

Mindfulness-based interventions for women victims of interpersonal violence: A systematic review



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Introduction

Violence is considered as “the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation” (WHO, 2002). Three subtypes of classification are described: self-directed violence (self-inflicted), collective violence (inflicted by larger groups like militias or terrorist organizations) and interpersonal violence. Interpersonal violence, which is the focus of this study, encompasses the type of aggression that involves individuals of the same family, intimate partners, friends, acquaintances and strangers, child maltreatment and violence against women (WHO, 2002).

Interpersonal violence against women is responsible for a number of serious consequences for the victim, which can be socially damaging and may generate harm to physical and mental health (Black, 2011). Mental damage includes increased psychiatric morbidity and a prolonged response to stress, which may result in chronic health problems (Grippe & Johnson, 2010). Therefore, the negative influence of violence on the victim occurs not only during the traumatic experience but may also persist after the event, becoming a serious health problem, which highlights the eminent necessity for effective interventions for this population.

The negative outcomes for the mental health of women exposed to violence include suicide ideation, alcohol and drug abuse, Common Mental Disorders (CMD), depression, anxiety disorders and Post-Traumatic Stress Disorder (PTSD) (Follette, Palm, & Rasmussen, 2004). Therefore, interpersonal violence is an important public health issue and the services that assist this population need to be able to offer adequate clinical care and include the demands of scientific method in their practice, with the aim of applying effective interventions and establishing adequate care (WHO, 2002).

Mindfulness-based interventions

In the context of promising interventions, non-pharmacological

practices aimed at the treatment of individuals exposed to interpersonal violence has gained the attention of researchers in recent decades. Among such practices, Mindfulness-based interventions present growing, albeit incipient research initiatives demonstrating benefits (Fjorback, Arendt, Ornbol, Fink, & Walach, 2011; Williams, Simmons, & Tanabe, 2015).

Mindfulness is recognized for developing a mental state characterized by the intentional regulation of attention to what is happening at a given moment (Kabat-Zinn, 2003). Although the concept of Mindfulness has its origins in many contemplative and philosophical traditions such as Hinduism and Buddhism, its practice does not necessarily imply following a specific philosophy or religion. From a clinical perspective, the original concept of Mindfulness has been used through standardized interventions with the intention of obtaining improvement in determined outcomes for physical and mental health (Kabat-Zinn, 1990; Ludwig & Kabat-Zinn, 2008). According to John Kabat-Zinn, founder of the program known as Mindfulness Based Stress Reduction (MBSR), Mindfulness is considered to be consciousness developed from intentional attention, in the present moment, with the absence of judgment a compassion (Kabat-Zinn, 1990; Kabat-Zinn, 2003).

Mindfulness-based interventions can be delivered in an organized program which is composed by several mindfulness based practices. The first organized and investigated program was the MBSR (Kabat-Zinn, 2003; Salmon et al., 2004). After others were developed based on MBSR components, such as the Mindfulness-based Cognitive Therapy – MBCT and Mindfulness-based Relapse Prevention – MBRP (Segal, Williams, & Teasdale, 2002; Sipe & Eisendrath, 2012). MBSR is a non-pharmacological clinical tool performed through a structured protocol. This is an intensive program composed by 8 meetings, once a week, as well as an all-day retreat. The program is based on face-to-face instructor-led activities and daily practice at home (Kabat-Zinn, 2003; Salmon et al., 2004). Participants perform several exercises that include concentration on breathing, meditation, yoga exercises, body movements, cognitive techniques, and biofeedback. These techniques primarily focus on physical, emotional, and cognitive sensations, and involve gradually over during the whole program (Kabat-zinn, 2003;

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Salmon et al., 2004).

Scientific evidence suggests that the use of these strategies induces an improvement in chronic diseases, including depression (Segal et al., 2002), anxiety (Hofmann, Sawyer, Witt, & Oh, 2010), stress (Kabat-Zinn, 1990; Kabat-Zinn, 2003), drug dependency (Fjorback et al., 2011), heart disease (Gotink et al., 2017), and diabetes (Merkes, 2010). Furthermore, such interventions are possible low-cost treatment options, when compared to conventional treatment (Herman et al., 2017).

Specifically in relation to victims of violence, studies indicate that therapeutic interventions based on Mindfulness may lead to a general reduction of symptoms and promote positive changes in behavior (Thompson, Arnkoff, & Glass, 2011; Dutton, Bermudez, Matás, Majid, & Myers, 2013). The hypothesis suggested is that the practice of Mindfulness may increase consciousness of sensorial, cognitive and affective responses of an individual (Thompson et al., 2011). However, this recognition occurs from a non-judgmental perspective, with self-compassion and appreciation of the efforts to control the internal experience (Kabat-Zinn, 1990). Unlike most traditional therapy for traumatic experiences, Mindfulness does not require intentional or explicit exposure to the content or details of the victim's history of violence, instead, this strategy concentrates on moment to moment experiences (Dutton et al., 2013).

Unconscious behavior and the avoidance of traumatic experiences seem to result in greater vulnerability to the principal symptoms of PTSD (Thompson et al., 2011). From our clinical experience, rumination on traumatic events maintains negative emotions related to mood. As such, the development of abilities of full attention, and especially of acceptance, may assist in emotional regulation of the individual. The conscious mental state in the moment, with the absence of judgment before the traumatic experience, reduces symptoms of post-traumatic stress disorder, besides depression and anxiety symptoms (Follette et al., 2004).

Although the research indicates promising results for the use of Mindfulness interventions in various contexts and countries since its development, recent studies have raised questions on such scientific evidence. Researchers indicate the possibility of methodological limitations, especially in studies with randomized clinical trial experimental designs, using control groups in inactive conditions. They also criticize the lack of specificity in relation to the results presented on intervention outcomes and suggest that individual personality characteristics may have interfered in the results, for example, individuals with a profile “open to new experiences” may benefit more from Mindfulness interventions (Farias, Wikholm, & Delmonte, 2016).

