Research Article

The Interrelations of Physical and Mental Health: Self-Rated Health, Depression, and PTSD Among Female IPV Survivors

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Abstract

Researchers have found that intimate partner violence (IPV) is associated with low self-rated health (SRH), which is correlated with increased medication usage, and has tremendous social consequences. IPV and low SRH are associated with posttraumatic stress disorder (PTSD) and depression, and the current study examined the interrelations between these variables among 505 Israeli women in shelters. To assess mediation, three regressions were designed. Traumatic events, Russian ethnicity, and chronic illness all contributed to low SRH. The direct effect of depression on SRH was insignificant when PTSD entered the regression. Our findings suggest that PTSD is a more fundamental factor than depression when predicting SRH among IPV survivors.

Keywords

intimate partner violence, shelters, SRH, PTSD

Introduction

Intimate partner violence (IPV) is an umbrella term covering a variety of hostile and dominating behaviors (Walker, 2009). It is manifested in acts of physical, emotional, and sexual abuse, ranging from mild to life-threatening assaults (Eisikovits, Winstok, & Fishman, 2004). These behaviors take place in ongoing relationships that are characterized by aggressive dynamics between two people who, at the same time, are dependent on one another for support (Dutton & Painter, 1993; Herman, 1992).

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IPV is a universal social health problem that occurs worldwide, across societies (Abramsky et al., 2011). Not only does IPV have major financial, medical, and developmental implications for the entire community in which it occurs (Gunter, 2007), it first and foremost threatens the physical safety (Clevenger & Roe-Sepowitz, 2009) and emotional state (Perez, Johnson, & Wright, 2012) of the individuals involved. Indeed, research has identified various types of mental distress resulting from IPV, such as posttraumatic stress disorder (PTSD), depression, anxiety, substance abuse, and suicidal tendencies (Bargai, Ben-Shakhar, & Shalev, 2007; Golding, 1999).

It is important to point out that the distress reported by IPV victims is not restricted to the mental health domain; rather, it is also expressed in the physical domain, under the guise of various physical illnesses (Sanchez-Lorente, Blasco-Ros, & Martínez, 2012). IPV victims also report perceptions of low self-rated health (SRH; Badawi et al., 2013). SRH is the subjective judgment of one's physical health, ranging from negative to positive perceptions which are associated with general attitudes and mood (Sulander, Pohjolainen, & Karvinen, 2012).

Although IPV is associated with poor physical health and low SRH (Sanchez-Lorente, Blasco-Ros), depression (Beydoun, Beydoun, Kaufman, Lo, & Zonderman, 2012), and PTSD (Perez et al., 2012), the interrelations between all of these variables are not clear. In an attempt to explain these interrelations, several models have been suggested. As such, the current study further explores the contributions of exposure to violence, physical health conditions, depression, and PTSD to SRH among female IPV survivors.

IPV and SRH

From a physical health point of view, IPV has major implications: IPV survivors have been found to utilize health services, as well as medications, excessively, in comparison with the general population (Montero et al., 2011; Sanchez-Lorente et al., 2012). In fact, a meta-analysis showed IPV to be associated with a wide range of physical issues, including high levels of chronic pain; cardiovascular, circulatory, and respiratory problems; and gynecological symptoms (Dillon, Hussain, Loxton, & Rahman, 2013). In addition, low SRH has also been identified as *resulting* from IPV (Lacey, McPherson, Samuel, Sears, & Head, 2013; Sanchez-Lorente et al., 2012), and a correlation has been found between low SRH and mortality, among both men and women (DeSalvo, Bloser, Reynolds, He, & Muntner, 2005).

This subjective judgment of one's health, based partially on the assessment of formal medical information regarding diagnosed illnesses, also captures the individual's perceptions toward symptoms of diseases that have not yet been diagnosed and which are in prodromal stages (Deeg & Bath, 2003). As such, it is reasonable to suggest that SRH can also influence one's preventive behaviors and decisions concerning self-care (Idler & Beniamini, 1997). In fact, SRH has been found to be associated with different patterns of medication usage and medical expenses (Wade & Guo, 2010). In other words, it is clear that SRH and physical health status are concepts which are closely intertwined (Idler & Beniamini, 1997). However, the factors which contribute to SRH

are to date unknown and remain essential grounds for research (Benyamini, Ein-Dor, Ginzburg, & Solomon, 2009).

