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Original article

Impact of violence against women on quality of life and menopause-related disorders

Loreto Mendoza-Huertas [a], Nicolás Mendoza [a,*], Débora Godoy-Izquierdo [b]

[a] Department of Obstetrics & Gynaecology, Faculty of Medicine, University of Granada, Avda. de la Investigación 11, 18071 Granada, Spain
[b] Department Personality and Psychological Assessment & Treatment, Faculty of Psychology, University of Granada, C.U. Cartuja w/n, 18071 Granada, Spain

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ABSTRACT

Violence against women is a pressing global issue that poses a number of significant health risks. The influence of violence on women's health during the menopause has been underestimated, especially its impact on the early onset of menopause and on the exacerbation of symptoms that determine quality of life.

The objectives of our study were to analyse whether experiencing any type of violence increases the risk of early menopause, worsens menopausal symptoms, and results in a lower quality of life.

This cross-sectional observational study recruited 29 postmenopausal women who had experienced violence from a partner in their lifetimes. Additionally, 89 postmenopausal who had not suffered from violence were included as a control group. All the women who had experienced violence from a partner reported psychological and economic violence, 75 % reported physical violence, 57.1 % reported sexual violence, and 39.3 % reported all types of violence.

Violence was found to be associated with menopausal symptoms and poorer quality of life. These associations persisted after adjustment for multiple factors, and women who had experienced any form of violence reported a worse quality of life during menopause. Moreover, violence-exposed women reached menopause approximately 20 months earlier ($p < 0.05$), and 20.7 % of these women developed premature ovarian insufficiency ($p < 0.001$).

1. Introduction

Violence against women (VAW) is a pressing global issue that poses a number of significant health risks. Although we currently lack precise data on the number of women who have been victims of VAW, it is a pervasive social problem, with at least one in four women reaching menopause estimated to have experienced VAW [1].

Given the impaired neuroendocrine function observed in women who have experienced VAW, it is of interest to examine whether VAW can cause long-lasting effects even years after it has occurred [2]. A recent systematic review and meta-analysis found that a lifetime history of VAW is associated with increased menopausal symptoms and worse physical, sexual, and psychological health in both perimenopausal and postmenopausal women [3].

Therefore, it is necessary to investigate the influence of VAW on women's health during menopause, with a particular focus on its impact on other conditions, such as early onset of menopause and the exacerbation of symptoms that, in turn, determine quality of life (QoL).

The objectives of our study were to analyse whether experiencing any type of VAW increases the risk of early menopause, worsens menopausal symptoms, and results in a lower QoL.

2. Methods

This cross-sectional study is part of a larger project that specifically targets postmenopausal women who have experienced VAW during their lives. As described in the corresponding research paper, VAW is defined as "any act of violence against an individual belonging to the female gender that results in physical, sexual, or psychological harm or suffering for the woman, as well as threats of such acts, coercion, or arbitrary deprivation of liberty, whether this occurs in public or private life" [4]. In addition, economic violence was defined as the control of a woman's ability to obtain economic resources that limits her self-sufficiency.

In this observational study, we recruited postmenopausal women who had experienced VAW at some point in their lives and who had

* Corresponding author.
E-mail addresses: nicomendoza@ugr.es (N. Mendoza), deborag@ugr.es (D. Godoy-Izquierdo).

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either reported VAW or sought medical advice for menopause-related issues.

Women with pre-existing endocrine or gynaecological diseases before experiencing VAW were excluded. A control group consisted of postmenopausal women who attended the same clinic on the same date and who had not suffered from VAW, according to a self-report.

2.1. Measures

Clinical data were gathered during the medical interviews, paying special attention to menopausal symptoms and any associated disorders. Additionally, the use of medications or toxic substances related to the history of VAW was recorded. Menopausal symptoms and QoL were evaluated by the Cervantes Scale in all cases. The Cervantes Scale is a Spanish validated questionnaire to measure health-related quality of life in perimenopausal and menopausal women. Information was gathered on independent variables directly related to the type of VAW suffered (economic, psychological, sexual, or physical) and dependent variables [5].