In considering Mindfulness interventions as a recent theme for investigation and the existence of criticism on their effectiveness, this systematic review aims to identify empirical evidence on the benefits of Mindfulness interventions for the treatment of women affected by violence, specifically victims of interpersonal violence. Moreover, as secondary objectives, the present study intends to assess the principal Mindfulness interventions investigated, evaluating methodological quality of the selected studies and confirming the principal outcomes used in the selected articles.

The research question was constructed according to the PICO strategy, of Patient, Intervention, Comparison and Outcomes. Therefore, this study seeks to answer the following question: What benefits (O) do Mindfulness-based interventions offer (I) in comparison to other interventions (C) aimed at the treatment of female victims of interpersonal violence (P)?

Materials and methods

To guarantee rigorous methodological quality and scientific relevance, this systematic review was developed following recommendations of Preferred Reporting Items for Systematic Review and Meta-Analysis- PRISMA (Liberati et al., 2009).

Eligibility criteria

Mindfulness is considered a wide-ranging term and may indicate different meanings, including, principally, individual trait Mindfulness related to characteristics of personality, Mindfulness based practices, and state of Mindfulness, the latter being composed of different aspects. As such, the authors chose to include studies evaluating outcomes of the use of structured protocols of Mindfulness Practices or Interventions for the treatment of female victims of interpersonal violence. Also included were studies that selected the specific aspects of Mindfulness approach, such as, “non-judgment” and “contact with the present moment”, and which evaluated the outcome of these components after interventions aimed at the same population.

With the aim of fulfilling the purpose of this review, the authors excluded studies testing other approaches that did not evaluate Mindfulness-based interventions, as well as studies whose authors did not describe the intervention as Mindfulness, such as exclusive activities of Yoga, transcendental or Tibetan meditation, Cognitive Therapy or dialectic behavioral therapy. Also excluded were studies with samples of individuals with PTSD without specifying exposure to interpersonal violence, studies evaluating the application of Mindfulness aimed at the aggressor, or with samples that did not include female victims of violence, studies evaluating the application of this strategy with outcomes of reduced aggressiveness and violence, theses, dissertations, reviews and studies with qualitative methodology.

The articles were identified through searches on Pubmed, Web of Science, Embase and Scopus electronic databases. The research was conducted during the period from January to February 2018. The selected articles were those with samples exclusively or primarily composed of women, published in English, Spanish or Portuguese and without time limitations regarding year of publication.

Search and selection strategy

The search strategy included the terms “Mindfulness”, “MBCT” or “MBSR” in combination with the terms “Violence”, “Physical abuse”, “Intimate partner violence” or “Trauma”. The articles were initially identified through a search on PubMed (<http://www.pubmed.gov>) using the following combination of words: “Mindfulness” OR “MBCT” OR “MBSR” in combination with the terms “Violence” OR “Physical abuse” OR “Intimate partner violence” OR “Trauma”, which identified a total of 338 studies. Subsequently, bibliographic searches were carried out on the Embase database,

identifying 382 articles, on Web of Science, finding 94 studies and on the Scopus database with 101 articles. As such, a total of 915 studies were identified for critical analysis.

Quality criteria of the selected articles

The selection process for the articles in this systematic review identified that the studies applied different research methodologies. Two review authors independently assessed the risk of bias in included studies. Therefore, the authors opted to evaluate the quality of the studies and risk of bias based on methodological design.

Thus, the Cochrane risk of bias tool was used to assess the quality of the studies with a random clinical trial design (Table 1). This instrument makes a judgment through six principal domains: Random sequence generation, Allocation concealment, Blinding of participants and personnel, Blinding of outcome assessment, Incomplete outcome data, Selective reporting and others (Higgins & Altman, 2008)

The studies with non-randomized quasi-experimental designs that used pre-test and post-test strategies, were analyzed based on the criteria established by the Risk of Bias Assessment Tool for Non-randomized Studies - RoBANS (Table 2), which analyzes the following domains: selection of participants, confounding variables, measurement of intervention (exposure), blinding of outcome assessment, incomplete

Table 1
Risk of bias assessment of the included studies using the Cochrane risk of bias tool for randomized controlled trials.

Study	Risk of bias						
	Random sequence generation (“Selection”)	Allocation concealment (“Selection”)	Blinding of participants and personnel (“Performance”)	Blinding of outcome assessment (“Detection”)	Incomplete outcome data (“Attrition”)	Selective reporting (“Reporting”)	Other
Brotto, Seal, & Rellini, 2012	Low risk	Unclear	Unclear	Unclear	Low risk	Low risk	Unclear
Kelly & Garland, 2016	Low risk	Unclear	Low risk	Low risk	Low risk	Low risk	Low risk
Ghahari et al., 2017	Low risk	Unclear	Unclear	Unclear	Unclear	High risk	High risk
Valdez & Lilly, 2016	Low risk	Unclear	Low risk	High risk	Low risk	Low risk	Low risk
Valdez, Sherrill, & Lilly, 2016	Low risk	Unclear	Low risk	High risk	Low risk	Low risk	Low risk

outcome data and selective outcome reporting (Kim et al., 2013).

Results

Study selection

The search on the databases resulted in a total of 915 articles, whereby 36 studies were duplicated leaving 879 for analysis. After detailed evaluation of the titles and abstracts and application of the eligibility criteria, a total of 15 studies were selected for a thorough review of the text.

