Post-Intervention Cortisol Level in Victims-Survivors of Intimate Partner Violence Living in Transition-Housing

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Abstract

Background: Intimate partner violence (IPV) is devastating women worldwide, contributing to being incarcerated or re-entering society as previously-incarcerated women. The Music and Account-Making Behavioral -Related Adaptation (MAMBRA) Intervention positively impacts incarcerated victims-survivors of IPV as demonstrated by decreased cortisol levels. However, cortisol changes have not been reported for previously-incarcerated victims-survivors of IPV living in low-income community transition-housing. Thus, this brief report focuses on cortisol changes for these victims-survivors after four sessions of MAMBRA Intervention.

Methods: With an exploratory descriptive design, a sample (n=11) was recruited from a Midwestern transition-housing for previously-incarcerated women victims-survivors of IPV. Index of Spouse Abuse (ISA) measured physical and nonphysical abuse. MAMBRA was administered over four sessions. Salivary cortisol was collected before and after each session. Data were analyzed with descriptive and univariate statistics.

Participants were middle aged (0_{AGE}=44.6±10.6), White women (n=10, 91%) who have experienced physical abuse ($0_{ISA\text{-}P}$=48.9±19) and nonphysical abuse ($0_{ISA\text{-}NP}$=55.7±24). Cortisol levels differed (FTχ^2(df=7)=24.5, p<.00) and decreased over the four MAMBRA sessions.

Conclusion: Cortisol changes indicated a physiological reaction to MAMBRA by the participants. This finding indicates that MAMBRA may be a useful intervention for this vulnerable population of victims-survivors of IPV. Future studies need to executed to examine MAMBRA longitudinally.

Keywords: *Gender-sensitive and trauma-informed psychoeducation intervention, Music and Account-Making Behavioral-Related Adaptation Intervention, Salivary cortisol,, Previously-incarcerated, Intimate partner violence,Community transition-housing.*

Introduction

Intimate partner violence (IPV) has and is devastating women across all ages, ethnicities, gender identities, and socioeconomic levels worldwide.[1] In the U. S. alone over 43 million women, 1 in 3, experience IPV (or domestic violence) by an intimate partner.[2,3] Victims-survivors of IPV manifest depressive symptoms, anxiety, low self-esteem, social isolation, insomnia and poor concentration or inability to prevent thought intrusion.[4,5] These symptoms over time can lead to suicidal ideation/attempts/completion, major depression disorder, and/or post-traumatic stress disorder (PTSD).[5]

Some victims-survivors of IPV may fight back, leading to charges of aggravated assault, homicide,[6,7,8] or even involvement with inadequate policy changes not supporting women for "fighting back against domestic violence".[8,9 para 7] At least 60% of incarcerated women are victims-survivors of IPV,[6,8] and, attribute their incarceration to following their partner's instruction, trying to avoid further abuse/assault, and needing to

protect their children.[7] This is a growing vulnerable population in immediate need of treatment.

Treatment involves reflecting on experiences and feelings through therapies (e.g., cognitive behavioral, interpersonal psycho-awareness, trauma-informed, desensitization techniques, or psychopharmaceutical treatment).[1] A measure of reactivity to therapies can be cortisol changes that occur as a stress response to issues of personal safety, depressive thoughts, and memories.[10,11] Cortisol changes are associated with major depression, PTSD, suicide, stress, and physical signs of traumatic events, causing health consequences.[10,11,12] Current therapies do not focus on the psychoeducational needs of women victims-survivors of IPV or use cortisol changes.

Previous research with the Music and Account-Making Behavioral-Related Adaptation (MAMBRA) Intervention indicated a positive impact on psychosocial symptoms for victims-survivors of IPV, incarcerated and previously-incarcerated[13] with decreased cortisol for incarcerated.[14] However, cortisol changes have not been reported for previously-incarcerated victims-survivors of IPV living in low-income community transition-housing. Thus, this brief report focuses on cortisol changes for these victims-survivors after four sessions of the MAMBRA intervention.

Materials and Methods

Participants and recruitment

This brief report was part of a larger study at the PI's University with some findings already published. For this brief report, a convenience sample (n=11) was recruited in a low-income community transition-housing in the Midwest. Recruitment involved flyers and word-of-mouth. Eligibility included reading/speaking English, being at least 21 years of age, and free of abusive relationships for at least 1 year. All participants signed an informed consent document. The study protocol was approved by the university's Institutional Review Board (IRB).

Instruments

The Index of Spouse Abuse (ISA)15 confirmed a history of IPV with two 15-item subscales: ISA-P for severity of physical abuse and ISA-NP for severity of non-physical abuse. The ISA had a Cronbach α of .98 when used with incarcerated women.[15]

Salivary cortisol was selected as a relatively low risk, non-invasive method to measure the physiological response to MAMBRA.16 It has a sensitivity of .01 with an intraassay of <5%, and an interassay of 6.7%.16 Salivary cortisol also correlates to serum cortisol (r=.91, p>.0001).

