SAPIENZA
UNIVERSITÀ EDITRICE

E-ISSN 2724-2943
ISSN 2723-973X

Psychology Hub (2023)
XL, 1, 25-36

Intimate Partner Violence and physical diseases: an exploratory study

Sorrentino Anna[a]*, Alfano Valentina[a]

[a]*Department of Psychology, Università degli studi della Campania 'Luigi Vanvitelli', Caserta, Italia*

Article info

Submitted: 26 September 2022
Accepted: 30 January 2023
DOI: 10.13133/2724-2943/17857

Abstract

Intimate Partner Violence (IPV) is a transversal phenomenon that affects a significant number of women and female adolescents in the world. Although several and numerous studies have investigated various negative consequences associated with exposure to IPV, few have focused on the physical diseases associated with exposure to physical, psychological, and sexual violence. The present study aims to analyze the association between past or present IPV victimization and the presence of physical disease, in particular, investigating the unique contribution of physical, psychological, and sexual violence on IPV victims' likelihood of reporting physical diseases diagnoses, by surveying 133 women victims of IPV recruited from various anti-violence centers (CAV). The results showed that women who experienced psychological violence were more at risk of reporting cardiovascular disorders and a diagnosis of benign neoplasm; moreover, women who believed that their physical disease was linked to exposure to IPV showed a higher presence of gastrointestinal disorders. The results are discussed, along with possible applications for prevention and intervention strategies.

Keywords: Intimate Partner Violence, physical violence, psychological violence, health conditions, physical diseases

*Corresponding author.
Sorrentino, Anna,
Department of Psychology,
Università degli studi della Campania
'Luigi Vanvitelli'
Viale Ellittico, 31 - 81100 Caserta
Phone: +39 0823274766
E-mail: anna.sorrentino1@unicampania.it
(A. Sorrentino)

Introduction

Intimate Partner Violence (IPV) includes any "*physical violence, sexual violence, stalking and psychological aggression (including coercive tactics) by a current or former intimate partner (i.e., spouse, boyfriend/girlfriend, dating partner, or ongoing sexual partner)*" (Breiding et al., 2015, p.11).

IPV should also be described by considering the three main types of violence or abuse, that are: physical, sexual, and psychological violence (Burelomova, Gulina & Tikhomandritskaya, 2018; Devries et al., 2013; Ellsberg et al., 2008; García-Moreno et al., 2015).

Physical violence is any action aimed at harming or frightening the victim, causing injury. It includes any physical contact (e.g., beating, pushing, grabbing forcefully, slapping, punching, strangling attempts, and threatening or using a gun, knife, or another weapon) aimed to cause fear, frighten and control the victim (Baldry, 2014; García-Moreno et al., 2005).

Sexual violence is defined as forcing a partner, who did not want it, to have sexual intercourse, or do any sexual act they found degrading or humiliating, harming them during sex or forcing them to have sex without protection (Burelomova Burelomova, Gulina & Tikhomandritskaya, 2018; World Health Organization - WHO, 2013). So the victim is deprived of her ability to control intimate contact and to decide on it (Larsen, Hilden & Lidegaard, 2015).

Psychological violence refers to behaviors that aim to harm the victims' identity and dignity, weaken their self-esteem and devalue and control them (Canu, 2008). It is the so-called invisible violence (Canu. 2008), and includes verbal threats, humiliations, belittling, deprivations, social isolation, restrictions and limitation in accessing information, education, or health services, and emotional deficiencies (World Health Organization - WHO, 2002)

Worldwide, it is estimated that 1 in 3 women has been a victim of violence at least once within a current or past intimate relationship (World Health Organization - WHO, 2013); in 2018 about 379 million women reported having suffered physical and/or sexual violence by their partner (United Nations Office on Drugs and Crime - UNODC, 2018).

In Italy, one in four women has suffered violence in the course of her life by her partner or former partner (Istituto Nazionale di Statistica – ISTAT, 2006). 31.5% of women aged between 16 and 70 years (6 million 788 thousand) suffered some form of physical or sexual violence during their lives; 20.2% (4 million 353 thousand) suffered physical violence; 21.0% (4 million 520 thousand) sexual violence; 5.4% (1 million 157 thousand) severe forms of sexual violence, such as rape (652 thousand) and attempted rape (746 thousand). 13.6% of women (2 million 800 thousand) suffered physical or sexual violence from current partners or ex-partners. All IPV victims reported physical and psychological negative consequences; more than one in three women victims of IPV report wounds, bruises, or other injuries (37.6%), and more than half of them suffer from loss of confidence and self-esteem (52.7%) (ISTAT, 2014).

Furthermore, since 1996, thanks to Resolution WHA49.25, IPV was recognized as a growing public health problem across the world, thus leading to the development of reports and studies on IPV victims' physical and psychological health. However, despite this, IPV prevalence worldwide has increased over the years (World Health Organization - WHO, 2012). This trend in IPV rates, increased due to the COVID-19 pandemic and the consequent lockdown (McNeil, Hicks, Yalcinoz-Ucan & Browne, 2023), putting victims potentially at a greater risk of IPV escalation and Intimate Partner Femicide (European Institute for Gender Equality - EIGE, 2021; ISTAT, 2021), as also confirmed by the significant increase of Italian IPV victims' requests of support and help by calling the 1522 helpline and anti-violence numbers (Del Casale et al., 2022; ISTAT, 2021). The worldwide increase of IPV rates, involving women of all social, economic, religious, cultural groups, and age groups, potentially increase IPV victims' risk of reporting severe and several physical, psychological and mental health diseases.

Although the first study highlighting that compared to non-victims, women victims of IPV reported several negative psychological and physical health outcomes was published in 2005 (World Health Organization - WHO, 2005), to date, few studies have been conducted to assess the association between IPV and victims' physical diseases.

In fact, on the one hand, the negative mental and psychological outcomes related to IPV are well-documented and well-known (e.g., Dillon et al., 2013; Ellsberg et al., 2008; Lahi & Prezza, 2010; Pico-Alfonso et al., 2006; Romito, De Marchi, & Gerin, 2008; Vos, Astbury, & Piers, 2006; Wong & Mellor, 2014; Wathen, MacGregor, & MacQuarrie, 2016), less is known about the physical diseases reported by victims of IPV, as studies investigating such types of outcomes are mainly descriptive, leading to contrasting results and often difficult to compare, due to different sampling procedures, measures, and methodologies.

