, B. E., Rossom, R., ... & Solberg, L. I. (2014). Health care contacts in the year before suicide death. *Journal of general internal medicine*, *29*, 870-877.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.

Arifin, S. R. B. M., Cheyne, H., & Maxwell, M. (2018). Healthcare practitioners' views of postnatal depression: A qualitative synthesis. *Jurnal Sains Kesihatan Malaysia (Malaysian Journal of Health Sciences)*, *17*(1).

Barry, M. J., Nicholson, W. K., Silverstein, M., Coker, T. R., Davidson, K. W., Davis, E. M., ... & US Preventive Services Task Force. (2023). Screening for anxiety disorders in adults: US Preventive Services Task Force recommendation statement. *JAMA*.

Ben-Porath, Y. S., & Tellegen, A. (2008/2011). MMPI-2-RF (Minnesota Multiphasic Personality Inventory-2-Restructured Form): Manual for administration, scoring, and interpretation. University of Minnesota Press.

Ben-Porath, Y. S., & Tellegen, A. (2020a). MMPI-3 (Minnesota Multiphasic Personality Inventory-3): Manual for administration, scoring, and interpretation. University of Minnesota Press.

Ben-Porath, Y. S., & Tellegen, A. (2020b). *Minnesota Multiphasic Personality Inventory-3 (MMPI-3): Technical manual*. University of Minnesota Press.

Centers for Disease Control and Prevention. (2002). Web-based injury statistics query and reporting system (WISQARS). *www. cdc. gov/ncipc/wisqars*.

Chu, C., Klein, K. M., Buchman-Schmitt, J. M., Hom, M. A., Hagan, C. R., & Joiner, T. E. (2015). Routinized assessment of suicide risk in clinical practice: An empirically informed update. *Journal of Clinical Psychology*, *71*(12), 1186-1200.

Cochran, A. L., Pingeton, B. C., Goodman, S. H., Laurent, H., Rathouz, P. J., Newport, D. J., & Stowe, Z. N. (2020). A transdiagnostic approach to conceptualizing depression across the perinatal period in a high-risk sample. *Journal of Abnormal Psychology*, *129*(7), 689.

Cox, J. L., Chapman, G., Murray, D., & Jones, P. (1996). Validation of the Edinburgh Postnatal Depression Scale (EPDS) in non-postnatal women. *Journal of Affective Disorders*, *39*(3), 185-189.

Davenport, M. H., Meyer, S., Meah, V. L., Strynadka, M. C., & Khurana, R. (2020). Moms are not OK: COVID-19 and maternal mental health. *Frontiers in global women's health*, 1.

Dodge, M. C., Hicks, A.D., & McCord, D. M. (2023*). Rapid Screening for Suicide Risk: An Algorithmic Approach. (*Manuscript currently in "in press" status; available on request.)

Earls, M. F., & Committee on Psychosocial Aspects of Child and Family Health. (2010). Incorporating recognition and management of perinatal and post-partum depression into pediatric practice. *Pediatrics*, *126*(5), 1032-1039.

Gaynes, B. N., Gavin, N., Meltzer-Brody, S., Lohr, K. N., Swinson, T., Gartlehner, G., ... & Miller, W. C. (2005). Perinatal depression: Prevalence, screening accuracy, and screening outcomes: Summary. *AHRQ evidence report summaries*.

Gibson, J., McKenzie-McHarg, K., Shakespeare, J., Price, J., & Gray, R. (2009). A systematic review of studies validating the Edinburgh Postnatal Depression Scale in antepartum and post-partum women. *Acta Psychiatrica Scandinavica*, *119*(5), 350-364.

Harkness, A. R., Finn, J. A., McNulty, J. L., & Shields, S. M. (2012). The Personality Psychopathology—Five (PSY–5): Recent constructive replication and assessment literature review. Psychological assessment, 24(2), 432.

Hom, M. A., Joiner Jr, T. E., & Bernert, R. A. (2016). Limitations of a single-item assessment of suicide attempt history: Implications for standardized suicide risk assessment. *Psychological Assessment*, *28*(8), 1026.

Insel, T., Cuthbert, B., Garvey, M., Heinssen, R., Pine, D. S., Quinn, K., ... & Wang, P. (2010). Research domain criteria (RDoC): Toward a new classification framework for research on mental disorders.

Joiner Jr, T. E. (1999). The clustering and contagion of suicide. *Current Directions in Psychological Science*, *8*(3), 89-92.