Research has shown low SRH to be significantly associated with IPV among women (Lacey et al., 2013). More specifically, low SRH has been shown to be more probable among women who have experienced psychological abuse than among those who have not experienced psychological abuse. The current research, therefore, aimed to further understand the relationship between IPV and SRH among women.

Exposure to violence and low SRH have been found to be associated with depression among women who reported exposure to intimate violence (Lacey et al., 2013). PTSD and depression are also the central and most common consequences of IPV (Bargai et al., 2007; Golding, 1999). Therefore, the current study aimed first to explore the correlation between the study variables—that is, violence exposure, physical conditions, depression, and PTSD—and SRH. Second, it aimed to explore the interrelations between depression and PTSD in predicting SRH.

Depression

A meta-analysis has identified IPV women victims as being at high risk of depression (Beydoun et al., 2012). The association between depression and IPV can be understood in light of IPV victims' inability to avoid ongoing violent threats and the sense of helplessness that ensues as a result (Maier & Seligman, 1976; Walker, 2009). Indeed, helplessness has been found to mediate between exposure to violence and depression (Bargai et al., 2007).

The association between depression and low SRH can be explained in accordance with three possible models (Banks & Kerns, 1996). The first model suggests that depression precedes perceived poor health as a result of the fact that depression increases pain sensitivity and lowers pain tolerance thresholds. The second model suggests that illness, chronic pain, and depression occur simultaneously due to the fact that they share common underlying psychological and biological processes. The third model proposes that depression is a psychological reaction to the experience of chronic illness and perceived poor health.

In cases in which exposure to violence is involved, the first model seems most applicable: The undermining effect of intimate violence has been found to impede women's self-concept and increase their depressive symptoms, all of which tends to become generalized to an overall poor quality of life schema, including low SRH (Burton, Halpern-Felsher, Rehm, Rankin, & Humphreys, 2016). We therefore hypothesized that depression would contribute to low SRH.

PTSD

Severe IPV can escalate to a life-threatening level (Campbell, Webster, & Glass, 2009). Shelter residents report having received concrete life threats and intense fear for their lives (Bargai et al., 2007; Mertin & Mohr, 2001), and it is after the occurrence of an acute event that they frequently apply to shelters (Clevenger & Roe-Sepowitz,

2009). In addition, many IPV survivors describe having been subjected to ongoing serious physical harm, forced intercourse, and other terrorizing behaviors (Hughes, Cangiano, & Hopper, 2011; Mertin & Mohr, 2001). Women whose situations are severe enough to require shelter protection, therefore, can be said to have experienced events that qualify as "traumatic events," as per the *DSM* definition (*Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-5*; American Psychiatric Association [APA], 2013). Indeed, the overwhelming majority of IPV survivors residing in shelters meet the criteria for a PTSD diagnosis (Bargai et al., 2007; Golding, 1999; Mertin & Mohr, 2001), and IPV survivors in general are at risk of PTSD (Perez et al., 2012).

In comparison with other diagnosed mental illnesses among military veterans, PTSD has been shown to predict excessive health care utilization (Lehavot, O'Hara, Washington, Yano, & Simpson, 2015). Furthermore, PTSD clusters have been found to be associated with occupational impairments (Schnurr & Lunney, 2011). It has also been found that women with military combat experience who reported PTSD also reported a variety of physical and behavioral symptoms: from various physical illnesses and physical chronic pain to sexual dysfunction and substance abuse (Cohen et al., 2012).