Other variables that could potentially influence the history of VAW were also documented, such as socio-demographic factors (age, age at menopause, educational level, employment status, marital status, and size of locality), as well as lifestyle-related control variables (body mass index -BMI-, and tobacco or alcohol consumption). Age at menopause was defined as age at the last menstrual period.

2.2. Data analysis

Analysis of data distribution, normality, and homoscedasticity were conducted to determine the appropriate statistical tests. Student's *t*-test for independent samples was used for between-group comparisons, while Pearson's chi-square test was used for categorical variables. Analyses of covariance (ANCOVAs) were used to control for covariates. Multivariate regression analyses were employed to explore the predictors of menopause-related QoL. In cases where it was possible to quantify the effect of VCM on the risk of menopausal symptoms or poorer quality of life, the odds ratio (OR) was calculated for each category using logistic regression.

2.3. Ethical considerations

This study was approved by the FIBAO ethics committee (file number 6hWMS752PFIRMAVHc6wPtZT2 + f1x4Y).

All personal data obtained in this study were confidential and stored and processed following the EU Regulation 2016/679 of the European Parliament. Individuals participating in this study were able to exercise the rights of access, rectification, deletion, limitation of processing, data portability, and opposition established in the regulation mentioned above.

All women involved in the study gave their informed written consent.

3. Results

No missing data was detected, except a missing value for education level. Preliminary analyses conducted with total and partial QoL scores to check data accuracy and distribution revealed acceptable skewness and kurtosis. Although Shapiro-Wilk's test of normality was significant for most of the variables, Levene's test for homogeneity of variances (VAW vs. controls) was non-significant for all variables (Supp. File). Therefore, we decided to use parametric tests.

A total of 118 postmenopausal women aged 40 to 68 years met the eligibility criteria and completed all the surveys (mean age ± standard deviation = 52.5 ± 5.7). Of the sample, 29 women (24.6 %) had experienced VAW at some point in their lives. Specifically, 24 of them had reported experiencing VAW prior to their inclusion in the study, while five admitted to having experienced VAW during the first interview. Twenty-eight of the participants (96.5 %) reported a history of intra-partner violence, while one woman reported sexual violence by a man other than her partner. Among the women who had experienced intra-partner violence, all of them reported instances of psychological and economic violence, 75 % reported incidents of physical violence, 57.1 % reported occurrences of intra-partner sexual violence, and 39.3 % reported experiencing all types of violence.

Regarding socio-demographic characteristics, no differences were found between women with or without VAW experience in terms of age, marital status, locality, alcohol consumption, osteoporosis or other comorbidities (breast cancer, type 2 diabetes or hypothyroidism), as well as use of treatments for menopausal symptoms. However, differences were found in educational level, employment status, treatment for anxiety or depression, body mass index (BMI), and smoking (Table 1).

3.1. Association between violence and age at menopause

The mean age at menopause was 46.83 (±4.34) years for women who experienced VAW, while for control women without VAW, it was 48.52 (±2.69) ($t = -1.979$, $p < 0.05$; 95 % CI: −3.029 – −0.350).

A total of 20.7 % of women who had experienced VAW also suffered from premature ovarian insufficiency (POI), compared to 2.2 % of

Table 1
Socio-demographic characteristics of study participants.