Khanlari, S., AM, B. B., Ogbo, F. A., & Eastwood, J. (2019). Re-examination of perinatal mental health policy frameworks for women signaling distress on the Edinburgh Postnatal Depression Scale (EPDS) completed during their antenatal booking-in consultation: A call for population health intervention. *BMC Pregnancy and Childbirth*, *19*(1), 221.

Kim, J. J., La Porte, L. M., Saleh, M. P., Allweiss, S., Adams, M. G., Zhou, Y., & Silver, R. K. (2015). Suicide risk among perinatal women who report thoughts of self-harm on depression screens. *Obstetrics & Gynecology*, *125*(4), 885-893.

Kotov, R., Krueger, R. F., Watson, D., Achenbach, T. M., Althoff, R. R., Bagby, R. M., ... & Zimmerman, M. (2017). The Hierarchical Taxonomy of Psychopathology (HiTOP): A dimensional alternative to traditional nosologies. *Journal of abnormal psychology*, *126*(4), 454.

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*(9), 606-613.

Marcus, S. C., & Olfson, M. (2010). National trends in the treatment for depression from 1998 to 2007. *Archives of General Psychiatry*, *67*(12), 1265-1273.

McCord, D. M. (2020). The multidimensional behavioral health screen 1.0: A translational tool for primary medical care. *Journal of Personality Assessment*, *102*(2), 164-174.

Miller, B. F., & Coffey, M. J. (2021). Understanding suicide risk and prevention. *Health Affairs Policy Brief*.

Mitchell, H. G., Frayne, D., Wyatt, B., Goller, H., & McCord, D. M. (2020). Comparing the PHQ-9 to the Multidimensional Behavioral Health Screen in Predicting Depression-Related Symptomatology in a Primary Medical Care Sample. *Journal of Personality Assessment*, *102*(2), 175-182.

O'Connor, E., Henninger, M., Perdue, L. A., Coppola, E. L., Thomas, R., & Gaynes, B. N. (2023). Screening for depression, anxiety, and suicide risk in adults: A systematic evidence review for the US preventive services task force.

Oates, M. (2003). Postnatal depression and screening: too broad a sweep?. *The British Journal of General Practice*, *53*(493), 596.

Ross, L. E., Murray, B. J., & Steiner, M. (2005). Sleep and perinatal mood disorders: A critical review. *Journal of Psychiatry and Neuroscience*, *30*(4), 247.

Rui, P., & Okeyode, T. (2015). National Ambulatory Medical Care Survey: 2015 state and national summary tables. *Atlanta, GA: Centers for Disease Control and Prevention*.

Sellbom, M. (2019). The MMPI-2-Restructured Form (MMPI-2-RF): Assessment of personality and psychopathology in the twenty-first century. *Annual Review of Clinical Psychology*, *15*, 149-177.

Sellbom, M., Ben-Porath, Y. S., & Bagby, R. M. (2008). On the hierarchical structure of mood and anxiety disorders: confirmatory evidence and elaboration of a model of temperament markers. *Journal of Abnormal Psychology*, *117*(3), 576.

Spitzer, R. L., Kroenke, K., Williams, J. B., & Patient Health Questionnaire Primary Care Study Group. (1999). Validation and utility of a self-report version of PRIME-MD: The PHQ primary care study. *JAMA*, *282*(18), 1737-1744.

Strakowski, S. M., Keck, F. E., Arnold, L. M., Collins, J., Wilson, R. M., & Fleck, D. E. (2003). Bipolar and Psychotic Disorders Research Program, Department of Psychiatry, University of Cincinnati College of Medicine, Cincinnati, Ohio, USA. *J Clin Psychiatry*, *64*, 747-754.

Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner Jr, T. E. (2010). The interpersonal theory of suicide. *Psychological Review*, *117*(2), 575.

Wang, P. S., Angermeyer, M., Borges, G., Bruffaerts, R., Chiu, W. T., De Girolamo, G., ... & Uestuen, T. B. (2007). Delay and failure in treatment seeking after first onset of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World psychiatry*, *6*(3), 177.

Wisner, K. L., Sit, D. K., McShea, M. C., Rizzo, D. M., Zoretich, R. A., Hughes, C. L., ... & Hanusa, B. H. (2013). Onset timing, thoughts of self-harm, and diagnoses in post-partum women with screen-positive depression findings. *JAMA psychiatry*, *70*(5), 490-498.