In addition, a mechanism underlying the association between traumatic events and low SRH has been detected: More specifically, PTSD following traumatic events has been significantly associated with lower ratings of general health, a greater number of missed workdays, a higher number of physical symptoms, and high somatic symptom severity (Hoge, Terhakopian, Castro, Messer, & Engel, 2007). PTSD has also been found to affect the trajectory of SRH over time (Benyamini et al., 2009; Solomon, Greene, Ein-Dor, Zerach, & Beniamini, 2013). We therefore hypothesized, in addition, that PTSD would be related to low SRH.

Depression and PTSD Interrelations

Both depression (Lacey et al., 2013) and PTSD (Benyamini et al., 2009) have been found to be associated with low SRH among violence survivors. Furthermore, depression and PTSD together accounted for the relationship between low SRH and traumatic events (Clum, Calhoun, & Kimerling, 2000). Nevertheless, it remains unclear how these two variables interrelate with SRH.

It has been suggested that PTSD very likely precedes a subsequent diagnosis of depression (Watson, 2005). The dysphoric dimension of PTSD has a substantial influence on the comorbidity of PTSD and depression, with PTSD being viewed as a higher order factor which subsumes negative emotional states such as sadness and despondency (Biehn et al., 2013). Furthermore, it has been found that the risk of major depression among trauma survivors is significantly higher for individuals who develop PTSD than it is for individuals who do not develop PTSD (Breslau, Davis, Peterson, & Schultz, 2000). Thus, an additional hypothesis of the current research was that PTSD would mediate the relationship between depression symptoms and SRH among women in shelters.

The Current Study

In light of the interrelatedness between IPV, SRH, depression, and PTSD, the current research aimed to predict the SRH level among IPV survivors in shelters. The current study hypothesis was that exposure to more intense violence, along with higher levels of depression and PTSD, would be associated with lower SRH levels among IPV survivors in shelters. Furthermore, the current study hypothesis was that PTSD would mediate the relationship between depression symptoms and low SRH.

Method

Participants

The sample consisted of 505 women in 12 shelters throughout Israel and was assembled from a total of 1,409 IPV survivors who had been referred to shelters between September 2009 and April 2014. After excluding from the sample women with cognitive impairments or various psychopathological conditions not related to IPV, and women who stayed in the shelter fewer than 7 days, data were collected from 526 women, and the response rate was 68.97%. Twenty additional participants were excluded due to completion of less than 42% of the questionnaires; the final sample therefore included 505 participants. One hundred forty-nine participants were of Jewish ethnicity (29.5%), 154 were of Arab ethnicity (30.5%), 125 were of Russian ethnicity (24.8%), and 77 were of Ethiopian ethnicity (15.2%).

The participants' average age was $M = 32.65$ ($SD = 8.54$) years, with an average of $M = 11.21$ ($SD = 3.27$) years of education and an average of 2.49 children ($SD = 1.65$) among them. In total, 44.7% of the women earned minimum wage at their jobs ($M = 3{,}600$ NIS).

Sixty percent of the participants were referred to the shelters by a social worker from local social welfare services, and 32.6% were referred by local police departments. A prevalence of 44.1% of the participants applied to shelters after experiencing an acutely violent event, and 29.7% of the participants had applied to shelters previously. In all, 83.8% of the participants reported being victims of mild recent physical aggression, 75.2% reported being victims of recent severe acute violence, and 74.1% reported receiving threats on their lives. Ninety-three percent of the women reported verbal and emotional abuse, and 78.3% reported financial abuse.

Procedure

The current research was executed by the shelters' social workers. A self-report questionnaire in Hebrew, Arabic, Russian, and Amharic was given to the participants who had agreed to participate. Translators were available when required. The questionnaires were given to the participants within 3 weeks of their entrance to the shelter. All participants signed informed consent forms and were assured that refusal to participate would not affect their stay at the shelter in any way. To guarantee anonymity, the

questionnaires, after being filled out, were sealed in envelopes and then returned. The study was approved by the institutional review board of the university at which the research was being conducted and by the Ministry of Welfare and Social Services.

Measures

Demographic questionnaire. Participants were asked to describe their personal characteristics: year of birth, ethnic origin, religion, country/countries of citizenship, education, income level, employment status, and family situation (i.e., marital status, number of children, and number of children residing in the shelter). In addition, participants were asked whether they had any chronic illnesses or disabilities and about their usage of medications.