A further five articles were excluded in this stage due to the following factors: qualitative methodological design (Dutton et al., 2013, Ferszt, Miller, Hickey, Maull, & Crisp, 2015), critical review of the literature (Tesh, Learman, & Pulliam, 2015), evaluation of Post-Traumatic Stress Disorder not being related exclusively to trauma resulting from interpersonal violence and qualitative evaluation (Muller-Engelmann, Wunsch, Volk, & Steilet, 2017) and absence of the complete text (Dempsey et al., 2014). An additional study was identified that fulfilled the inclusion criteria but only its abstract, submitted for presentation at a conference, could be found. The researchers responsible for said study were contacted; however, they informed that the complete article had not yet been published, so it was excluded (Dempsey et al., 2014). Therefore, in the end, this systematic review was composed of 10 articles.

The following figure identifies the strategies during article selection and describes the exclusion factors used in each stage (Fig. 1).

Descriptive analysis of the included studies

A total of 10 studies were included in this review, of which five were randomized clinical trials, four were non-randomized clinical trials, and one was a retrospective cohort study. All the studies were published in English, during the last 10 years (between 2010 and 2017). In relation

to sample composition, all the studies assessed adult individuals exposed to different types of interpersonal violence (history of physical abuse as a child and in adulthood, domestic violence or interpersonal trauma). Exclusive participation of women occurred in seven studies and, in the other three studies, the participants were mixed, albeit with women composing at least 80% of the sample (Earley et al., 2014; Goldsmith et al., 2014; Kimbrough et al., 2010).

Recruitment locations were diverse, including a sample exclusively from the community (Kelly & Garland, 2016), a sample from the community and/or university (Valdez et al., 2016; Valdez & Lilly, 2016), from university (Hill et al., 2011) and from clinical or psychiatric treatment services (Kimbrough et al., 2010; Brotto et al., 2012; Earley et al., 2014; Goldsmith et al., 2014; Gallegos et al., 2015; Ghahari et al., 2017). Most of the studies used small samples, with a variation in the number of participants from a minimum of nine to a maximum of 71 (SD = 19.6). A detailed description of the articles and their principal findings is demonstrated in the following table (Table 3).

Establishment of a control group and type of mindfulness intervention

The randomized clinical trials used different comparative groups. Two studies used waiting lists as control groups (Ghahari et al., 2017; Kelly & Garland, 2016), another two studies used different types of comparative intervention, such as Cognitive Behavioral Treatment (Brotto et al., 2012) and the Analytical Approach (Valdez & Lilly, 2016), and in two studies the authors did not use any comparative intervention (Hill et al., 2011; Valdez et al., 2016).

The most common Mindfulness-based intervention was the Mindfulness-Based Stress Reduction-MBSR, used in five studies (Earley et al., 2014; Gallegos et al., 2015; Goldsmith et al., 2014; Kelly & Garland, 2016; Kimbrough et al., 2010). The MBSR protocol was applied through eight weekly meetings, with an average duration of 2 to 2.5 h, and a single silent retreat lasting an average of four hours. The protocol occurred according to the manual of the University of

Table 2
Risk of bias assessment of the included studies using the Risk of Bias Assessment Tool for Non-Randomized Studies - RoBANS.

Study	Risk of bias					
	Selection of participants	Confounding variables	Measurement of intervention (exposure)	Blinding of outcome assessment	Incomplete outcome data	Selective outcome reporting
Kimbrough, Magyari, Langenberg, Chesney, & Berman, 2010.	High risk	Low risk	Low risk	Unclear	Low risk	Low risk
Gallegos, Lytle, Moynihan, & Talbot, 2015.	High risk	Low risk	Low risk	Unclear	Low risk	Low risk
Hill, Vernig, Lee, Brown, and Orsillo (2011)	High risk	High risk	High risk	Unclear	Low risk	Low risk
Goldsmith et al., 2014	High risk	High risk	Low risk	Unclear	Low risk	Low risk