Some of them investigated IPV victimization association with victims' general health conditions, founding that IPV victims reported a poor and precarious general physical health status (e.g., WHO, 2005, 2013, Ellsberg et al., 2008, Ruiz-Pèrez, Plazaola-Castaño, & del Río-Lozano, 2007; Wathen, MacGregor, & MacQuarrie, 2016) and that IPV victims' health conditions were worse and more severe as the severity and frequency of IPV they suffered (Dillon et al., 2013), regardless of the past or present IPV victimization (Ruiz-Pérez, Plazaola-Castaño, & del Río-Lozano, 2007; Scott-Storey, Wuest & Ford-Gilboe, 2009).

In line with the long-term negative outcomes related to past or present IPV victimization, some studies hypothesize the possible contributing role of psychological distress (Drossman et al., 1999) and the adoption of dysfunctional coping strategies (e.g., smoking, obesity, and alcohol abuse) by IPV victims' to cope with the violence found that women victims of IPV were more at risk of showing functional gastrointestinal disorders (Perona et al., 2005; Matheis et al., 2007; Dillon et al., 2013), with the majority of them (72.0%) reporting that the onset of these symptoms coincided with the beginning of IPV (Perona et al., 2005), and the presence of cardiovascular symptoms and diseases (Scott-Storey, Wuest & Ford-Gilboe, 2009).

More recent studies starting from the psycho-neuro-immunology perspective, which investigate the negative impact of stressful experiences such as IPV on physical diseases, focused, in particular, on the presence of a diagnosis of benign

or malignant neoplasm among victims of IPV, showing that women victims of IPV have a significant risk of reporting a diagnosis of neoplasm compared to the general population (Cesario et al., 2014; Hindin et al., , 2015), with women still victims of IPV reporting a more severe diagnosis of cancer (III or IV stage) (Coker et al., 2017).

Other studies have investigated the possible unique contribution of the different types of IPV suffered by women and the presence of physical diseases, often reporting contrasting results.

Some studies underlined the unique negative contribution of psychological IPV victimization on women's health, founding that victims of only psychological IPV reported more negative health conditions than victims of only physical IPV (Lacey et al., 2013; Coker et al., 2000), and were more at risk to have a cancer diagnosis (Coker et al., 2017).

On the contrary, the study carried out by Ruiz-Pérez et al. (2007) showed that although women victims of psychological and physical IPV or psychological IPV were more likely to report more chronic diseases than non-abused women, only victims experiencing all three types of IPV (physical, psychological and sexual) were significantly more at risk of reporting physical diseases. Bonomi et al. (2006) found that victims of physical and/or sexual IPV were 2.8 times more likely to report fair or poor health status; women victims of physical and/or sexual IPV were found to be more likely to have a higher 10-year estimated risk of cardiovascular disease than women who did not report IPV (Stene et al., 2013).

Few studies investigating IPV victims' beliefs about their poor health and IPV suffered. In this regard, Sawin et al. (2009) found that women victims of IPV believe their physical disease was linked to their experience of IPV, reporting the perception that the stress from the IPV suffered caused their cancer or would negatively affect its course. Similar results were also reported by Perona et al. (2005), who found that victims of IPV related their digestive symptoms to their history of IPV suffered, thus underlying the need to explore and investigate the role of such beliefs about the link between the origin of physical diseases and the IPV suffered.

Objectives

Considering the several negative effects on victims of IPV physical health and the contrasting results underlined by the few existing studies investigating the relationships between physical diseases and the different types of IPV suffered, our first research aim was to explore the existence of possible differences in terms of presence and types of physical diseases by comparing victims of IPV who left their abusive partner with those still engaged in a violent relationship. The second objective was to analyze the possible unique contribution of types of IPV suffered (physical, psychological, and sexual), years of exposure to IPV, the victim's beliefs about the possible association between the physical disease and the experience of violence suffered, in increasing IPV victims' likelihood to report physical diseases (e.g., gastrointestinal, cardiovascular disease and benign neoplasm).

Method

Participants

One hundred thirty-three women victims of IPV, aged between 23 and 60 years (M = 41.48, SD = 7.40), were recruited from anti-violence centers in the Campania region. 72.9% of participants were Italian. About participants' marital status: 20.3% were single, 30.1% were married, 4.5% were cohabitants, 44.3% were divorced/separated, and 0.8% were widowed. 87.2% of participants had at least one child. Concerning victims' occupation, 44.5% were unemployed or retired, 25.8% were in low-specialization jobs (e.g., waitress, hairdresser, babysitter), and 29.7% were in high-specialization employment (e.g., teacher, manager, employee).

Procedure

Women victims of IPV participated in the research on a voluntary basis and were recruited from anti-violence centers in the Campania region. All participants turned in anti-violence centers between 2012 and 2016 because of their history of violence and abuse by a partner or ex-partner.

The Ethics Committee of the Psychology Department of the University of Campania "Luigi Vanvitelli" approved the study (protocol nr. 18/2016 approved on 27 September 2016). All ethical guidelines were applied, following the procedures defined by the American Psychological Association (APA), the Italian Association of Psychology (AIP), and the 1964 Helsinki declaration (with their and subsequent amendments).

Participants were first contacted to explain the aims and objectives of the research and to request their consent to participate in this study and, therefore, to the telephone administration of a structured interview created ad hoc for this study. All the women contacted agreed to participate in the research.

Data were collected from June 2016 to January 2017, and telephonic interviews were administered to participants by the authors.

The administration of the telephonic interview lasted about 20 minutes. Furthermore, before proceeding with the interview, participants were reminded that participation in the research was on a voluntary basis and that they could withdraw at any time. Participants were also reassured about the protection of their privacy. Data were collected and stored under law 196 of 30/6/2003, art. 13, and subsequent amendments; information provided by participants were used only for scientific and statistical purposes.

Measures

For the objectives pursued by the research, an ad hoc questionnaire was developed and administered to participants as a telephone interview. The questionnaire consisted of 100 questions, structured in 4 macro-areas to gather information about the victim, the abusive partner or ex-partner, the duration and types of IPV suffered, and the participants' physical health.

Duration of IPV was measured by asking participants to indicate for how many years they have been victims of

violence by their current partner or ex-partner. Participants were also asked through a dichotomous item to indicate if they still were in an intimate relationship with their abusive partner.

The *Conflict Tactics Scale 2 short form* (CTS- 2S - Straus & Douglas, 2004) is a short self-report measure of 20 items to assess IPV prevalence and severity, and conflict resolution strategies. For the purpose of the present study, similar to other studies (Harding et al., 2013; Hu et al., 2020), only the two maladaptive conflict scales referring to victimization (Physical and Psychological violence) were included.