APPENDIX A

Multidimensional Behavioral Health Screen 2.0 (Copyright 2020, David M. McCord, Ph.D.)

Indicate your response to each item by circling the number. Please answer as accurately and honestly as you can.	**Definitely False**	**Mostly False**	**Mostly True**	**Definitely True**
1. I have pains.	0	1	2	3
2. I feel useless.	0	1	2	3
3. There is little joy in my life.	0	1	2	3
4. I worry a lot.	0	1	2	3
5. My mood has very severe changes.	0	1	2	3
6. These days, I feel like I don't belong.	0	1	2	3
7. I have trouble concentrating.	0	1	2	3
8. I sometimes drink or use drugs too much.	0	1	2	3
9. I often make impulsive decisions.	0	1	2	3
10. These days, the people in my life would be better off if I were gone.	0	1	2	3
11. I get bored easily.	0	1	2	3
12. I feel weak.	0	1	2	3
13. I am dissatisfied with my life.	0	1	2	3
14. I have little motivation.	0	1	2	3
15. I want to die.	0	1	2	3
16. Nervousness interferes with my daily functioning.	0	1	2	3
17. I get distracted easily.	0	1	2	3
18. I sometimes spend more time drinking or using drugs than I intended.	0	1	2	3
19. I often break rules, regardless of the consequences.	0	1	2	3
20. I tend to avoid social activities.	0	1	2	3
21. I don't think before I act.	0	1	2	3
22. My thoughts race through my head very fast.	0	1	2	3
23. I get nauseated often.	0	1	2	3
24. I feel generally discouraged.	0	1	2	3
25. I am not afraid to die.	0	1	2	3
26. I have wanted to cut down on drinking or using drugs.	0	1	2	3
27. I can't remember things.	0	1	2	3
28. I obsess about things I can't control.	0	1	2	3
29. Any previous suicide attempts?	none	one	two	three^{+}

APPENDIX B

Edinburgh Postnatal Depression Scale[1] (EPDS)

Name: _____ Address: _____

Your Date of Birth: _____ _____

Baby's Date of Birth: _____ Phone: _____

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed.

I have felt happy:
□ Yes, all the time
☒ Yes, most of the time This would mean: "I have felt happy most of the time" during the past week.
□ No, not very often Please complete the other questions in the same way.
□ No, not at all

In the past 7 days:

1. I have been able to laugh and see the funny side of things
   - □ As much as I always could
   - □ Not quite so much now
   - □ Definitely not so much now
   - □ Not at all

2. I have looked forward with enjoyment to things
   - □ As much as I ever did
   - □ Rather less than I used to
   - □ Definitely less than I used to
   - □ Hardly at all

*3. I have blamed myself unnecessarily when things went wrong
   - □ Yes, most of the time
   - □ Yes, some of the time
   - □ Not very often
   - □ No, never

4. I have been anxious or worried for no good reason
   - □ No, not at all
   - □ Hardly ever
   - □ Yes, sometimes
   - □ Yes, very often

*5 I have felt scared or panicky for no very good reason
   - □ Yes, quite a lot
   - □ Yes, sometimes
   - □ No, not much
   - □ No, not at all

*6. Things have been getting on top of me
   - □ Yes, most of the time I haven't been able to cope at all
   - □ Yes, sometimes I haven't been coping as well as usual
   - □ No, most of the time I have coped quite well
   - □ No, I have been coping as well as ever

*7 I have been so unhappy that I have had difficulty sleeping
   - □ Yes, most of the time
   - □ Yes, sometimes
   - □ Not very often
   - □ No, not at all

*8 I have felt sad or miserable
   - □ Yes, most of the time
   - □ Yes, quite often
   - □ Not very often
   - □ No, not at all

*9 I have been so unhappy that I have been crying
   - □ Yes, most of the time
   - □ Yes, quite often
   - □ Only occasionally
   - □ No, never

*10 The thought of harming myself has occurred to me
   - □ Yes, quite often
   - □ Sometimes
   - □ Hardly ever
   - □ Never

Administered/Reviewed by _____ Date _____

[1]Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786 .

[2]Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

APPENDIX C

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✔" to indicate your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING 0 + _____ + _____ + _____

=Total Score: _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

APPENDIX D

Structured Suicide Risk Interview

Current SI/DI?

Current/recent plans and/or methods?