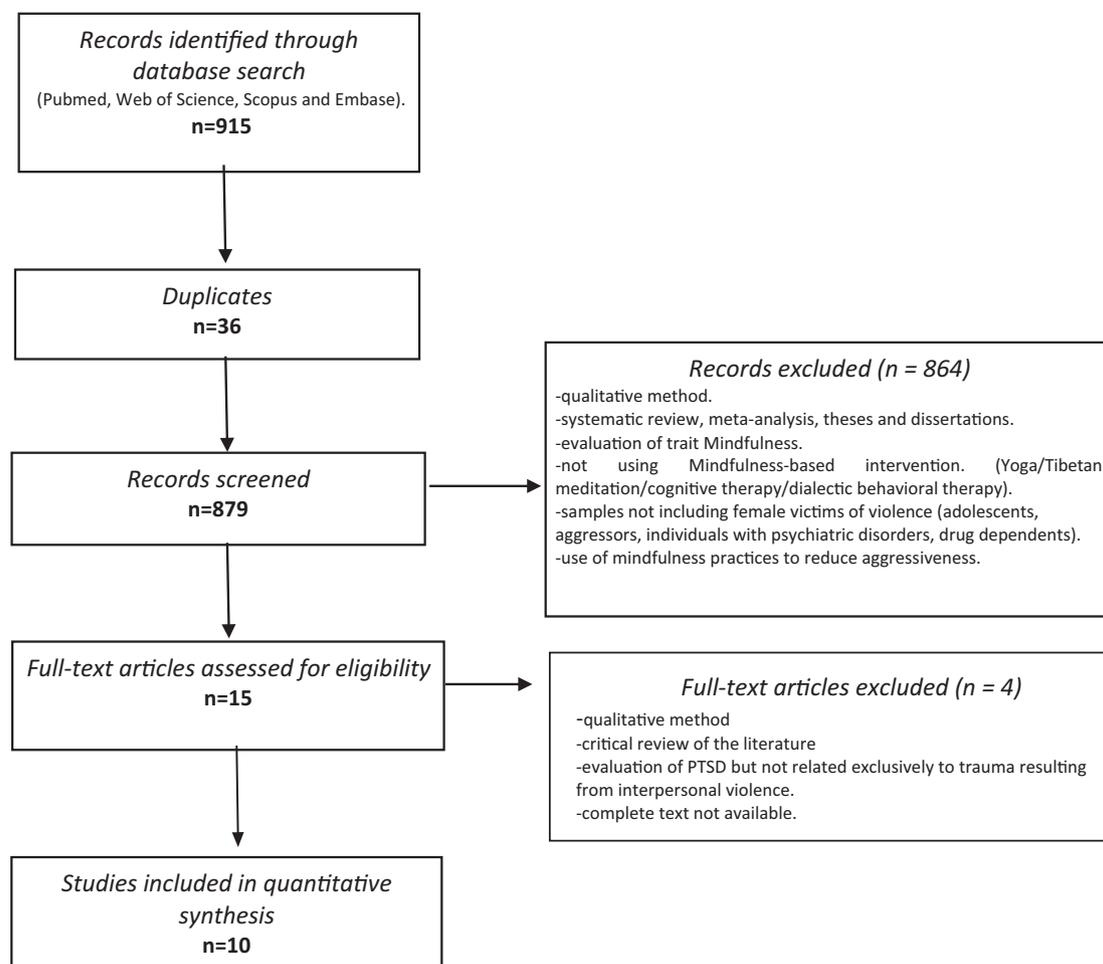


Fig. 1. Flowchart of study selection following Preferred Reporting Items for Systematic Review and Meta-Analysis-PRISMA recommendations.

Massachusetts - Center for Mindfulness, developed by John Kabat-Zinn (Kabat-Zinn, 1990).

It is interesting to note that in two studies the authors indicated alterations and/or adaptations to the original protocol. Kelly and Garland (2016) incorporated additional psycho-educative content and practice related to the traumatic experience into the MBSR protocol in each session. According to the authors, alteration of the protocol was specifically aimed at reaching cognitive aspects and autonomous and affective mechanisms underlying the women's trauma. Neurophysiology of the trauma, reactivity related to the experience of a trauma and its symptoms, introduction to meditation as a physiological experience, and description of the trauma triangle (relationships between victim/victimizer/spectator) were among the content incorporated into the initial protocol. The authors also excluded the single silent retreat of one day (proposed in the original MBSR protocol) (Kelly & Garland, 2016). Brotto et al. (2012) also included a session with psycho-educational content in their intervention strategy. These authors included discussions on the importance of sexuality in the lives of the participants, the prevalence of sexual difficulties, discussion on predisposition and sexuality protection factors and education on the female sexual response cycle as part of the MBSR protocol (Brotto et al., 2012).

On the other hand, Hill et al. (2011) developed a different protocol for Mindfulness intervention to those previously presented. These authors based their work on the theoretical model proposed by Polusny and Follette (1995) for practice strategy construction. They incorporated psycho-educational content into the protocol, albeit choosing to not include any aspect related directly to sexual violence. The psycho-educational aspects covered common stressors at

university, ways of dealing with stressors, and control strategies for thoughts, emotions and physiological sensations.

Another two studies, both developed by the same group of researchers (Valdez et al., 2016; Valdez & Lilly, 2016), chose to carry out the evaluation of an experiment based on specific aspects included in the practice of Mindfulness. The authors evaluated non-judgment, consciousness of the present moment and compassion in isolation. The technique used by these authors was evaluation of the participants' individual processing module, through the presentation of scenarios with a series of configurations and posterior assessment of intervention outcomes.

Benefits of mindfulness intervention with victims of violence

Nine of the ten studies demonstrated benefits from Mindfulness-based interventions in at least one of the analyzed variables, among women who were victims of interpersonal violence. Significant differences were identified between the experimental group and the control group (Brotto et al., 2012; Ghahari et al., 2017; Kelly & Garland, 2016; Valdez et al., 2016; Valdez & Lilly, 2016), between pre and post-test assessment (Gallegos et al., 2015; Goldsmith et al., 2014; Kimbrough et al., 2010) and in evaluation after 128 weeks of intervention (Earley et al., 2014). Only one study failed to find significant differences between the groups in the measures evaluated before and after intervention (Hill et al., 2011).

Although most of the studies agreed in their findings on the effectiveness of Mindfulness intervention, there were variations in outcome measurement. The following variables were used in the studies selected

Table 3
Summary of the characteristics identified in the selected articles, including the principal results (N = 10).