In particular, psychological IPV was measured using two items ("My (ex-) partner insulted or swore or shouted or yelled at me" and "My (ex-) partner destroyed something belonging to me or threatened to hit me") which were summed up to assess respondents' experience of psychological violence. Participants should report their history of psychological violence on a 5-point Likert scale (from 0 = "Never" to 4 = "Very often "). The two items assessing psychological IPV were highly correlated with each other ($r=0.41$, $p < 0.001$) (Dancey & Reidy, 2007). Similarly, physical IPV was calculated by summing the 2 items ("My (ex-) partner pushed, shoved, or slapped me?" and "My (ex-) partner punched or kicked or beat me up") o measured on a 5-point Likert scale (from 0 = "Never" to 4 = "Very often"). The two items assessing physical IPV were highly correlated with each other ($r=0.83$, $p < 0.001$) (Dancey & Reidy, 2007). To measure sexual IPV, consistent with other studies (Hu et al., 2020; Anderson & Cuccolo, 2021; Anderson, Garcia & Delahanty; 2021), a single dichotomous question: "Have you ever been forced by your (ex-) partner to have sex?" was used.

Participants' physical health was assessed by asking participants about the presence of a diagnosis of the following physical diseases: gastrointestinal disorders (irritable bowel syndrome, gastritis, colitis, etc.), fibromyalgia; autoimmune diseases (connective tissue disease, ALS, diabetes, etc.); cardiovascular diseases (diseases affecting the heart or blood vessels); benign neoplasm and malignant neoplasm. Participants should report more than one of the included physical diseases or indicate the presence of other deceases not included in our survey. In this section, also participants' beliefs about IPV victimization and physical diseases were assessed by asking participants to rate on a 5 - points Likert scale (from 0 = "Not at all" to 5 = "Totally") "How much do you think your physical disease (s) could be related to your experience of IPV victimization?".

Data analysis

The data collected within the database were analyzed using the SPSS statistical package (version 21.0, IBM Milano, Milan, Italy). Descriptive analyses were conducted for all the dimensions listed above. To test the possible differences between the victim's relationship with the perpetrator and the presence of the physical diseases investigated in the current study, chi-square analysis and Odds Ratios (OR) were used. Simple correlations were calculated to investigate the association between types and, years of IPV suffered, the perception of the possible link between IPV victimization and physical diseases, and the presence of physical diseases. Then, three separate logistic regression analyses were carried out to analyse if physical, psychological and sexual IPV, years of IPV suffered, the perception of the possible link between IPV, and physical diseases significantly increase victims' likelihood of reporting gastrointestinal disorders, cardiovascular disease, and benign neoplasm.

Results

Prevalence of types of Intimate Partner Violence and physical diseases

Of the 133 women participating in the study, 36.8% stated that in answering the interview questions, they referred to their husband, 31.6% to their ex-husband, 9.8% to their current partner, 9.0 % to their ex-partner, 3.0% to their boyfriend; 6.8% to their ex-boyfriend, 2.2% to their ex-lover, and 0.8% to other person. Years of IPV suffered ranged from 1 to 42 years ($M = 11.21$, $SD = 8.83$). 49.3% of participants reported they had left the abusive and violent intimate relationship.

Concerning types of IPV suffered, 79.7% of the participants reported having experienced physical violence by their intimate partner or ex-partner. Of these, 78.9% and 58.6% reported they had been pushed, jerked, slapped or beaten, kicked, or punched at least sometimes (see Table 1).

97.7% of participants experienced psychological violence by their intimate partner or ex-partner; of these, 94.0%

Tab. 1. Descriptive statistics (N=133)

Variable	Index
Years of IPV suffered	M= 11.21 (SD=8.83)
Physical IPV	20.3% never
	79.7% at least once
Your partner pushed, shoved, or slapped you?	13.5% never 7.6% rarely 23.3% sometimes 36.1% often 19.5% very often
Your partner punched or kicked or beat-you-up?	21.1% never 20.3% rarely 15.8% sometimes 27.8% often 15.0% very often
Psychological IPV	2.3% never
	97.7% at least once
Your partner insulted or swore or shouted or yelled at you?	1.5% never 4.5% rarely 14.3% sometimes 40.6% often 39.1% very often
Your partner destroyed something belonging to you or threatened to hit you?	7.5% never 15.8% rarely 21.1% sometimes 37.6% often 18.0% very often
Sexual IPV	70.7% no
	29.3% yes

reported having been insulted at least sometimes, while 76.7% reported that their partner or ex-partner destroyed her objects, has threatened to destroy such objects or to use them to hit the victim. 29.3% of women reported having experienced sexual violence by their partner or ex-partner.

Regarding physical diseases, 45.9% of participants reported at least one physical health problem. In particular, 31.6% reported only one disease, and 7.6% reported two or more physical diseases. More specifically, 17.3% of the participants reported gastrointestinal disorders, 6.0% cardiovascular diseases, 10.5% autoimmune diseases (connective tissue disease, ALS, diabetes), 2.3% fibromyalgia, 3.0% benign neoplasm, and 3.0% malignant. 6.1% of participants reported a diagnosis of 'other disease' such as 2.3% thyroid disorders, 1.5% lung disorders, 1.5% movement disorders, and 0.8% kidney problems. 2.1% preferred not to specify the type of medical condition they suffered from. 45.9% of the participants totally agree with attributing the presence of physical disease to their experience of IPV suffered by the partner or ex-partner.

Victim's relationship with the perpetrator and physical diseases

We then examined the existence of possible differences between the victim's relationship with the perpetrator and the presence of physical diseases (see Table 2).

The results showed that IPV victims who had left their abusive partner significantly differed from those still in a relationship with their abusive partner in terms of the presence of a diagnosis of physical disease ($\chi^2(1) = 4.57$; $p = 0.02$), indicating that women that left their abusive partner were more at risk to report at least one physical disease (OR = 0.46, p = 0.03).

No significant differences emerged concerning gastrointestinal disorders, fibromyalgia, autoimmune diseases, cardiovascular diseases, benign and malignant neoplasm, and participants' current or past relationship with the IPV perpetrator.

Association between types and years of IPV suffered, victims' believes about IPV victimization and physical diseases and physical diseases diagnoses

First, simple correlations were calculated between different types of IPV suffered, physical diseases, years of IPV victimization, and beliefs about IPV victimization and physical diseases (see Table 3).

The results showed that all types of IPV suffered were significantly correlated; physical IPV was significantly associated with psychological IPV (r=0.53; p<0.01) and with sexual IPV (r=0.28; p<0.01).

Psychological IPV significantly correlates with sexual IPV (r=0.26; p<0.01) and with years of IPV victimization (r=0.28; p<0.01). Physical, psychological, and sexual IPV were also significantly associated with participants' beliefs about the existence of a relationship between IPV victimization and the presence of physical diseases, indicating that the more participants have experienced physical, psychological, and sexual violence, the more they believe that physical diseases are associated with their history of IPV victimization.