	VAW Group (n = 29)	Control Group (n = 89)	p
Place of residence (number of inhabitants) (%)			0.083
— <30,000	44.8	25.8	
— 30–100,000	31	29.2	
— >100,000	2.4	45	
Education level (%)			<0.001
— Basic studies	79.3	16.9	
— College degree	6.9	24.8	
— Graduate degree	13.8	57.3	
Employment status (%)			<0.001
— Housewife	6.2	11.2	
— Active	37.9	76.4	
— Unemployed	0	7.9	
— Disabled/retired	0	4.5	
Relationship status (%)			0.222
— No partner	24.1	11.2	
— Casual	24.1	25.9	
— Stable	51.2	62.9	
Tobacco use (%)			0.020
— No	65.6	76.4	
— Ex-smoker	17.2	9	
— Occasional	17.2	3.4	
— Daily	0	11.2	
Alcohol consumption (%)			0.172
— No	75.9	59.6	
— Occasional	17.2	19.1	
— Daily	6.9	21.3	
Use of psychotropic drugs for depression or anxiety (SSRI, SNRIs, antipsychotics) (%)	75.9	19.1	<0.001
Osteoporosis (%)	7.9	13.5	0.341
Other medical conditions (%)			0.086
— Type 2 diabetes	6.9	4.5	
— Breast cancer	10.3	4.5	
— Hypothyroidism	6.9	3.4	
Medication for menopausal symptoms (%)			0.379
— Menopausal hormonal therapy	3.4	4.5	
— Phytoestrogens	6.9	1.1	
BMI (mean, SD)	26.4 (5.3)	24.1 (4.7)	<0.05
Age (mean, SD)	53.1 (7.0)	52.3 (5.2)	0.582

BMI = body mass index; SD = standard deviation; SNRIs = selective serotonin reuptake inhibitor; SSRI = selective serotonin reuptake inhibitor; VAW = violence against women.

women in the control group (X2 = 11.771, p < 0.001).

3.2. Association between violence and menopausal symptoms

Women who have been victims of VAW scored significantly higher on the Cervantes Scale (i.e., greater negative impact of menopause on perceived QoL) compared to control women. On average, scores among VAW victims were two-fold higher, and three-fold higher in the Intimate relationships' domain (Table 2). We also examined whether there were differences based on the type of VAW experienced. Since we observed that all victims of psychological abuse had also experienced economic VAW, we restricted our analyses to physical, psychological/economic, and sexual forms of VAW. Menopause-related QoL was significantly lower for women experiencing psychological/economic, physical, and sexual violence (Table 3).

When menopausal symptoms were analysed, it was observed that VAW victims reported a higher frequency and intensity of these symptoms (when measured) compared to non-victims (see Table 4).

3.3. Covariation and regression analyses

Correlation analyses were conducted to explore the relationships between scores on the QoL scale and sociodemographic, clinical, and lifestyle variables and to select possible confounders of VAW. Moreover, multivariate regression analyses controlling for confounders indicated that VAW is a unique of worsened QoL in general in all domains; in addition, a few covariates were also significant predictors (e.g., education level, alcohol intake).

An initial ANCOVA rejected age, age at menopause, BMI, POI, and smoking as covariates of QoL scores. ANCOVAs conducted controlling for marital status, education level, alcohol intake, and psychiatric therapy (fixed factors) revealed significant between-group differences for all scores except the Menopause and Health domain [5]. In all domains, except for the Menopause and Health domain, the experience of any type of violence was associated with impaired menopause-related QoL after accounting for confounding factors. The explained variance ranged from 4 to 17 %, with the largest effects being observed for the Sexuality and Intimate relationships domains. Overall, VAW explained 21 % of global menopause-related QoL.

Finally, we conducted logistic regression analyses to calculate the ORs for decreased QoL because of VAW. Women were categorised into two groups based on normative data [5]: those with high QoL (<norms average) or low QoL (≥norms average). Table 5 presents the findings for the global score on the QoL scale after excluding non-significant confounding variables. Notably, women residing in small localities, with lower levels of self-reported osteoarticular pain and psychological symptoms, but having higher alcohol intake, were less likely to report decreased QoL. Furthermore, women with no history of VAW had a 97 % lower risk of decreased QoL compared to those with a history of VAW.

Table 2
Quality of life scale scores and violence.