Author (year)	Design	Participants (N)	Mindfulness intervention group (n)	Control group (n)	Description of the mindfulness intervention	Follow-up time	Outcome measures	Principal results
Brotto et al. (2012).	Randomized clinical trial (Pilot)	Women in treatment for sexual difficulties and a history of childhood sexual abuse (N = 20).	Mindfulness-Based Group Treatment-MBT (n = 12).	Cognitive Behavioral Treatment-CBT (n = 8)	Pre/post treatment evaluation and two sessions of intervention. The session included psycho-education activities, readings and home exercises (common to both arms of research). After, there were specific exercises for the MBT group including introduction to Mindfulness, its benefits, abilities and practice; conscious breathing and body scanning.	3 to 4 weeks after intervention.	- Female Sexual Function Index (FSFI), - Assessment of sexual arousal with erotic stimuli-vaginal photoplethysmograph. - Female Sexual Distress Scale (FSDS)	The Experimental group (MBT) presented a significantly stronger sexual arousal response (FSFI) to the same level of genital arousal in comparison to pre-treatment and to the Control group. Both groups (MBT and CBT) also experienced a significant decrease in sexual difficulty on the FSDS measure.
Earley et al. (2014)	Retrospective cohort	Adults undergoing psychiatric treatment, victims of childhood sexual abuse (N = 19, mostly women).	Mindfulness-based Stress Reduction-MBSR (n = 19).	Study not controlled	Group sessions for a period of 8 weeks, each session lasting 2.5–3 h and a single retreat of 5 h. The intervention included sessions of meditation, stretching and body conscience following the manual of the University of Massachusetts Center for Mindfulness (Kabat-Zinn, 1990). It also included daily Mindfulness exercises at home and readings on the theme.	One follow-up session, 2 and a ½ years (128 weeks) after the previous study by Kimbrough et al. (2010).	- Beck Depression Inventory Second edition (BDI-II), - Anxiety subscale of the Brief Symptom Inventory, - Mindfulness Attention Awareness Scale (MAAS), - PTSD Checklist Civilian Version	The initial results on the decrease in measures of depression, PTSD, anxiety and increased Mindfulness were maintained in follow-up after two and a half years of intervention. PTSD symptoms diminished in relation to the baseline, besides there being a decrease in relation to avoidance (d = 0.7), reliving the experience (d = 0.5) and hyper vigilance (d = 0.9). The group receiving intervention TI-MBSR presented a significant decrease in depression symptoms (d = 0.86), post-traumatic stress symptoms (d = 0.94) and anxiety symptoms (d = 0.85). The results were not significant for the avoidance variable. Greater practice of Mindfulness at home had a significant association with less symptoms of PTSD.
Kelly and Garland (2016)	Randomized clinical trial (Pilot)	Women, victims of interpersonal violence (N = 45, community sample).	Trauma Informed Mindfulness Based Stress Reduction—TI-MBSR (n = 23)	Waiting list (n = 22)	Weekly group meetings for a period of 8 weeks, duration of 2 to 2.5 h, plus exercises at home with a duration of 30–45 min and additional reading. Psycho-educational content and practice related to trauma after interpersonal violence was also added. There was no single retreat (proposed in the MBSR protocol).	Assessment pre and post intervention.	- PTSD Checklist Civilian Version - Beck Depression - Inventory - Anxious and Avoidant Attachment Relationship Structures Questionnaire (RSQ)	The group receiving intervention TI-MBSR presented a significant decrease in depression symptoms (d = 0.86), post-traumatic stress symptoms (d = 0.94) and anxiety symptoms (d = 0.85). The results were not significant for the avoidance variable. Greater practice of Mindfulness at home had a significant association with less symptoms of PTSD.
Kimbrough et al. (2010)	Non-randomized clinical trial (pilot)	Adults undergoing psychiatric treatment, victims of childhood sexual abuse. Total of 27	Mindfulness-Based Stress Reduction-MBSR (n = 27).	Study not controlled	Group sessions for a period of 8 weeks, each session lasting 2.5–3 h and a single retreat of 5 h. The intervention included	Follow-up occurred 4, 8 and 24 weeks after intervention. 21 participants concluded the	- Beck Depression Inventory Second edition (BDI-II), - Anxiety subscale of the Brief Symptom Inventory,	Significant reduction after intervention of depression, anxiety and post-traumatic stress symptoms and in

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Table 3 (continued)

Author (year)	Design	Participants (N)	Mindfulness intervention group (n)	Control group (n)	Description of the mindfulness intervention	Follow-up time	Outcome measures	Principal results
Gallegos et al. (2015)	Non-randomized clinical trial (pilot)	Women with a history of exposure to trauma, high levels of perceived stress (score of ≥ 25 on PSS) in low-income conditions (N = 42).	Mindfulness-Based Stress Reduction-MBSR (n = 42)	Study not controlled	<p>sessions of meditation, stretching and body conscience following the manual of the University of Massachusetts Center for Mindfulness (Kabat-Zinn, 1990). It also included daily Mindfulness exercises at home and readings on the theme.</p> <p>Weekly group meetings for a period of 8 weeks, duration of 2 h and a single retreat of 4 h. The intervention included sessions of meditation, conscious movement, stretching and body scanning following the manual of the University of Massachusetts Center for Mindfulness (Kabat-Zinn, 1990).</p>	<p>study (24 weeks after intervention).</p> <p>Four periods of follow-up. One week before the program (Time 1), in the middle (4 weeks, Time 2), immediately after conclusion (8 weeks, Time 3) and four weeks after conclusion (12 weeks, Time 4).</p>	<ul style="list-style-type: none"> - Mindfulness Attention Awareness Scale (MAAS) - PTSD Checklist-Civilian Version. - Perceived Stress Scale - Spielberger State-Trait Anxiety Inventory (STAI). - Center for Epidemiologic Studies Depression Scale - Difficulties in Emotion Regulation Scale (DERS) - Modified PTSD Symptom Scale Self-Report - Mindfulness Questionnaire - Immunological data (30 ml of blood) 	<p>strategies of avoidance in all three follow-up periods. Increased mean on the MAAS scale in comparison to the baseline. There were no significant results regarding time of Mindfulness practice at home and changes in psychological measures. Significant association between intervention and reduction in the levels of depression (all the times), anxiety, emotional deregulation and symptoms of post-traumatic stress (times 3 and 4). Increased level of full attention at different follow-up times. Greater adherence to the program (MBSR) was associated with lower levels of inflammatory cytokines IL-6. There was no significant alteration in the levels of TNF-α or CRP.</p>
Ghahari et al. (2017)	Randomized clinical trial	Women, victims of domestic violence receiving treatment at a psychiatric clinic in Tehran (N = 30).	Mindfulness-based cognitive therapy- MBCT (n = 15)	Waiting list (n = 15)	<p>Weekly group meetings for a period of 8 weeks, with a duration of 45 min. Exercises included, for example, behavior-emotion cycle and feelings approach; meditation, body scanning, training on non-judgement or critical thought and feelings on oneself and exercises at home.</p>	<p>Assessment pre and post intervention.</p>	<ul style="list-style-type: none"> - Beck's Depression Inventory - Spielberger's State-Trait Anxiety Inventory (STAI) 	<p>The study demonstrated that MBCT intervention reduced depression symptoms and the state of anxiety of women who were victims of violence in Tehran.</p>
Hill et al. (2011)	Non-randomized clinical trial (pilot)	Female university students, victims or non-victims of violence (N = 71)	Mindfulness-Based Program. Group composed of 10 women that suffered violence and 19 that did not report violence.	Group composed of 18 women that had suffered violence and 24 that did not report violence.	<p>The program was based on the theoretical model proposed by Polusny & Follette, (1990). Two sessions were performed (two hours each). Content included a combination of psycho- education and exercises on Mindfulness as consciousness of the present moment, responses and judgements,</p>	<p>Assessment pre and post intervention. Mean of 9.97 weeks between this interval.</p>	<ul style="list-style-type: none"> - Sexual Experiences Survey (SES). - Kentucky Inventory of Mindfulness Skills (KIMS). - Acceptance and Action Questionnaire (AAQ). - Program utility and practice questionnaire. 	<p>The intervention was not effective in reducing global rates of sexual aggression, despite having some effect on the risk of rape. The program did not significantly diminish the confrontation strategy of avoidance and did not increase levels of Mindfulness.</p>