Psychological IPV was also associated with cardiovascular diseases (r = 0.21; p < 0.05) and benign neoplasm (r = 0.20; p < 0.05); no significant associations were found between physical and sexual IPV and the presence of physical diseases.

Tab. 2. Physical diseases in reference to the persistence or not in the intimate violent relationship

Pathologies		Current relationship					
		%Yes	%No	χ2	B(SE)	OR	95 C.I. for OR
Physical diseases' presence	Yes	15.2	24.2	4.57*	-.77 (.36)	.46*	(.23-.94)
	No	34.8	25.8				
Cardiovascular disease	Yes	1.5	4.5	2.13	-1.16 (.84)	.31	(.06-1.61)
	No	48.5	45.5				
Gastrointestinal disorders	Yes	6.1	11.4	2.58[t]	-.76 (.48)	.47	(.18-1.20)
	No	43.9	38.6				
Autoimmune pathologies	Yes	3.8	6.8	1.28	-.65 (.58)	.51	(.16-1.64)
	No	46.2	43.2				
Fibromyalgia	Yes	0.8	1.5	0.34	-.70 (1.24)	.49	(.44-5.57)
	No	49.2	48.5				
Benign neoplasm	Yes	0.8	2.3	1.03	-1.13 (1.17)	.32	(.03-3.19)
	No	49.2	47.7				
Malignant neoplasm	Yes	2.3	0.8	1.03	1.13 (1.17)	3.10	(.31-30.55)
	No	47.7	49.2				

*Note. * p<.05, [t] p<.10*

Tab. 3. Correlation between types, years of Intimate Partner Violence suffered, beliefs about IPV victimization and physical illness and presence of physical diseases

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Physical violence	1										
2. Psychological violence	.53**	1									
3. Sexual violence	.28**	.26**	1								
4. Years of IPV suffered	.18	.28**	-.09	1							
5. Believes about IPV and physical disease	.47**	.30*	.34**	.25	1						
6. Cardiovascular disease	.10	.21*	.05	-.16	-.06	1					
7. Benign neoplasm	.13	.20*	.08	-.01	-.04	.14	1				
8. Malignant neoplasm	-.15	-.08	-.11	.06	-.23	-.05	-.03	1			
9. Fibromyalgia	.12	.07	.01	.15	-.02	-.04	-.03	-.03	1		
10. Gastrointestinal disorders	.12	.04	.01	.03	.42**	.05	-.08	-.08	-.07	1	
11. Autoimmune pathologies	.07	.10	.15	.04	.09	.12	.08	-.06	-.05	.04	1

*Notes. ** p < .01* p < .05; IPV= Intimate Partner Violence*

Tab. 4. Logistic regressions

	Gastrointestinal disorders				Cardiovascular disease				Benign neoplasm			
	B(SE)	OR	95 C.I. for OR		B(SE)	OR	95 C.I. for OR		B(SE)	OR	95 C.I. for OR	
			Lower bound	Upper bound			Lower bound	Upper bound			Lower bound	Upper bound
Psychological IPV	-.32 (.28)	.73	.42	1.25	1.31 (.67)	3.72*	1.00	13.83	2.35 (1.27)	10.47ł	.86	126.72
Physical IPV	.10 (.28)	1.10	.71	1.72	-.14 (.39)	.87	.40	1.88	.39 (.49)	1.47	.56	3.84
Sexual IPV	-.65 (.77)	0.52	.12	2.37	-1.06 (1.35)	.35	.02	4.90	2.52 (2.29)	12.47	.14	1107.78
Years of IPV	-.04 (.04)	0.96	.89	1.04	-.32 (.15)	.73*	.54	0.97	-.02 (.11)	.98	.80	1.21
Believes IPV	1.17 (.40)	3.22*	1.48	7.00	.21 (.45)	1.24	.51	2.97	-1.62 (1.07)	.20	.02	1.60
Cox & Snell R^2	0.28				0.23				0.20			
Nagelkerke R^2	0.39				0.44				0.48			
$\chi^2(5)$	16.75**				12.95*				11.54*			

*Notes. * p = .05, ł p<.10; IPV= Intimate Partner Violence; Believes IPV= Believes about the relationship between IPV victimization and physical diseases*

Participants' beliefs about the existence of a relationship between IPV victimization and the presence of physical diseases were significantly associated with gastrointestinal disorders (r = 0.42; p < 0.01).

Then, three logistic regression analyses were performed to investigate the relationship between the different types of IPV suffered, years of IPV victimization, beliefs about IPV victimization and physical diseases, and gastrointestinal disorders, cardiovascular diseases, and benign neoplasm.

The results show that participants believing that IPV victimization was associated with physical diseases were 3.22 times more likely to have a diagnosis of gastrointestinal disorders. Furthermore, psychological IPV significantly increases the risk of reporting cardiovascular diseases (OR = 3.72, p = 0.05). Participants who experienced IPV victimization for fewer years were significantly more at risk of reporting a diagnosis of cardiovascular diseases (OR = 0.73, p = 0.03).

Finally, results highlighted the presence of a trend between psychological IPV and a diagnosis of benign neoplasm (OR = 10.47, p = 0.06) (see Table 4).

Discussion

The present study aimed to explore the possible association between IPV victimization and the presence of physical diseases. In fact, to date among studies investigating the negative physical consequences of IPV exposure, some focused on IPV victims' general health conditions (e.g., World Health Organization - WHO, 2005; 2013, Ellsberg et al., 2008), while others hypothesizing the possible intervening role of distress and dysfunctional coping strategies, analysed the association between IPV victimization and the presence of specific physical diseases, such as cardiovascular or gastrointestinal diseases or cancer diagnosis (e.g., Perona et al., 2005; Matheis et al., 2007; Ruiz-Pérez, Plazaola-Castaño, & del Río-Lozano, 2007; Scott-Storey, Wuest & Ford-Gilboe, 2009; Dillon et al., 2013; Cesario et al., 2014; Hindin et al., 2015).

Among these, still few studies considered the association between types of IPV (physical, psychological, and sexual) and the presence of physical disease diagnoses, leading also to contrasting results (e.g., Bonomi et al., 2006; Lacey et al., 2013; Stene et al., 2013; Coker et al., 2017)

Investigating such a relationship could be crucial for the development of effective primary and secondary prevention strategies, also considering the increase in IPV prevalence due to the pandemic COVID-19 (e.g., McNeil et al., 2022; Del Casale et al., 2022), thus, stressing the importance to deepen this relationship as IPV continue to represent a serious and severe global health problem.