How strong is your intent to kill yourself? (e. g., current, next week, past week?) 0 = no intent at all, 10 = definite intent

History of attempts?

History of self-injury?

History of suicide in family?

Do you feel confident you could attempt suicide (0[definitely could not] - 10 [definitely could])?

Do you feel connected with others?

Thoughts that others would be better off if you were gone?

Hopelessness (0 [hopeful/good] - 10[not hopeful at all/bad])?

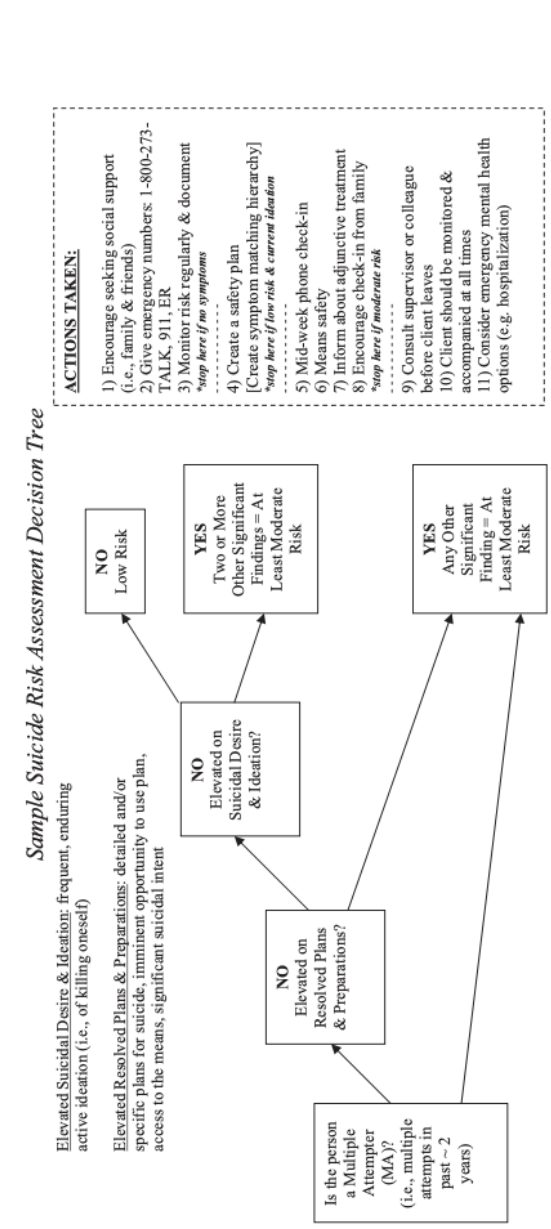
Recent stressors?

How do you cope?

Ongoing Mental health treatment?

APPENDIX E

Suicide Risk Decision Tree (Chu et al., 2015)



APPENDIX F

Resource Document

Psychological/Medical Care Services

Your participation in this research project presents no specific risks greater than those encountered in normal daily life. However, some of the questions we asked you as part of this study dealt with sensitive subjects. If you feel distress related to questions asked in this study or are experiencing other distress in your personal life, we encourage you to contact one of the resources listed below.

Local Resources

- MAHEC Center for Psychiatry and Mental Wellness: 828.398.3601
- Western NC 24-hour crisis line: 888.315.2880
- Appalachian Community Resources: 888.315.2880
- Vaya Health: 800.849.6127
- RHA Mobile Crisis Helpline: 888.573.1006
- Blue Ridge Behavioral Health:
- Meridian Behavioral Health
    - Address: 44 Bonnie Lane, Sylva, NC 28779 (other locations in Waynesville and Franklin)
    - Phone: 828.631.3973
- Smoky Mountain Center: 888.757.5726
    - http://www.smokymountaincenter.com/

National Emergency Resources

- National Suicide Prevention Lifeline: 800.273.8255
- REACH (Sexual Violence Resources) - 828.369.5544
- Trevor Project (LGBTQ Crisis support) - 866.488.7386
- Veterans Crisis Line- 800.273.8255

Postpartum Resources

- Postpartum Support International: 800.994.4773
    - www.postpartum.net
- Perinatal Emotional Health Network of WNC: 828.771.5532
    - www.facebook.com/pehnwnc/

Medical Care

- Mission Hospital
    - Address: 509 Biltmore Ave, Asheville, NC 28801
    - Phone: 828.213.1111
- Harris Regional Hospital
    - Address: 68 Hospital Road, Sylva, NC 28779
    - Phone: 828.586.7000

Postpartum Depression and Anxiety

The first weeks of caring for a new baby are a lot of work. During this time, your feelings and moods may not be what you expected. This handout will help you understand when feelings are normal, and when you should call your health care provider.