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Table 3 (continued)

Author (year)	Design	Participants (N)	Mindfulness intervention group (n)	Control group (n)	Description of the mindfulness intervention	Follow-up time	Outcome measures	Principal results
Valdez and Lilly (2016)	Randomized clinical trial	Women, victims of violence (N = 63, 56 women from the community and 7 university students)	Experimental group: included self-reflective experience and Mindfulness (n = 21)	Group with analytical approach (n = 21) or control group (n = 21)	<p>cultivation of compassion, differentiation between internal experiences and behavior. The intervention did not include specific content on sexual aggression.</p> <p>The women participated in an experiment (Watkins, Moberly, & Moulds, 2008) whose objective was to evaluate the processing module through scenarios. Participants received 30 scenarios with a series of settings (social, interpersonal, academic and employment) and were instructed to spend a minute on each scenario. The reading instructions depended on the proposed intervention for each group. For the Mindfulness group the women were asked to concentrate on how the scenario happened, visualizing vividly and tangibly and how the event unfolded, including their moment to moment feelings.</p>	<p>Assessment pre (T1) and post (T2) intervention. The interval between screening and intervention was 15.14 days.</p>	<ul style="list-style-type: none"> - Traumatic Life Events Questionnaire - PTSD Checklist-Civilian Version - Self-Compassion Scale - Beck Anxiety Inventory - Positive and Negative Affect Schedule- Expanded Form (Watson & Clark, 1999) 	<p>At T1, the highest level of self-compassion correlated with the least post-traumatic stress symptoms.</p> <p>At T2, in the control group, greater self-compassion and full attention correlated with lower anxiety and negative affectivity. At T2, in the analytical group, greater self-compassion correlated with lower negative affectivity, while Mindfulness correlated with lower anxiety and greater positive affectivity. At T2, in the experimental group, greater self-compassion correlated with higher anxiety and positive affectivity.</p> <p>The results indicated that processing modules exercise differential effects of self-compassion and on anxiety related to trauma and affectivity.</p> <p>The results indicated that contact with the present moment in isolation without "non-judgement", led to undesirable results; contrary to typical results of Mindfulness interventions. In the control group, PMC was positively associated with negative affectivity and negatively associated with positive affectivity for those that did not receive the inducement of "non-</p>
Valdez et al. (2016)	Randomized clinical trial (N = 40)	Women that reported exposure to violence as their worst traumatic experience (n = 40, 36 women from the Community and 4 university students)	Experimental group (inducement of non-judgement) (n =)	Control group (without intervention)	<p>The women participated in an experiment (Watkins et al., 2008) whose objective was to evaluate the processing module through scenarios. Participants received 30 scenarios with a series of social situation. The reading instructions depended on the proposed intervention for each group. The experimental group received the orientation to "imagine in your mind tangibly, like a</p>	<p>Assessment pre (T1) and post (T2) intervention. The interval between screening and intervention was 15.65 days</p>	<ul style="list-style-type: none"> - Positive and Negative Affect Schedule - Thought Listing Procedure (TLP) - PTSD Checklist-Civilian Version - Present Moment contact (Linguistic Inquiry and Word Count (LIWC)) 	<p>The results indicated that the results indicated that contact with the present moment in isolation without "non-judgement", led to undesirable results; contrary to typical results of Mindfulness interventions. In the control group, PMC was positively associated with negative affectivity and negatively associated with positive affectivity for those that did not receive the inducement of "non-</p>

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Table 3 (continued)

Author (year)	Design	Participants (N)	Mindfulness intervention group (n)	Control group (n)	Description of the mindfulness intervention	Follow-up time	Outcome measures	Principal results
Goldsmith et al. (2014)	Non-randomized clinical trial (N = 9)	Adults with different traumas and symptoms of post-traumatic stress. Most of the sample were women with a history of childhood sexual and physical abuse or emotional abuse (N = 9)	Mindfulness-Based Stress Reduction-MBSR (N = 9)	Study not controlled	<p>film, how the event occurred". After the intervention there was an interview to recall the traumatizing experience and application of the PANASX and TLP instruments.</p> <p>Weekly meetings occurring according to the Kabat-Zinn protocol. The author does not refer to any alterations being made.</p>	<p>Questionnaires were applied pre-intervention, in the middle of the intervention session and after intervention. The intermediate evaluation occurred from 3 to 4 weeks</p>	<ul style="list-style-type: none"> - Patient Health Questionnaire-9 - Beck Depression Inventory - PTSD Checklist-Civilian Version. - Acceptance and Action Questionnaire-Version II. - Child Trauma Questionnaire. - Life Events Checklist - Trauma Appraisal Questionnaire. - Mindfulness Practice Log. 	<p>judgement". In the experimental group, for those that received the inducement of "without judgement", PMC protected them against the occurrence of intrusions, that is, it was negatively related to the frequency of traumatic intrusions under conditions of non-judgement.</p> <p>After intervention, there was a significant decrease in depression symptoms and post-traumatic stress symptoms. The trauma appraisal scores (as a basis for the criteria of shame) decreased along the intervention analysis. Acceptance and action scores increased. Total number of minutes practicing Mindfulness was not significantly associated with changes in depression or post-traumatic stress symptoms.</p>