Protocol

All participants, as a group, engaged in four sessions of the MAMBRA intervention. As previously described,[13] this group-based interactive intervention uses participatory music design and psychoeducation to encourage the reflection on experiences of the violence. A "receptive experience" results when clients listen and verbally respond to pre-determined music. This internationally recognized practice facilitates the ability to assume responsibility and participation in recovery.[13]

Sessions were facilitated by the principal investigator (co-author). Each session lasted 1-1.5 hours. Each session began with a psychoeducation presentation about a topic related to IPV and recovery. Participants then listened to 1 or 2 music selections with themes supporting the presented psychoeducation topic. Paper copies of song lyrics were provided as the music played. After the music selection ended, participants discussed the topic and related it to the music as well as their experiences.[13]

Salivary samples were collected by participants, using the PI-supplied pre-coded/pre-labeled salivette vials. Samples were collected at 2 time points during each session—before the intervention (preMAMBRA) and at the end of the intervention (postMAMBRA).

Data analysis plan

Data were analyzed with SPSS 27.0 (Windows). Data consisted of demographics, spousal abuse, and cortisol levels. Participants were their own control. Saliva samples were assessed for free cortisol levels

using the HS-Cortisol High Sensitivity Salivary Cortisol Enzyme Immunoassay Kit.[16] Two salivary assays were provided for each sample with a computed mean, when possible. There was no statistical difference between the two salivary assays. The Friedman Test (FTχ^2) and the Wilcoxon Signed Ranks Test (Z) were used to determine how the cortisol changed over the four MAMBRA sessions. A subsample (n=8; 73% of the original 11 participants) was used after data cleaning. In the original sample, the mean ($\bar{x}_{cortisol}$=1.05±2.40) indicated outliers. The sample size was adjusted by excluding from analysis any cortisol values over 3 standard deviations (1 participant) or missing 5 of the 8 cortisol data points (2 participants). There were 64 data points for analysis (8 participants x 4 sessions x 2 cortisol collections). The level of significance was .05.

Results

The baseline (BL) sample (n=11) were previously-incarcerated middle-aged, White women residing in transition-housing ($\bar{x}_{AGE}$=44.6±10.6, range=24-58). All participants reported a history of physical abuse ($\bar{x}_{ISA\text{-}P}$=48.9±19) and non-physical abuse ($\bar{x}_{ISA\text{-}NP}$=55.8±24) (*see* Table 1).

Table 1. Demographics

Demographics	n	%
Sample size	11	100%
Age		
<45	5	45%
≥45	6	55%
Race/Ethnicity		
White	10	91%
Bi-racial	1	9%
Marital Status		
Single	6	55%
Married	1	9%
Divorced	3	27%
Unmarried couple	1	9%
Education		
High school degree	3	28%
Some college	4	36%
College degree	4	36%
Income		
<$10,000	1	9%
<$20,000	5	46%
<$30,000	2	18%
<$50,000	2	18%
<$70,000	1	9%

Cont... **Table 1. Demographics**

Health Status		
Poor/fair	4	36%
Good	3	28%
Very good/excellent	4	36%
Use Prescribed Meds, yes	9	82%
Use Street Drugs, yes	10	91%
HX S-Abuse TX, yes	10	91%

ISA-NP = Index of Spouse Abuse Non-Physical;

ISA-P = Index of Spouse Abuse Physical;

HX = history; S-Abuse = Substance abuse; TX = treatment

Using the subsample, cortisol significantly differed over the MAMBRA sessions ($FT\chi^2(df=7)=24.5$, p=.00), indicating a physiological reaction to MAMBRA (see Figure 1).