In this regard, our first objective was to analyse the existence of possible differences in terms of physical diseases by comparing women still in a violent intimate relationship and women that leave their abusive partner.

Our results, underlined that IPV victims which leave their abusive partner are more likely to report physical diseases compared to victims still in an intimate violent relationship (e.g., World Health Organization - WHO, 2005; 2013). This finding seems to support other studies' results, underlying that the IPV's negative physical outcomes do not end with leaving the abusive relationship (Ruiz-Pèrez, Plazaola-Castaño, & del Río-Lozano, 2007; Scott-Storey, Wuest & Ford-Gilboe, 2009). These long-term negative outcomes among victims who leave the violent partner should be the result of their prolonged exposure to stress, which continues, persists, and often worsens after the ending of the violent relationship; potentially explaining why women who leave their abusive partner are more likely to report physical diseases than women still engaged in a violent intimate relationship (Yim & Kofman, 2019).

Our second objective was to investigate the possible unique contribution of physical, psychological, and sexual IPV, years of exposure to IPV, and the victims' beliefs about the possible association between physical diseases and the experience of violence in increasing IPV victims' likelihood to report physical diseases such as gastrointestinal and/or cardiovascular diseases and/or benign neoplasm.

Similar to other studies (WHO, 2013; Baldry, 2014; Pence & Paymar, 1993; Walker, 1979), our results showed that all types of IPV were significantly associated, highlighting that they are closely related, physical IPV is often accompanied by sexual as well as psychological IPV (ISTAT, 2021).

Interestingly we found a significant association between the three types of IPV suffered and victims' beliefs that IPV victimization could be linked to the presence of physical diseases. Participants seem to somehow attribute their state of health to the violence suffered, consistent with Sawin et al. (2009), who found that women with a diagnosis of cancer believed that their disease was linked to IPV suffered by their partner and that IPV could worsen its course and increase the likelihood that cancer could recur in the future.

We could hypothesize that the IPV suffered has made these women believe that their physical diseases are linked to their IPV victimization.

These beliefs are also significantly associated with gastrointestinal disorders, which could result from the high psychological stress that abused women were exposed to (Perona et al., 2005). In particular, our results showed that IPV victims' likelihood to report gastrointestinal disorders was associated only with their beliefs about the relationship between IPV victimization and the IPV suffered, significantly increasing to 3.22 times their risk of reporting such type of disease.

Although the etiology of the gastrointestinal disorders is still not clear, consistent with the biopsychosocial model, we can hypothesize that several factors participate in the origin of such diseases: biological factors such as dysregulation in mechanical-sensitive function and psychosocial factors such as psychological well-being, social environment, and stress, and being a victim of IPV had been proved to cause significant stress for women (Drossman et al., 1999).

Furthermore, our results, consistent with Mason et al. (2012), which found that women victims of severe psychological violence were 24 times more at risk of developing arterial hypertension than women not exposed to emotional abuse, showed that only psychological IPV seems to significantly increase victims' likelihood of reporting cardiovascular diseases. Our findings seem also to indicate that participants' risk of reporting cardiovascular diseases decreases as years of IPV exposure increase. This result appears particularly controversial and difficult to interpret; however, a possible hypothesis could be that women to cope with and endure their partner's violent behaviors immediately resort to coping strategies that are maladaptive such as smoking, abusing alcohol, and physical inactivity, strategies that are considered significant behavioral risk factors for the development of cardiovascular diseases, and which over time would tend to diminish and reduce their impact on women's health (Mozaffarian, Wilson, & Kannel, 2008; Liu, Logan, & Alhusen, 2020).

Psychological IPV victimization seems to have a more incisive negative impact on victims' physical health, as according to our results it appears to be also associated with the presence of a diagnosis of benign neoplasm (Cooker et al., 2000; Coker et al., 2017; Lacey et al., 2013). Suffering psychological IPV could indirectly affect other chronic long-term health conditions due to psychological stress (Yim & Kofman, 2019).

The experience of psychological IPV could be considered a source of severe stress (Johson & Pieters, 2015), and prolonged exposure to stress is associated with severe physical health problems (Halpern et al., 2017; Lutgendorf et al., 2005; Pozzi & Frajese, 2004).

In recent years, psycho-neuro-endocrine-immunology (PNEI) has underlined the link between the immune system, human physiology, mental states, and the connective system to find an explanation for complex physical diseases such as neoplasm (Bottaccioli & Bottaccioli, 2017). PNEI tries to identify the links between psychosocial stress, the immune system, and the state of health. Stress can interfere with the immune system's functioning, reducing its capability to destroy antigens, such as bacteria, viruses, and cancer cells, thus increasing the person's vulnerability to disease (Lutgendorf et al., 2005). PNEI supports the existence of a close link between emotional stress and various physical diseases, including chronic ones, as they represent the result of progressive wear and tear of the body systems and are considered stress-related diseases (Bottaccioli & Bottaccioli, 2017). Stress seems to be the leading cause of health problems: stressful factors can promote the imbalance of the autonomic nervous system, cardiovascular, immune, and metabolism, making the body more susceptible to the onset of diseases. Therefore, the physiological, biochemical, and endocrine alterations can be

caused by the stress linked to undergoing IPV (Scott-Storey, Wuest & Ford-Gilboe, 2009).

Victims of IPV would experience a continuous and prolonged state of stress that persists even after the relationship has ended, for example, having to undergo a legal process for maltreatment and a personal path to escape from IPV.

Conclusion

The results of our explorative study showed that psychological IPV suffered by a current partner or an ex-partner could be a significant risk factor associated with the presence of cardiovascular disease and benign neoplasm, highlighting the need to design, implement and validate primary prevention approaches aimed at increasing women' awareness and recognition of risks of psychological IPV (i.e., to identify all those situational, relational, individual, or 'alarm bells' risk factors) (Sherrill, Bell, & Wyngarden, 2016).

In particular, it would be helpful to work on the development, dissemination, and validation of online actuarial tools for self-assessment of the risk of suffering violence within an intimate relationship. The compilation of such a tool would allow all potential IPV victims to perform an initial assessment of their level of victimization risk and to obtain a profile of risk as feedback at the end of the compilation of the tool. Getting and reading a 'risk profile' could significantly raise awareness and perception of the risk of potential victims, an aspect that could potentially avoid exposure to violence and its negative consequences.

Furthermore, our results suggest sensitizing anti-violence center workers to encourage IPV victims to screen and monitor their physical health, promptly identify any disease or symptoms, and improve their physical health. Similarly, the medical and health personnel who treat physical diseases associated with undergoing IPV, if sufficiently trained, should investigate their patients' possible history of IPV victimization, thus playing a crucial role in identifying, supporting, and helping patients experiencing IPV.