Domain	VAW group M (SD)	Control group M (SD)	t 95 % CI (low – high)	P value
Menopause & health	51.5 (16.4)	35.8 (18.5)	4.071 (8.063–23.346)	<0.001
Psychological	69.0 (23.7)	36.1 (25.2)	6.194 (22.360–43.379)	<0.001
Sexual	83.1 (23.8)	39.9 (26.6)	7.798 (32.240–54.192)	<0.001
Couple	84.8 (33.1)	26.2 (25.6)	9.947 (46.974–70.331)	<0.001
Total QoL score	72.2 (18.1)	34.6 (15.2)	11.013 (30.856–44.388)	<0.001

QoL = quality of life; VAW = violence against women.

4. Discussion

Despite the growing recognition of VAW as a critical issue for women's overall health, there remains a lack of studies that adequately investigate its long-term impact, particularly concerning the health problems that may develop during mid-life and the postmenopausal stage. It is estimated that, for every woman who loses her life due to VAW, >400 suffer varying degrees of severe disability. This number rises dramatically when considering other less severe or "silent" disabilities, many of which share clinical similarities with menopausal symptoms [6,7]. VAW has been associated with increased long-term health risks, spanning a range of issues from chronic pain in different areas of the body to severe sexual and psychological disorders [2,8]. In addition, women who have suffered VAW at any point in their lives also tend to experience worse menopausal symptoms [3,9].

In the current study, we have found that experiencing any form of VAW at any point in a woman's life was associated with a poorer postmenopausal QoL. These findings contribute to the limited body of literature on the impact of all types of VAW —both recent and past— on menopausal symptoms [2,3,10]. Notably, a history of VAW was associated with more severe menopausal symptoms across all domains, including somatic, psychological, and sexual symptoms [11,12]. In our study, we observed a robust association in all domains, with the most pronounced impact being evident in the psychological, sexual, and couple-related domains. Although less pronounced, significant associations were also observed in the menopause and health domain.

Multivariate analysis revealed the significant impact of VAW on lower QoL scores, suggesting that there is a component of VAW associated with menopausal symptoms that is not explained by other variables included in this study such as age, partner status, education level, employment status, or use of menopausal therapies. Overall, VAW explained 21 % of global menopause-related QoL and women who had not experienced VAW had a 97 % lower risk of decreased QoL when compared to women with a history of VAW.

The strengths of the current study include the comprehensive assessment of the types of VAW suffered and their impact on global QoL and specific domains, including menopausal symptomatology. The use of a robust and validated instrument, the Cervantes Scale, tailored to Spanish postmenopausal women, as well as the adjustment for multiple potentially influential factors on these symptoms, all contribute to the reliability of the findings.

The limitations of the study primarily concern the sample size. As already noted in the parent research report [4], this reflects the challenges faced by these women in attending health centres. These difficulties arise both due to personal obstacles faced by the women themselves and because of the administrative barriers imposed by political parties opposed to the concepts related to VAW and to the integral attention of women who are victims of VAW.

Neurobiological and epigenetic mechanisms have been proposed to explain the relationship between VAW and increased severity of menopausal symptoms [13,14]. Such mechanisms are also thought to be involved in the earlier age of menopause and its long-term effects. While some explanations point directly to hypoestrogenism, others suggest alterations in the sympathetic nervous system, the hypothalamic-pituitary-adrenal axis, or the serotonergic pathways following VAW [15,16]. In addition, the increased prevalence of psychiatric problems among women who have experienced VAW may influence their perception of menopausal symptoms, which could result in altered pain thresholds and the perceptions of symptoms such as hot flashes or insomnia [17]. It is highly likely that there are other undiscovered brain pathways linking VAW and menopausal symptomatology, opening up interesting avenues for future research. In this regard, it is worth noting that VAW suffered in childhood or at a young age has been linked to alterations in the perception of certain symptoms and behaviours in adulthood, potentially even increasing the risk of cognitive impairment [18].