for this review: sexual factors related to sexual difficulty, sexual satisfaction and arousal (genital and subjective), exposure to sexual aggression, depression symptoms, anxiety symptoms, post-traumatic stress symptoms including avoidance, levels of full attention, stress perception and immunological assessment. The individual results for each variable are described below.

Benefits related to sexuality of the women

In a study with a sample of adult women with a history of childhood sexual abuse and currently experiencing sexual difficulties, Brotto et al. (2012) compared the outcome of two interventions: Mindfulness-based Treatment (MBT group) and Treatment based on Cognitive Behavioral Therapy (CBT group). The authors concluded that both groups (MBT and CBT) experienced a significant decrease in sexual difficulty after intervention. However, the experimental group (MBT) presented a significantly stronger sexual arousal response to the same level of genital arousal, when compared with both the pre-treatment period and with the control group. The authors hypothesized that non-judgment and the perception of the present moment, provided by the practice of Mindfulness, enabled a greater connection between genital and subjective sexual sensations and may even diminish sexual suffering (Brotto et al., 2012).

Effects related to risk of sexual assault

In another study the authors evaluated the efficacy of a Mindfulness-based program for prevention of new sexual aggressions in university women with a history of childhood sexual abuse. Contrary to the initial hypothesis, the intervention did not reduce revictimization (global rates of sexual aggression) and presented a small effect in reducing the risk of rape. This was the only study that did not find significant effectiveness for Mindfulness-based interventions aimed at this population (Hill et al., 2011).

Benefits to emotional symptoms

Assessment of depression symptoms occurred in five studies. All the articles used the Beck Depression Inventory (BDI) to evaluate this variable (Earley et al., 2014; Ghahari et al., 2017; Goldsmith et al., 2014; Kelly & Garland, 2016; Kimbrough et al., 2010; Valdez et al., 2016; Valdez & Lilly, 2016) and identified a decrease in depression symptoms after Mindfulness-based intervention.

In relation to anxiety symptoms, five studies found a significant decrease in anxiety symptoms after Mindfulness intervention. In these articles the following instruments were used: Anxiety subscale of the Brief Symptom Inventory (Earley et al., 2014; Kimbrough et al., 2010) Anxious and Avoidant Attachment Relationship Structures Questionnaire (Kelly & Garland, 2016), and the Spielberger State-Trait Anxiety Inventory (Gallegos et al., 2015; Ghahari et al., 2017). In contrast, in one study the authors identified that, after the experiment, in the Mindfulness group higher levels of self-compassion were correlated not only with greater positive affectivity, but also with higher levels of anxiety (Valdez & Lilly). It is worth noting that in this study the components of Mindfulness were only tested individually and not as a group as in most protocols of Mindfulness practices.

Post-Traumatic Stress symptoms was the most evaluated variable, being present in seven studies (Earley et al., 2014; Gallegos et al., 2015; Goldsmith et al., 2014; Kelly & Garland, 2016; Kimbrough et al., 2010). All the authors identified a significant decrease in the number of symptoms after Mindfulness practice. The most used instrument for evaluation of this variable was the so-called PTSD Checklist–Civilian Version (Weathers, Litz, Huska, & Keane, 1994), used in six studies. The use of confronting avoidance was also frequently assessed, being present in four articles. The results were different for each study, whereby in two (Earley et al., 2014, Kimbrough et al., 2010) this variable

decreased after Mindfulness intervention, while two other studies did not find any significant statistical alteration (Hill et al., 2011; Kelly & Garland, 2016). It was also identified that there was a significant decrease in symptoms of trauma re-experience in the experimental group (Earley et al., 2014, Kimbrough et al., 2010).

Mindfulness practice time (out of in-person sessions)

Assessment of Mindfulness practice time and psychological measures was carried out in three studies. Goldsmith et al. (2014) verified that the total number of minutes of Mindfulness practice was not significantly associated with changes in depression symptoms and post-traumatic stress symptoms. Another study corroborates these results: in the study by Kimbrough et al. (2010) there were also no significant results regarding the association between Mindfulness practice time at home and changes in psychological measures (Kimbrough et al., 2010). On the other hand, in other studies the women with active Mindfulness practice had a greater reduction in PTSD symptoms than those that practiced a few minutes during the week (Kelly & Garland, 2016).

Evaluation of the level of mindfulness

Levels of Mindfulness of the participants were evaluated in three studies. Using the Mindfulness Attention Awareness Scale (MAAS), Kimbrough et al. (2010) identified the mean Mindfulness score was significantly improved after intervention (Kimbrough et al., 2010), and these results were maintained after a follow-up of two and a half years (Earley et al., 2014). In the same way, Gallegos et al. (2015), using the Five Facet Mindfulness Questionnaire (FFMQ), verified that there was an increase in the level of Mindfulness at different follow-up times in the study (Gallegos et al., 2015). On the other hand, in just one study (Hill et al., 2011), the authors found that the practice did not increase the levels of Mindfulness evaluated through the Kentucky Inventory of Mindfulness Skills (Kim et al., 2013).