Finally, it would be necessary at the national and international level to recognize the extent and impact that IPV has on the quality of life and physical health of victims to plan and implement coordinated and focused interventions at various levels (institutional, community, etc.), to intervene and mitigate the negative consequences of IPV. However, such interventions should be designed and closely linked to cultural and social change. It is essential to recognize that the first step in IPV victim protection is to reduce gender inequalities and eliminate violence against women (Lahi & Prezza, 2010).

Despite this, the present explorative study has some limitations. Due to the cross-sectional nature of our research, it was impossible to investigate the associations' directionality and temporal trend. Future longitudinal studies are needed to understand and investigate the possibility that exposure to IPV, mainly psychological IPV, causes the development of physical diseases such as cardiovascular disease and neoplasms. Another possible limitation is related to the simple size, thus affecting the generalizability of our results. The small sample in the study arises from the need to involve women victims of IPV. For this reason, similar to other studies (e.g., Romito, Feresin, Bastiani, & Saurel-Cubizolles, 2022 ; Quiroz Molinares et al., 2019), only women in charge of anti-violence centers from 2012 to 2016 and with a documented history of IPV suffered participated in the study.

A further possible limitation of this research is related to the measurement of IPV victimization, particularly sexual IPV. However, this choice was derived from the need to not re-victimize participants by asking them to recall the frequency and the types of sexual assaults experienced. For this reason, also considering the great variety of measures adopted across studies and the complexity related to this variable's measurement, and studies underlying that assessing sexual violence severity could lead to measurement errors (Hu et al., 2020; Anderson & Cuccolo, 2021; Anderson, Garcia & Delahanty, 2021), sexual IPV was assessed through a single dichotomous item of the CTS-2S scale (Straus & Douglas, 2004).

Finally, the use of telephonic interviews to collect data could be a further limitation. However, considering the possible emotional implications related to the nature of the topics investigated by the current study, we hypothesized that the telephone interview could be the most appropriate data collection method (Gregory, Feder, Taket, & Williamson 2017).

Despite the aforementioned limitations, this exploratory study shows a significant association between exposure to IPV and physical diseases, highlighting, in particular, that victims of psychological IPV are at a greater risk of reporting a diagnosis of cardiovascular diseases and neoplasm. However, further studies are needed to consider and evaluate the weight that contextual, historical factors and acute stressful events may have in determining or mediating this relationship (Epel et al., 2018).

Authors Contributions

A.S. and V.A. have contributed equally to the conceptualization, methodology, data collection, data analyses, original draft preparation, and writing of the present work.
All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors declare no conflict of interest.

Funding

This research received no external funding

Ethical approval

The Ethics Committee of the Psychology Department of the University of Campania "Luigi Vanvitelli" approved the study (protocol nr. 18/2016 approved on 27 September 2016). All ethical guidelines were applied, following the procedures defined by the American Psychological Association (APA), the Italian Association of Psychology (AIP), and the 1964 Helsinki declaration (with their and subsequent amendments)

References

Anderson, R. E., & Cuccolo, K. (2021). An experimental test of the impact of varying questionnaire response format on prevalence rates for sexual violence victimization and perpetration. *Journal of Interpersonal Violence*, 37(23-24), NP23541–NP23562. doi: 10.1177/0886260521106423.

Anderson, R.E., Garcia, M.A., & Delahanty, D.L. (2021). Test–retest reliabilities of four tactic-first sexual violence history questionnaires. *Psychology of Violence*, 11(6), 580-590.doi: 10.1037/vio0000384

Baldry, A.C. (2014). *Dai maltrattamenti all'omicidio. La valutazione del rischio di recidiva e dell'uxoricidio*. Milano: Franco Angeli. ISBN: 978-88-204-9200-7

Bonomi, A.E., Thompson, R.S., Anderson, M., Reid, R.J., Carrell, D., Dimer, J.A., & Rivara, F.P. (2006). Intimate partner violence and women's physical, mental, and social functioning. *American Journal of Preventive Medicine,* 30(6), 458-466. doi: 10.1016/j.amepre.2006.01.015.

Bottaccioli, F., & Bottaccioli A.G. (2017). Psiconeuroendocrinoimmunologia e scienza della cura integrata. Il manuale. Milano: Edizioni Edra. ISBN: 978-88-214-3766-3

Breiding, M. J., Basile, K., Smith, S. G., Black, M. C., & Mahendra, R. (2015). *Intimate partner violence surveillance uniform definitions and recommended data elements, version 2.0*. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. Retrieved from: https://stacks.cdc.gov/view/cdc/31292

Burelomova, A. S., Gulina, M. A., & Tikhomandritskaya, O. A. (2018). Intimate partner violence: An overview of the existing theories, conceptual frameworks, and definitions. *Psychology in Russia: State of the Art*, *11*(3), 128-144. doi: 10.11621/pir.2018.0309

Canu, R. (2008). *La violenza domestica contro le donne in Italia e nel contesto internazionale ed europeo. La Riflessione* (pp. 1-22). Cagliari: Davide Zedda Editore. ISBN: 886211088X

Cesario, S.K., McFarlane, J., Nava, A., Gilroy, H., & Maddoux, J. (2014). Linking cancer and intimate partner violence: the importance of screening women in the oncology setting. *Clinical Journal of Oncology Nursing*, 18(1), 65-73. doi: 10.1188/14.CJON.65-73.

Coker A.L., Smith, P.H., Bethea, L., King, M.R., & McKeown, R.E. (2000). Physical Health Consequences of Physical and Psychological Intimate Partner Violence. *Archives of Family Medicine*, 9(5), 451-457.doi: 10.1001/archfami.9.5.451.

Coker, A.L., Follingstad, D.R., Garcia, L.S., & Bush, H.M. (2017). Intimate Partner Violence and Women's Cancer Quality of Life. *Cancer Causes Control*, 28(1), 23-39. doi: 10.1007/s10552-016-0833-3.

Dancey, C. P., & Reidy, J. (2007). Statistics Without Maths for Psychology. London: Pearson Education. ISBN 978-0-132-05160-6

Del Casale, A., Modesti, M. N., Lai, C., Ciacchella, C., Veneziani, G., Barchielli, B., ... & Pompili, M. (2022). Calls to the anti-violence number in Italy during COVID-19 pandemic: correlation and trend analyses of violence reports during 2020. *Social Psychiatry and Psychiatric Epidemiology*, 57(12), 2503-2510. doi: 10.1007/s00127-022-02330-x

Devries, K. M., Mak, J. Y., Garcia-Moreno, C., Petzold, M., Child, J. C., Falder, G., ... & Watts, C. H. (2013). The global prevalence of intimate partner violence against women. *Science*, 340(6140), 1527-1528. doi: 10.1126/science.1240937

Dillon, G., Hussain, R., Loxton, D., & Rahman, S. (2013). Mental and physical health and intimate partner violence against women: A review of the literature. *International Journal of Family Medicine*. 5, 1-15. doi: 10.1155/2013/313909.