Traumatic life events. This questionnaire (Solomon, 1995) measures stressful events which have occurred in the past. In the current study, three out of nine items that were of no relevance to our research were excluded, and a question about witnessing parental violence was added; the questionnaire therefore contained a total of seven questions. For each question, participants were requested to circle either "yes" or "no" as to whether they had experienced it, and if so, at which point in their lives they had experienced it. A sample question includes, "Have you experienced a serious injury or a life-threatening event? If yes, in what year and month?" In the analysis of the questionnaire, only traumatic events which had occurred during childhood were included under the variable "childhood exposure to violence," and one affirmative response to a question about childhood experience was enough for the participant to be regarded as having had childhood exposure to violence.

Violence severity. The questionnaire (Eisikovits et al., 2004) contains 13 items measuring different types and frequency of violence: verbal assault (cursing, insulting, yelling); psychological or emotional abuse (threatening, controlling, domineering, stalking, or isolating behaviors); and physical assault (the breaking of material items, moderate physical violence, severe physical violence). For each of these items, the participants were asked to rank the frequency of abuse on a 4-point Likert-type scale ranging from 1 (*once*) to 4 (*every day*). The overall reliability was alpha = .90.

Depression. A scale based on the Brief Symptom Inventory (BSI; Derogatis, 1992) was used to measure depression. The questionnaire consisted of a list of six moods (e.g., "no hope for the future"). Participants were asked to indicate the extent to which they had experienced each of the moods on a 5-point scale ranging from 0 (*not at all*) to 4 (*to a great extent*). In a previous study, the Cronbach's alpha for this scale was .89 (Hoffman, Zevon, D'Arrigo, & Cecchini, 2004). Norms for the BSI among the general population were constructed, and the average norm in Israel for the depression subscale was $M = 0.70$ ($SD = 0.69$) (Gilbar & Ben-Zur, 2002). In this study, the level of depression was $M = 2.33$ ($SD = 1.1$).

PTSD severity. This PTSD self-report scale (Solomon & Horesh, 2007) evaluated the occurrence of 17 PTSD symptoms upon the individual's entrance to the shelter and was based on symptoms experienced during the preceding 2 weeks. Five items measured intrusive symptoms, seven items measured avoidance symptoms, and five items measured arousal symptoms. The items ranged on a 4-point Likert-type scale from 1 (*never*) to 4 (*often*). The probable diagnosis of PTSD according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; APA, 1994) (i.e., the version of the *DSM* in use at the time the current study was carried out) required the occurrence of at least one intrusive symptom, at least three avoidance symptoms, and at least two arousal symptoms. In addition, an average mean of the symptoms' level was calculated. Reliability in earlier studies was high (e.g., Solomon, Dekel, & Zerach, 2009). In the current research, reliability was alpha = .84.

SRH. SRH was measured via a questionnaire containing a single item: "How would you define your physical health status at the present time?" The responses were rated on a 5-point scale ranging from 1 (*very bad*) to 5 (*very good*) (Idler & Beniamini, 1997). This item was highly correlated with various physical symptoms and diseases (Benyamini et al., 2009). An analysis based on the questionnaires showed that the average SRH among IPV survivors was $M = 3.43$ ($SD = 1.11$) upon their admission to shelters.

Statistical Analysis

First, Pearson's correlations were conducted to examine each variable's significant association with SRH. Next, to estimate the associations between PTSD and depression, and to assess whether there were mediating effects between depression and PTSD, three regressions were designed (Baron & Kenny, 1986). In all three regressions, the first and second steps were identical. The first step included the demographic variables that were found to be significant in the correlation analysis, such as age, employment, education, and ethnic identity (which entered the regression as three demi-variables, i.e., Arab ethnicity vs. native Israeli, Russian ethnicity vs. native Israeli, and Ethiopian ethnicity vs. native Israeli). Violence exposure—that is, traumatic life events and violence severity of the relationship that prompted shelter admission—was entered at the first step as both of these factors were common among the study population. The second step included physical health and medication usage.