Immunological evaluation

The traumatic experience seems to be associated with higher levels of inflammatory cytokines. As such, one study chose to carry out a blood test on the participants and verify possible immunological changes after the interventions (Gallegos et al., 2015). The results identified that greater adherence to the MBSR program was associated with lower levels of inflammatory cytokines (IL-6), although there was no significant alteration in the levels of tumor necrosis factor-alpha (TNF- α) or C-reactive protein (CRP).

Discussion

The objective of the present systematic review was to identify empirical evidence on the benefits of Mindfulness-based interventions for the treatment of women who are victims of interpersonal violence. The results indicated, through different measures, significant improvements after intervention. The variables demonstrating effectiveness of the intervention include: improvement in sexual difficulty (greatest response in sexual arousal), reduction in emotional symptoms (depression, anxiety and post-traumatic stress), decreased use of inadequate confrontation strategies like avoidance, increase in traits of full attention and improvement in the level of inflammatory cytokines.

The selected studies, including the articles with higher quality methodology, identified that the strategy was effective in reducing symptoms of depression. This finding is consistent with a recent systematic review and meta-analysis that also confirmed the benefits of Mindfulness interventions for this population. The authors observed consistent evidence of effectiveness, such that this practice was considered as having similar potential to treatment when compared with psychological and psychiatric interventions (Goldberg et al., 2018).

Other researchers justified that Mindfulness practice, through the development of non-judgment and experiencing the present moment, enables reduction of rumination and helps with emotional regulation and common symptoms of depression (Follette et al., 2004).

The improvement in post-traumatic stress symptoms after Mindfulness practices was also found in all the studies evaluating this variable. This finding corroborates other studies demonstrating that Mindfulness practices would confer greater resilience following a traumatic experience (Follette et al., 2004, Thompson et al., 2011). The support this practice provides to the victim's confrontation strategy is owing to visualization of thoughts and feelings related to the trauma, but from a perspective with the absence of judgment, with self-compassion and with recognition of efforts to control the internal experience. Through Mindfulness practices it would then be possible to develop abilities to calmly detach oneself from thoughts and emotions during stressful or traumatic events, instead of developing anxiety problems or other negative patterns that may signal the start of a cycle of reactivity to stress and contribute to an increase in psychological stress (Hölzel et al., 2011).

Anxiety symptoms also showed a decrease after intervention in most of the studies. Scientific evidence also identified a moderate improvement in anxiety symptoms in clinical populations after Mindfulness practice (Hofmann et al., 2010). However, a study with war veterans with PTSD highlights important observations on Mindfulness interventions with individuals exposed to traumatic experiences. The authors found that despite there being a significant decrease in PTSD symptoms after Mindfulness intervention, the activity of "body scanning" generated an increase in the anxiety of survivors of sexual trauma, triggering memories of the traumatic experience and resulting in discontinuation of the study (Kim et al., 2013). As such, this finding may suggest that, in the case of victims of physical violence, exercises specifically focusing on the body require adequate attention from the instructor, providing supervision and support to the participants.

Only one study failed to identify benefits from Mindfulness intervention in the sample. However, the study presented low quality methodology and a high risk of bias according to the judgment of the Risk of Bias Assessment Tool for Non-Randomized Studies - RoBANS. Two points should be highlighted, the first point refers to the fact that the study used only two brief intervention sessions (duration of two hours), which included exercises on Mindfulness and psycho-education with the absence of specific content on sexual aggression. The second point considers that the sample of the experimental group and control group was mixed, being composed of groups of women that had and had not suffered violence, with the presence of confounding variables and no clarification on the control of possible biases in the sample. Such characteristics may have influenced the findings in this study.

Methodological evaluation of non-randomized trials identified a high risk of bias in participant selection criteria, with all the studies being considered inadequate in this section. Researchers criticize the limitation of lack of specificity in some studies evaluating the effectiveness of Mindfulness practices. It has been suggested that individual personality characteristics may interfere in results; for example, individuals with a profile of being "more open to new experiences" may benefit more from Mindfulness interventions (Farias et al., 2016). From this perspective, the fragility highlighted by the authors may be overcome through group composition beyond recruitment through interest on the part of the participants, choosing methodological designs that encompass the inclusion of participants that were not looking for the practice as a possible intervention for their health requirements.

All the selected articles were published in the last eight years, demonstrating the recent interest of researchers in this area. The samples were small (maximum of 71 participants), only four studies presented a random clinical trial design and there was only one study with longitudinal follow-up (evaluation after more than two years of intervention). As demonstrated previously, the results indicated the effectiveness of the Mindfulness intervention for different variables. However,

said evidence should be analyzed with caution, given that there was no consensus on the results of all the measures and the methodological quality varied between the studies.

Finally, this review presented limitations predominantly related to the difference in methodology used in the sampling of articles. There was a small number of studies that fulfilled the eligibility criteria, among which the majority were pilot studies with small samples. Furthermore, the studies presented a wide variety in methodological quality, which restricted the strength of said scientific evidence. Although the number of articles was low, this systematic review has become of extreme importance given the necessity to evaluate, with adequate methodological rigor, scientific evidence on the potential use of Mindfulness interventions aimed at this population. It should be noted that women who are victims of violence comprise an important population for effective treatment, given the magnitude of negative repercussions related to exposure to this traumatic experience. Future studies on the same theme may obtain higher levels of scientific evidence in their findings by including larger samples, with randomized clinical trials and presenting follow-up at different periods of time, so as to demonstrate the long-term effects of intervention.

Conclusion

The present systematic review demonstrated the potential benefits of Mindfulness-based interventions in women who were victims of interpersonal violence. The studies with the best methodological quality identified the effectiveness of this strategy, especially for the reduction of symptoms of depression, post-traumatic stress and anxiety in the target population.

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