Drossman, D. A., Creed, F. H., Olden, K. W., Svedlund, J., Toner, B. B., & Whitehead, W. (1999). Psychosocial aspects of the functional gastrointestinal disorders. *Gut*, 45(suppl 2), 1125-1130.

Ellsberg, M., Jansen, H.A., Helse, L., Watts, C.H., & Garcia-Moreno, C. (2008). Intimate partner violence and women's physical and mental health in the WHO multi-country study on women's health and domestic violence: an observational study. *The Lancet*, 371(9619), 1165-1172. doi: 10.1016/S0140-6736(08)60522-X.

Epel, E. S., Crosswell, A. D., Mayer, S. E., Prather, A. A., Slavich, G. M., Puterman, E., & Mendes, W. B. (2018). More than a feeling: A unified view of stress measurement for population science. *Frontiers in Neuroendocrinology*, 49, 146–169. doi: 10.1016/j.yfrne.2018.03.001.

European Institute for Gender Equality (2021). *The Covid-19 pandemic and intimate partner violence against women in the EU*. Retrieved from https://eige.europa.eu/publications/covid-19-pandemic-and-intimate-partner-violence-against-women-eu

García-Moreno, C., Heise, L., Jansen, H. A., Ellsberg, M., & Watts, C. (2005). Violence against women. *Science*, *310*(5752), 1282-1283. doi:10.1126/science.1121400

García-Moreno, C., Zimmerman, C., Morris-Gehring, A., Heise, L., Amin, A., Abrahams, N., Montoya, O., Bhate-Deosthali, P., Kilonzo, N., & Watts, C. (2015). Addressing violence against women: a call to action. *The Lancet*, *385*(9978), 1685-1695. doi: 10.1016/S0140-6736(14)61830-4

Gregory, A., Feder, G., Taket, A., & Williamson, E. (2017). Qualitative study to explore the health and well-being impacts on adults providing informal support to female domestic violence survivors. *British Medical Journal Publishing Group Open*, *7*(3), 1-9. doi: 10.1136/bmjopen-2016-014511.

Halpern, L.R., Shealer, M.L., Cho, R., McMichael, E.B., Rogers, J., Ferguson-Young, D., Mounton, C.P., Tabatabai, M., Southerland, J., & Gangula, P. (2017). Influence of intimate partner violence (IPV) exposure on cardiovascular and salivary biosensors: is there a relationship? *Journal of the National Medical Association*. 109(4), 252–261. doi: 10.1016/j.jnma.2017.08.001.

Harding, H. G., Morelen, D., Thomassin, K., Bradbury, L., & Shaffer, A. (2013). Exposure to maternal-and paternal-perpetrated intimate partner violence, emotion regulation, and child outcomes. *Journal of Family Violence*, *28*(1), 63-72. doi 10.1007/s10896-012-9487-4.

Hindin, P., Btoush, R., Brown, D.R., & Munet-Vilaro, F. (2015). Intimate partner violence and risk for cervical cancer. *Journal of Family Violence,* 3(8), 1031-1043. doi: 10.1007/s10896-015-9733-7.

Hu, R., Xue, J., Lin, K., Sun, I. Y., Wu, Y., & Wang, X. (2021). The patterns and influencing factors of help-seeking decisions among women survivors of intimate partner violence in China. *Journal of Family Violence*, *36*(6), 669-681. doi: 10.1007/s10896-020-00145-5.

ISTAT (2006). *La violenza e imaltrattamenticontro le donnedentro e fuori la famiglia* [*Violence and Abuses against Women inside and Outside Family*]. Retrieved from: https://www.istat.it/it/archivio/34552.

ISTAT (2014). *La violenza contro le donne dentro e fuori la famiglia [Violence against Women]*. Retrieved from: https://www.istat.it/it/violenza-sulle-donne/il-fenomeno/violenza-dentro-e-fuori-la-famiglia e https://www.istat.it/it/violenza-sulle-donne/il-fenomeno/violenza-dentro-e-fuori-la-famiglia/gravita-e-conseguenze

ISTAT (2021). *Richieste di aiuto durante la pandemia*. Retrieved from https://www.istat.it/it/archivio/257704

Johson, W.A., & Pieters, H.C. (2015). Intimate partner violence among women with cancer. *Cancer Nursing*, 39(2), 87- 96. doi: 10.1097/NCC.0000000000000265.

Lacey, K., McPherson, M.D., Samuel, P.S., Powell Sears, K., & Head, D. (2013).The Impact of Different Types of Intimate Partner Violence on the Mental and Physical Health of Women in Different Ethnic Groups. *Journal of Interpersonal Violence*. 28(2) 359–385. doi: 10.1177/0886260512454743.

Lahi, M., & Prezza, M. (2010). Le conseguenze della violenza domestica sul benessere fisico delle donne. *Maltrattamento e Abuso all'Infanzia*, 12(1), 89-110. doi: 10.3280/MAL2010-001006.

Larsen, M. L., Hilden, M., & Lidegaard, Ø. (2015). Sexual assault: a descriptive study of 2500 female victims over a 10-year period. *Sexual Health*, 122 (4), 577-584. doi: 10.1111/1471-0528.13093è

Liu, X., Logan, J., & Alhusen, J., (2020). Cardiovascular Risk and Outcomes in Women Who Have Experienced Intimate Partner Violence: An Integrative Review. *Journal of Cardiovascular Nursing*, 35(4), 400–414. doi: 10.1097/JCN.0000000000000654.

Lutgendorf, S.K., Sood, A.K., Anderson, B., McGinn, S., Maiseri, H., Dao, M., & Lubaroff, D.M. (2005). Social support, psychological distress, and natural killer cell activity in ovarian cancer. *Journal of Clinical Oncology,* 23(28), 7105-7113. doi: 10.1200/JCO.2005.10.015.

Mason, S.M., Wright, R.J., Hibert, E.N., Spiegelman, D., Forman, J.P., & Rich-Edwards, J.W. (2012). Intimate partner violence and incidence of hypertension in women. *Annals of Epidemiology*. 22(8), 562–567. doi: 10.1016/j.annepidem.2012.05.003.