What are the baby blues?

As many as 3 in every 4 women will have short periods of feeling sad, crying, or feeling cranky or restless during the first few weeks after giving birth. This may be normal. Babies are fed every few hours, and you will not get a full night of sleep in those first weeks. Also, your body and hormones go through many changes after you give birth. Women who have the baby blues often say they feel like crying but don't know why. Baby blues usually happen in the first or second week postpartum (after you give birth) and last less than a week. If your sadness lasts 2 weeks or more, call your health care provider.

What is postpartum depression?

About one in every 5 women will develop postpartum depression during the first few months after giving birth. Women who have postpartum depression may have some of these symptoms:

- Feeling guilty
- Not able to enjoy your baby and feeling like you are not bonding with your baby
- Not able to sleep, even when the baby is sleeping
- Sleeping too much and feeling too tired to get out of bed
- Feeling overwhelmed and not able to do what you need to during the day
- Not able to concentrate
- Don't feel like eating
- Feeling like you are not normal or not yourself anymore
- Not able to make decisions
- Feeling like a failure as a mother or that you cannot take care of your baby
- Feeling lonely or all alone
- Thinking your baby might be better off without you

If you have any of these symptoms, tell someone you trust and call your health care provider right away!

What is postpartum anxiety?

About one in every 10 women will develop postpartum anxiety during the first few months after giving birth. Women who have postpartum anxiety may have some of these symptoms:

- Constant worry
- Racing thoughts
- Unable to sit still
- Sleeping too much or too little
- Don't feel like eating
- Feeling that something bad is going to happen
- Physical symptoms like dizziness, hot flashes, and nausea

If you have any of these symptoms, tell someone you trust and call your health care provider right away!

Which symptoms of postpartum depression and anxiety are dangerous?

Sometimes a woman with postpartum depression and/or anxiety will have thoughts of harming herself or her baby. If you have thoughts of wanting to hurt yourself or your baby, tell someone you trust and

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call your health care provider immediately. You can also call 911 or one of the emergency hotlines listed below.

Who is likely to have postpartum depression or anxiety?

Postpartum depression or anxiety can happen to any woman. Postpartum depression and anxiety sometimes happen together. Women with a personal or family history of anxiety or depression and women who have had stressful life events are more likely to have postpartum depression and/or anxiety. If you have any of these risks, talk with your health care provider before you give birth.

Planning ahead can help prevent problems after birth. If you have a history of depression or anxiety or someone in your family had one of these problems, it is important to plan ahead for how you can get help when you need it. If you can, see a counselor or mental health care provider before you give birth. If a mental health care provider is not available, you can work with your prenatal care provider to make a plan. You may not end up needing the extra help, but it is good to have someone available in case you need them.

How can a health care provider help treat postpartum depression or anxiety?

If you have postpartum depression or anxiety, it is important to get help. Treatments for these problems include therapy (counseling) and medication. Your health care provider can help you decide what treatment is best for you.

How can I help myself treat postpartum depression or anxiety?

Women who are depressed or anxious after having a baby may feel guilty and ashamed. You are not alone, and this is not your fault. It is important for your family and friends to understand that postpartum depression and/or anxiety can happen to anyone. Here are some things you can do to help yourself:

- Support groups or group activities help some women. Other women who have had postpartum depression and/or anxiety understand what you are going through.
- Sleep is very important for health and healing. Most women with postpartum depression and/or anxiety can have a hard time sleeping. Try different things to help you sleep, such as a warm bath before bedtime, massage, relaxation techniques, or meditation.
- If you are breastfeeding, you may need help with night feeding in order to get some uninterrupted sleep.
- Exercise produces hormones that help you feel better. Even a small amount of activity helps. Family and friends can help with short walks or take care of your baby while you exercise.
- Don't drink alcohol because it can make postpartum depression worse.
- Try to do something that made you happy before you had postpartum depression and/or anxiety, such as listening to music, doing something with a friend, or practicing your faith or religion.