The third step of the first regression included depression and PTSD together. However, the second and third regressions were reversed: The third step of the second regression included PTSD, while the third step of the third regression included depression. The fourth step of the second regression included depression, while the fourth step of the third regression included PTSD. The second regression, which demonstrated the way PTSD mediated between SRH and depression, is presented.

Table 1. Pearson's Correlations Between the Study Variables and Self-Rated Health.

Variable	Pearson's correlation
Age	−.01
Education	−.11*
Employment	.05
Traumatic life events	−.10*
Duration of abuse	−.04
Violence severity	−.09*
Physical violence	−.116*
Emotional violence	−.10*
Threats	−.01
Prescription medication	−.24**
Chronic illness or disability	−.26**
Depression	−.19**
Posttraumatic stress disorder	−.29**

*$p < .05$. **$p < .01$. ***$p < .001$.

Results

Among the participants, 85 (16.8%) reported a chronic illness or disability, and 111 (21.9%) participants reported current usage of medications. Furthermore, in regard to the SRH rate, the participants reported an average mean of 3.43 ($SD = 1.11$).

SRH correlations. Table 1 presents Pearson's correlations between the study variables. As can be seen, demographic variables such as age and employment were not correlated with SRH. The only demographic variables found to be related to low SRH were education ($r = -.11$, $p < .005$), chronic illness or disability ($r = -.26$, $p < .001$), and prescription medication ($r = -.24$, $p < .001$).

A history of experiencing traumatic life events was correlated with low levels of SRH ($r = -.10$, $p < .05$). In addition, the more the violence severity increased, the more the SRH level decreased ($r = -.09$, $p < .05$), and similar patterns were found with severity of physical violence ($r = -.12$, $p < .05$) and emotional violence ($r = -.10$, $p < .05$). Finally, high levels of depression ($r = -.20$, $p = .000$) and PTSD ($r = -.29$, $p = .000$) were significantly correlated with lower levels of SRH as well.

Multivariate analysis: The contribution of study variables to SRH. The first regression, which was designed to explore the parallel contribution made by both PTSD and depression to low SRH—with depression and PTSD being entered at the same step—demonstrated the significant negative contribution made by PTSD to SRH. Depression, however, was shown to have made no significant contribution. The second regression was designed to explore the mediating role of depression between PTSD and SRH, with PTSD being entered at the third step this time and depression being

entered at the fourth step. Results exhibited a significant contribution of PTSD to low SRH; no significant contribution was made by depression. However, the third regression, which was designed to explore the mediating role of PTSD between depression and SRH—with depression being entered into the regression before PTSD—indicated a significant contribution of higher depression to low SRH. When PTSD was added, however, the contribution of depression was no longer significant, whereas a significant contribution of PTSD to SRH was found. Table 2 presents the coefficients of each variable in the four steps of the third regression.

The total set of the independent variables explained 17.4% of the variance (adjusted $R^2 = .15$). As can be seen in the first step, which accounted for 0.6% of the variance, a higher number of traumatic life events ($\beta = -.06$), age ($\beta = -.12$), and Russian ethnicity ($\beta = -.12$) contributed significantly to low SRH.

Step 2 accounted for 10% of the variance and demonstrated that high levels of prescription medication ($\beta = -.12$) and reports of chronic illness or disability ($\beta = -.16$) contributed significantly to lower SRH ($\beta = -.06$). Step 3 accounted for an additional 3% of the variance and showed a significant contribution of high levels of depression to low SRH ($\beta = -.19$).

At the fourth step, which accounted for 4% of the variance, mediation effects were estimated for the model. Given that the direct effect of depression on low SRH was insignificant, whereas PTSD was significantly correlated with low SRH ($\beta = -.24$), this mediation was considered complete. In other words, the significant effect of depression on low SRH existed only indirectly ($r = -.11$, $p = .000$, confidence interval [CI] = [–.18, –.05]) through PTSD.