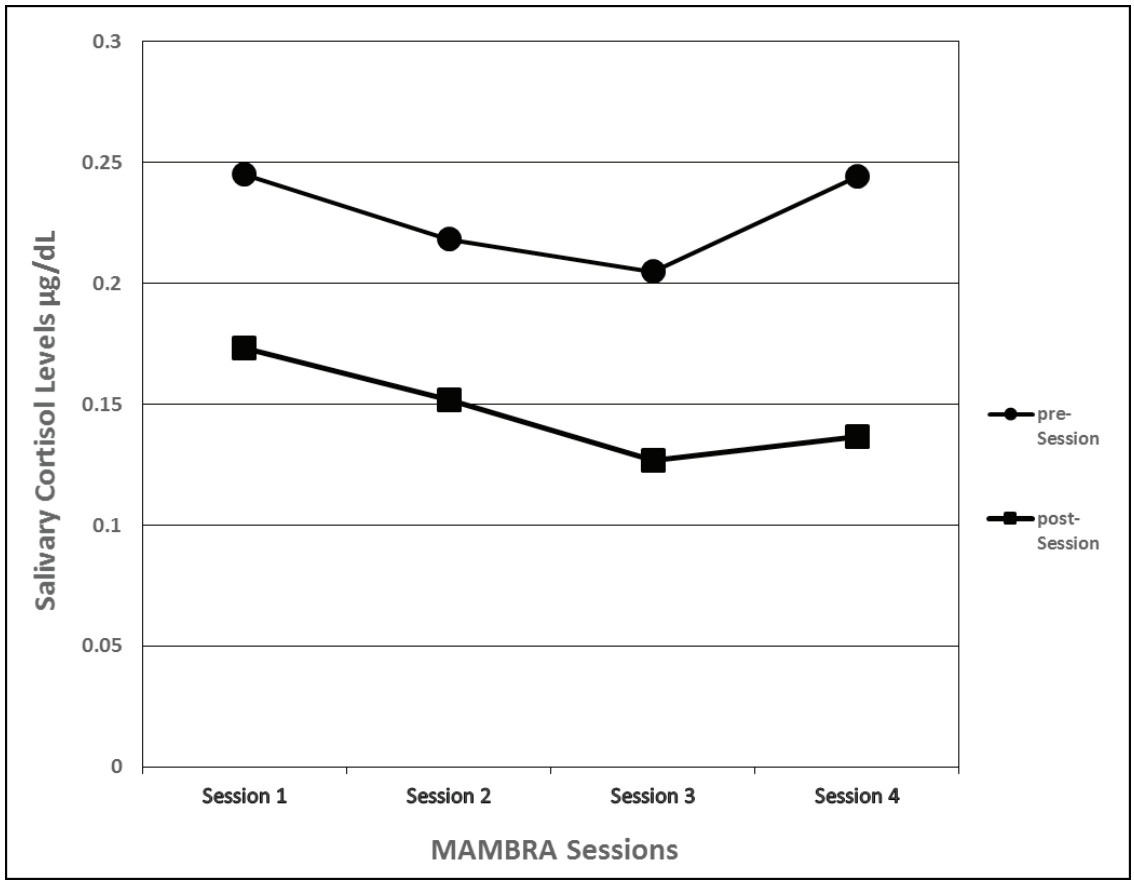

Figure 1. Salivary Cortisol Levels (pre- and post-) over the Four MAMBRA Sessions.

The pre/postMAMBRA cortisol levels were significantly different in all sessions with lower cortisol in postMAMBRA (session 1: Z=-2.52, p=.01; session 2: Z=-2.20, p=.03; session 3: Z=-2.24, p=.03; session 4: Z=-2.37, p=.02). Cortisol was significantly different and decreased across all MAMBRA sessions (Z=-1.96, p=.05). Session 1 preMAMBRA was also higher than session 4 postMAMBRA approaching significance (Z=-1.82, p=.07). A sustained physiological response to MAMBRA was evident.

Discussion

To the authors' knowledge, this is one of the first brief reports about a gender-sensitive and trauma-informed psychoeducation intervention like MAMBRA for previously-incarcerated victims-survivors of IPV residing in community transition-housing. The findings suggest that the MAMBRA intervention creates a safety and comfortable environment for the reflection on the IPV experiences. Future research is warranted.

These findings differ from those reported for incarcerated women victims-survivors of IPV.[14] Our participants had a significantly **sustained decrease** (.07 μg/dL) in cortisol across the MAMBRA sessions, indicating a positive reactivity to MAMBRA. Our findings are similar to those where the intervention was individualized to the participants' needs. Salivary cortisol levels significantly decreased after HIV-sero-positive women completed four sessions of relaxation therapy.[17] Pregnant women's salivary cortisol levels decreased after they completed Hatha yoga.[18] A reduction in salivary cortisol levels occurred over time with music therapy using relaxing music specific to the needs of the 31 depressed participants.[19] These findings substantiate those in our study.

Transition-housing may have added to MAMBRA's impact on the cortisol levels. For 28 previously-incarcerated women, living in transition-housing gave them the chance to think about their experiences, become optimistic about their mental health.[20] They expressed a decrease in stress. For our participants, the decreased cortisol may indicate a decrease in stress from feeling safe through MAMBRA and transition-housing so they can begin to address psychological symptoms from IPV.

There are limitations for this brief report. The convenience sampling and small sample size (n=11) limit the generalizability so that the findings are specific to the eleven previously-incarcerated victims-survivors of IPV residing in low-income community transition-housing. The potential researcher bias resulted from the PI (co-author) administering the intervention. This limitation was addressed by reviewing the sessions with the research team for potential biases. Future studies should include larger samples with appropriate staff administering the intervention.

Conclusion

Victims-survivors of IPV engage in therapy for relief from experiences of abuse and violence. The MAMBRA intervention may be capable of initiating a safe and comfortable environment for the reflection of experiences of IPV. The cortisol change can be a physiological indicator of reactivity to MAMBRA.

Ethical Clearance: All research procedures performed in this study with human participants complied with the ethical standards of the institutional review board and with the 1964 Helsinki declaration and ethical standards.

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Conflict of Interest: NIL.

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