For More Information

Postpartum Support International
www.postpartum.net
Support Helpline: 800-944-4773
Emergency Hotlines (available all the time, 24/7)
National Crisis Text Line: Text HOME to 741741 about any type of crisis
National Suicide Prevention Hotline: 800-273-8255

Flesch-Kincaid Grade Level: 8.1
Approved December 2018. This handout replaces "Postpartum Depression" published in Volume 58, Number 6, November/December 2013.

Appendix G

Sample Means, Standard Deviations, and Percent Elevated on MMPI-3 Substantive Scales

MMPI-3 Substantive Scales	Sample Statistics		
Somatic/Cognitive Dysfunction	**Mean**	**SD**	**% Elevated**
RC1-Somatic Complaints	**46.7**	9.4	4
MLS-Malaise	49.5	8.8	8
NUC-Neurological Complaints	47.1	9.6	4
EAT-Eating Concerns	49.5	9.7	2.7
COG-Cognitive Complaints	48.9	**12.4**	13.3
Emotional Dysfunction			
EID-Emotional/Internalizing Dysfunction	47.9	9.2	5.3
RCd-Demoralization	46	8.9	**5.3**
SUI-Suicidal/Death Ideation	45.6	5.2	9.3
HLP-Helplessness/Hopelessness	44.8	8.7	5.3
SFD-Self Doubt	47.5	9.2	6.7
NFC-Inefficacy	48.9	9.1	8
RC2-Low Positive Emotions	49.1	8.8	2.7
INTR-Introversion/Low Positive Emotions	49.7	10.5	14.7
RC7-Dysfunctional Negative Emotions	49.9	11.6	12
STR-Stress	51.2	10.8	17.3
WRY-Worry	49.6	10	16
CMP-Compulsivity	50.2	10.6	16
ARX- Anxiety Related Experiences	52.6	11.1	18.7
ANP-Anger Proneness	48.5	10.2	8
BRF-Behavior Restricting Fears	49.3	11.5	5.3
NEGE-Negative Emotionality	51	49.4	10.7
Thought Dysfunction			
THD-Thought Dysfunction	44.8	8.4	2.7
RC6-Ideas of Persecution	46.3	8.4	1.3
RC8-Aberrant Experiences	44.9	9.1	5.3
PSYC-Psychoticism	44.8	8.6	1.3
Behavioral Dysfunction			
BXD-Behavioral/Externalizing Dysfunction	43.6	8	1.3
RC4-Antisocial Behavior	45.4	7.9	2.7
FML-Family Problems	47.9	10	10.7
JCP-Juvenile Conduct Problems	46	8.7	5.3
SUB-Substance Abuse	46.3	8.7	6.7
RC9-Hypomanic Activation	44.1	9.0	4
IMP-Impulsivity	44.2	10.1	8
ACT-Activation	46.7	10.0	9.3
AGG-Aggression	44.0	6.3	0
CYN-Cynicism	42.6	8.3	1.3
DISC-Disconstraint	44.0	8.8	1.3
Interpersonal Functioning			
SFI-Self Importance	48.3	9.1	4
DOM-Dominance	45.2	8.2	5.3
AGGR-Aggressiveness	43.1	6.4	0
DSF-Disaffiliativeness	46.7	8.6	8
SAV-Social Avoidance	50.0	10.5	14.7
SHY-Shyness	48.6	10.2	8

Note: N = 75. % elevated indicates percent of sample with T score exceeding the clinical cut-point established for that scale (75 for EAT, 58 for SUI, 62 for CMP, 65 for all others).