Discussion

The current research aimed to examine the nature of the association between IPV and SRH. The relationship was explored through variables that have been found in the literature to be highly correlated with both IPV and SRH, that is, depression (Badawi et al., 2013) and PTSD (Benyamini et al., 2009).

When the contribution of violence to low SRH was explored via regressions including other research variables, no significant contribution was found. These findings suggest that exposure to violence in and of itself cannot be considered a predictive variable for SRH; nevertheless, perhaps the emotional responses to IPV, along with a physical medical condition, can predict SRH.

The first emotional response to IPV that was examined in this study was depression, and it was found to be significantly related to low SRH. This finding is consistent with findings from previous studies (Badawi et al., 2013); specifically, the association of depression with low SRH, when in the presence of IPV, can be understood as being part of a broader emotional state. IPV can give rise to helplessness, which appears in the form of negative cognitions (Walker, 2009), and negative cognitions are a feature of depressive states (Badawi et al., 2013; Banks & Kerns, 1996) and low SRH (Deeg & Bath, 2003). It is plausible, therefore, that the negative cognitions that typify both depressive states and low SRH should be regarded not separately, but as a whole, when

Table 2. Multiple Variables Analysis.

	PTSD		
Independent variables	*b*	*SD b*	β
Step 1			
Arab ethnicity vs. native Israeli	−.18	−1.4	−.07
Russian ethnicity vs. native Israeli	−.30	−.14	−.12*
Ethiopian ethnicity vs. native Israeli	−.18	−.06	−.101
Employment	.13	.10	.20
Age	−.02	.01	−.12*
Education	.028	.017	.084
Traumatic life events	−.07	.03	−.12*
Violence severity	−.12	.07	.08
Step 2			
Arab ethnicity vs. native Israeli	−.20	.14	−.08
Russian ethnicity vs. native Israeli	−.25	.14	.10
Ethiopian ethnicity vs. native Israeli	−.17	.17	−.06
Employment	.11	.10	−.05
Age	−.01	.01	−.06
Education	.02	.02	.06
Traumatic life events	−.06	.03	−.10*
Violence severity	−.11	.07	−08
Chronic illness or disability	−.48	.15	−.16***
Prescription medication	−.28	.14	−.11*
Step 3			
Arab ethnicity vs. native Israeli	−.19	.14	−.08
Russian ethnicity vs. native Israeli	−.29	.14	−.12*
Ethiopian ethnicity vs. native Israeli	−.18	.16	−.06
Employment	−.046	.027	−.078
Age	−.188	.139	−.077
Education	.08	.10	.03
Traumatic life events	−.05	.03	−.08
Violence severity	−.09	.07	−.06
Chronic illness or disability	−.48	.15	−.16***
Prescription medication	−.32	.14	.034
Depression	−.19	.05	−.19***
Step 4			
Arab ethnicity vs. native Israeli	−.17	.14	−.07
Russian ethnicity vs. native Israeli	−.27	.13	−.11*
Ethiopian ethnicity vs. native Israeli	−.27	.16	−.09
Employment	.07	.10	.03
Age	−.002	.01	−.02
Education	.02	.02	.05

(continued)

Table 2. (continued)

Independent variables	PTSD		
	b	*SD b*	β
Traumatic life events	−.03	.03	−.05
Violence severity	−.03	.07	−.02
Chronic illness or disability	−.42	.15	−.14***
Prescription medication	−.33	.14	−.12**
Depression	−.08	.05	−.08
PTSD	−.45	.10	−.24***

Note. PTSD = posttraumatic stress disorder.
*$p < .05$. **$p < .01$. ***$p < .001$.

accompanied by exposure to violence. Support for these findings can be found in previous studies identifying a generalization of depressive symptoms resulting from IPV to an overall life schema that includes low SRH (Burton et al., 2016).