Matheis, A., Martens, U., Kruse, J., & Enck, P. (2007). Irritable bowel syndrome and chronic pelvic pain: A singular or two different clinical syndrome?. *World Journal of Gastroenterology*, 13(25), 3446-3455. doi: 10.3748/wjg.v13.i25.3446.

McNeil, A., Hicks, L., Yalcinoz-Ucan, B., & Browne, D. T. (2023). Prevalence & Correlates of Intimate Partner Violence During COVID-19: A Rapid Review. *Journal of Family Violence*, 38, 241–261. doi: 10.1007/s10896-022-00386-6

Mozaffarian, D., Wilson, P.W.F., & Kannel, W.B. (2008). Beyond established and novel risk factors: lifestyle risk factors for cardiovascular disease. *Circulation*, 117(23), 3031–3038. doi: 10.1161/CIRCULATIONAHA.107.738732.

Pence, E., & Paymar, M. (1993). *Education groups for men who batter: The Duluth model*. New York: Springer Publishing Company. ISBN: 0-8261-7990-8

Perona, M., Benasayag, R., Perello, A., Santos, J., Zarate, N., Zarate, P., & Mearin, F. (2005). Prevalence of functional gastrointestinal disorders in women who report domestic violence to the police. *Clinical Gastroenterology & Hepatology*, 3(5), 436-441. doi: 10.1016/S1542-3565(04)00776-1.

Pico-Alfonso, M. A., Garcia-Linares, I. M., Celda-Navarro, N., Blasco-Ros, C., Echeburúa, E., & Martinez, M. (2006). The impact of physical, psychological, and sexual intimate male partner violence on women's mental health: depressive symptoms, posttraumatic stress disorder, state anxiety, and suicide. *Journal of Women's Health*, 15(5), 599–611. doi: 10.1089/jwh.2006.15.599.

Pozzi, F., & Frajese, G. (2004). Regolazione neuroendocrina dello stress: recenti acquisizioni. *NÓOς*, 10(4), 143-154.

Quiroz Molinares, N., Daugherty, J. C., Mejía Villarreal, R., Hidalgo-Ruzzante, N., & De los Reyes Aragón, C. J. (2019). Intimate partner violence-related injuries among Colombian women. *Violence and Gender*, *6*(3), 196-199. doi: 10.1089/vio.2018.0034

Romito, P., De Marchi, M., & Gerin, D (2008). Le conseguenze della violenza sulla salute delle donne. *Rivista Società Italiana di Medicina Generale e delle Cure Primarie (SIMG)*, 3, 34-6.

Romito, P., Feresin, M. C., Bastiani, F., & Saurel-Cubizolles, M. J. (2022). Psychological symptoms and intensity of partner violence: A study of women attending an anti-violence center in Italy. Health Care for Women International, 43(7-8), 931-945. doi.org/10.1080/07399332.2022.2039148

Ruiz-Pérez, I., Plazaola-Castaño, J., & del Río-Lozano, M. (2007). Physical health consequences of intimate partner violence in Spanish women. *The European Journal of Public Health*, 17(5), 437-443. doi: 10.1093/eurpub/ckl280.

Sawin, E.M., Laughon, K., Parker, B.J., & Steeves, R.H. (2009). Breast cancer in the context of intimate partner violence: a qualitative study. *Oncology Nursing Forum*, 36(6), 686-692. doi: 10.1188/09.ONF.686-692.

Scott-Storey K, Wuest J, & Ford-Gilboe, M. (2009). Intimate partner violence and cardiovascular risk: is there a link? *Journal of Advanced Nursing*, 65(10), 2186–2197. doi: 10.1111/j.1365-2648.2009.05086.x.

Sherrill, A. M., Bell, K. M., &Wyngarden, N. (2016). A qualitative examination of situational risk recognition among female victims of physical intimate partner violence. *Violence against Women*, *22*(8), 966-985. doi:10.1177/1077801215616706

Stene, L.E, Jacobsen, G.W., Dyb, G., Tverdal, A., & Schei, B. (2013) Intimate partner violence and cardiovascular risk in women: a population based cohort study. *Journal of Womens Health*. 22(3), 250–258. doi: 10.1089/jwh.2012.3920.

Straus, M. A., & Douglas, E. M. (2004). A short form of the Revised Conflict Tactics Scales, and typologies for severity and mutuality. *Violence and victims*, 19(5), 507-520. doi: 10.1891/088667004780927800.

United Nations Office on Drugs and Crime (UNODC) (2018). *Global study on homicide 2018: Gender-related killing of*

women and girls. Vienna: UNODC. Retrieved from: https://www.unodc.org/documents/data-and-analysis/GSH2018/GSH18_Gender-related_killing_of_women_and_girls.pdf

Vos, T., Astbury, J., & Piers, L. S., (2006). Measuring the impact of intimate partner violence on the health of women in Victoria, Australia. *Bulletin of the World Health Organization*, 84(9), 739–744. doi: 10.1590/S0042-96862006000900017.

Walker, L.E. (1979). *The battered women*. New York: HarperCollins. ISBN: 978-0060145828

Wathen, C. N., MacGregor, J. C. D., &MacQuarrie, B. J. (2016). Relationships Among Intimate Partner Violence, Work, and Health. *Journal of Interpersonal Violence,* 33(14), 2268-2290. doi: 10.1177/0886260515624236.

Wong, J., & Mellor, D. (2014). Intimate partner violence and women's health and wellbeing: impacts, risk factors and response. *Contemporary Nurse,* 46(2), 170-179. doi: 10.5172/conu.2014.46.2.170.

World Health Organization (2002). *The World Health Report 2002: Reducing Risks, Promoting Healthy Life*. Ginevra: World Health Organization. ISBN: 92 4 154561 5

World Health Organization (2004). *The World Health Report, 2004: Changing History*. Ginevra: World Health Organization. ISBN: 92 4 156265 X. ISSN: 1020-3311

World Health Organization (2005). *WHO Multi-Country Study on Women's Health and Domestic Violence against women: initial results on prevalence, health outcomes and women's responses.* Ginevra: World Health Organization. ISBN: 924159358X

World Health Organization (2012). *Understanding and Addressing Violence Against Women: Intimate Partner Violence* . Retrieved fromhttps://apps.who.int/iris/handle/10665/77432.

World Health Organization (2013). *Global and regional estimates of violence against women: prevalence and health burden of intimate partner violence and non-partner sexual violence*. Ginevra: World Health Organization. ISBN: 978 92 4 156462 5

Yim, I. S., &Kofman, Y.B. (2019). The psychobiology of stress and intimate partner violence. *Psychoneuroendocrinology,* 105, 9-24. doi: 10.1016/j.psyneuen.2018.08.017.