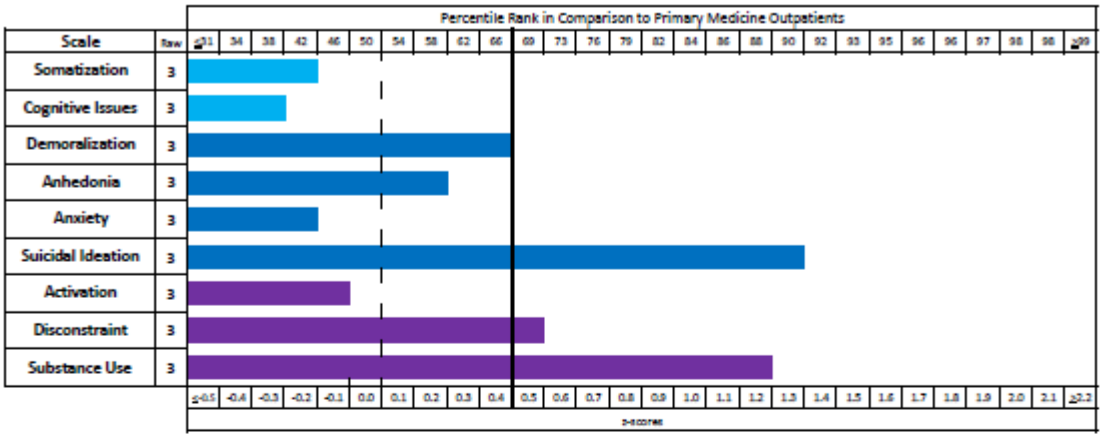
FIGURE 1

Sample Output from the MBHS 2.0

MBHS

Multidimensional Behavioral Health Screen 2.0

ID: 0 Provider: 0 DOB: 1/0/1900 Sex: 0 Date: 1/0/1900



** Graphed bars display patient's elevation on dimension relative to a sample of primary medicine outpatients.

** Bold vertical line at 66th %ile indicates clinical-level elevation on the measured dimension.

** See MBHS User Guide for additional interpretive information, includng medication considerations and multi-scale patterns.

Joiner Risk Assessment Framework				
Hx of Attempts	**Fearlessness**	**Suicidal Desire & Ideation**	**Other Risk Factors**	**Risk Category**
Non-multiple	Mild	Elevated	At least 2	**MILD**

Item-Level information (elevated scales highlighted; items bolded if score > 0)			
Somatization	1. I have pains.	1	(mostly false)
	12. I feel weak.	1	(mostly false)
	23. I get nauseated often.	1	(mostly false)
Cognitive Issues	7. I have trouble concentrating.	1	(mostly false)
	17. I get distracted easily.	1	(mostly false)
	27. I can't remember things.	1	(mostly false)
Demoralization	2. I feel useless.	1	(mostly false)
	13. I am dissatisfied with my life.	1	(mostly false)
	24. I feel generally discouraged.	1	(mostly false)
Anhedonia	3. There is little joy in my life.	1	(mostly false)
	14. I have little motivation.	1	(mostly false)
	20. I tend to avoid social activities.	1	(mostly false)
Anxiety	4. I worry a lot.	1	(mostly false)
	16. Nervousness interferes with my daily functioning.	1	(mostly false)
	28. I obsess about things I can't control.	1	(mostly false)
Suicidal Ideation	6. These days, I feel like I don't belong.	1	(mostly false)
	10. These days, the people in my life would be better off if I were gone.	1	(mostly false)
	15. I want to die.	1	(mostly false)
	25. I am not afraid to die. (*Fearlessness*)	1	(mostly false)
	29. Any previous suicide attempts? (*Previous attempts*)	1	0, 1, 2, 3+
Activation	5. My mood has very severe changes.	1	(mostly false)
	11. I get bored easily.	1	(mostly false)
	22. My thoughts race through my head very fast.	1	(mostly false)
Disconstraint	9. I often make impulsive decisions.	1	(mostly false)
	19. I often break rules, regardless of the consequences.	1	(mostly false)
	21. I don't think before I act.	1	(mostly false)
Substance Use Problems	8. I sometimes drink or use drugs too much.	1	(mostly false)
	18. I sometimes spend more time drinking or using drugs than I intended.	1	(mostly false)
	26. I have wanted to cut down on drinking or using drugs.	1	(mostly false)

Description of Dimensions
The extent to which psychological factors may be contributing to physical complaints. Tendency to over-report symtpoms.
Cognitive problems, including attentional focus, concentration, distractibility, and memory.
Non-specific distress, unhappiness, dissatisfaction with one's life circumstances, hopelessness. Consider CBT.
Inability to experience pleasure, joylessness, social avoidance. Dopamine mediated. Consider medication.
Nervousness, stress, worry, fears, phobic reactions, panic. Obsessive-compulsive tendencies. Consider CBT.
This scale (items 6, 10, & 15) assesses suicidal desire and ideation. Items 25 and 29 function independently. Note that 4 elements are considered to determine overall risk, (LOW, MILD, or AT LEAST MODERATE).
Excessive energy, hyperactivity, elevated levels of mental and physical energy. Cyclic mood instability possible.
Poor self-regulation and self-discipline. Impulse control problems. Difficulty with rules and routines.
Possible risk of maladaptive alcohol and/or drug use. Items are high in face validity, so cooperative attitude is assumed.