Depression was also found in the multiple analysis of the regression to contribute to low SRH. However, once PTSD was added to the regression, the significant contribution of depression to low SRH disappeared. If the contribution of depression to low SRH was significant only until a third variable was added, then the implication is that the relationship of depression to low SRH can actually be attributed to the third variable, which in this case is PTSD. These findings suggest that although depression may be regarded as a predictive variable for low SRH, when PTSD and depression are comorbid, the contribution of depression should be understood as being part of a broader emotional state (Watson, 2005). The understanding of the association between depression and PTSD, therefore, must be further refined.

The significant contribution made by PTSD to low SRH is consistent with previous studies (Benyamini et al., 2009; Hoge et al., 2007; Solomon et al., 2013), and several explanations for this finding can be offered. The first explanation is that PTSD is associated with a low level of optimism, an important factor given that optimism is known to serve both as a buffer against the negative influences of illness and as an enhancer of coping (Avidor et al., 2014). Another possible explanation may lie in the negative self-appraisals typical of PTSD and found among traumatized childhood sexual abuse (CSA) survivors (Ginzburg et al., 2009). Negative self-appraisal can be manifested in poor health maintenance and poor prevention behaviors.

The chief contribution of the current study, therefore, is in demonstrating that PTSD takes precedence over depression, that is, PTSD is a more fundamental factor than depression when predicting SRH among IPV survivors. PTSD has already been identified as the most crucial consequence of IPV in terms of healing, recovery, and revictimization in social interventions (Perez, Johnson, Johnson, & Walter, 2012). The current elaboration of the interrelatedness between PTSD and depression could clarify the key role of PTSD in the comprehensive emotional distress characteristic of IPV survivors. As such, the findings of this study strongly suggest that professionals in the

field should focus on PTSD as a central element in intervention planning among this population.

The current study also revealed that Russian ethnicity alone, of the various ethnicities examined, was significantly related to low SRH. Immigration and acculturation in general have been found in previous studies to be related to low SRH (Finch & Vega, 2003; Sousa et al., 2010) and, therefore, the current findings are inconsistent with the existing literature. However, given that the effect of immigration on low SRH has been found to be influenced by socioeconomic factors and lifestyle practices (Baron-Epel et al., 2015), further research is required to understand the differential contribution made by PTSD, depression, and IPV to low SRH in the context of differences in socioeconomic factors and lifestyle practices among the two groups in this study who are affected by issues of immigration and acculturation: the Ethiopian group and the Russian group.

The current research has a few limitations. First, the model testing was limited by a cross-sectional design, that is, we cannot conclude with certainty whether PTSD intensifies low SRH or whether low SRH increases PTSD symptoms. Another limitation concerns the possibility of the existence of another mediating variable. Learned helplessness (LH), for example, has been found to mediate between IPV and mental disorders (Bargai et al., 2007). It is possible, therefore, that LH, or a different variable, may be interrelated with PTSD and depression; further exploring the relationship between these variables, and the nature of their contribution to low SRH, would thus be worthwhile. The current findings may also be limited by the low socioeconomic status of the participants. Shelter populations have been found to be significantly less educated, to have significantly lower incomes, and to have significantly higher unemployment rates than the general population (Helfrich, Fujiura, & Rutkowski-Kmitta, 2008). Given the fact that poverty, lack of education, and unemployment have been found to predict health impairments and low SRH (Thomas, 2014), caution must be applied when generalizing from the current findings. In addition, participants' medical records were not available to the researchers of the current study; therefore, there was no access to medical diagnoses which may have been relevant for interpretation of the findings.

Further research is recommended to explore the difference between ethnicities regarding IPV, PTSD, and SRH. Further research on differences across immigration and acculturation experiences which could significantly affect the risk of IPV, as well as documented physical and mental health conditions, depression, PTSD, and SRH, is recommended as well. Finally, in light of the current findings, the role played by IPV in terms of public health policy seems to be crucial. The association between IPV and PTSD, and between PTSD and low SRH, and the contribution of low SRH to physical health, all suggest the necessity of integrating medical and social services. Providing medical care providers, as part of their training, with an understanding of IPV and PTSD symptoms would ultimately benefit patients.

Declaration of Conflicting Interests

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