Table 3
Quality of life scale scores and type of VAW.

	Psychological/economic VAW			Sexual VAW			Physical VAW		
Domain	VAW (n = 28) M (SD)	Control (n = 90) M (SD)	t 95 % CI (low – high)	VAW (n = 16) M (SD)	Control (n = 102) M (SD)	t 95 % CI (low – high)	VAW (n = 21) M (SD)	Control (n = 97) M (SD)	t 95 % CI (low – high)
Menopause-health	51.08 (16.54)	36.08 (18.65)	−3.812* (−22.794 to −7.207)	55.60 (14.05)	37.13 (18.74)	−3.772* (−28.159 to −8.767)	53.18 (16.11)	36.71 (18.62)	−3.759* (−25.158 to −7.795)
Psychological	68.36 (23.84)	36.68 (25.59)	−5.809* (−42.473 to −20.875)	74.19 (21.07)	39.49 (26.65)	−4.963* (−48.547 to −20.853)	67.64 (25.33)	39.12 (26.65)	−4.483* (−41.118 to −15.920)
Sexual	84.29 (23.32)	40.00 (26.44)	−7.949* (−55.320 to −33.252)	91.25 (15.00)	44.12 (28.95)	−9.985* (−56.707 to −37.558)	80.95 (25.48)	43.92 (29.25)	−5.374* (−50.684 to −23.386)
Couple	87.86 (29.35)	25.89 (25.57)	−10.809* (−73.329 to −50.617)	93.75 (25.00)	32.26 (31.74)	−8.790* (−75.955 to −47.033)	85.24 (33.10)	30.93 (30.72)	−7.246* (−69.164 to −39.470)
QoL total score	73.00 (17.88)	34.75 (15.25)	−11.117* (−45.064 to −31.435)	78.39 (11.06)	38.41 (19.04)	−11.946* (−46.805 to −33.157)	71.90 (19.81)	37.75 (18.43)	−7.598* (−43.046 to −25.244)

VAW = violence against women; QoL = quality of life. Note. Bonferroni's correction when homoscedasticity was not confirmed.
* $p < 0.001$.

Table 4
Menopausal symptoms.

	VAW group	Control group	P value
Insomnia (%)			<0.001
— No	3	45	
— Yes	26	44	
Hot flashes/day (%)			0.011
— No	7	48	
— 1–4	22	34	
— 5–9	0	3	
— 10–20	0	2	
— >20	0	2	
Sweating crises (%)			<0.001
— No	6	59	
— Yes	23	30	
Irritability (%)			0.979
— No	18	55	
— Yes	11	34	
Dysthymia (%)			<0.001
— No	3	60	
— Yes	26	29	
Vaginal dryness (%)			<0.001
— No	5	38	
— Mild	24	20	
— Moderate	0	18	
— Severe	0	13	
Dyspareunia (%)			<0.001
— No	2	59	
— Yes	27	30	
Reduced sexual desire (%)			0.001
— No	25	47	
— Yes	4	42	

VAW = violence against women.

Table 5
Risk for decreased QoL due to VAW.

	B	Standard error	Wald	gl	Sig.	Exp(B)
Place of residence	−0.981	0.331	8.753	1	0.003	0.375
Alcohol consumption	1.168	0.352	10.990	1	<0.001	3.217
Psychotropic drugs use	−1.666	0.759	4.826	1	0.028	0.189
Osteoarticular pain	−1.755	0.598	8.625	1	0.003	0.173
VAW	−3.405	1.005	11.487	1	<0.001	0.033
Constant	2.397	0.966	6.194	1	0.013	10.992

QoL = quality of life; VAW = violence against women.

4.1. Age at menopause, POI, and history of VAW

The data on earlier age of menopause and the risk of developing POI are particularly intriguing. Women who had experienced VAW reached menopause approximately 20 months earlier compared to their non-exposed counterparts, one in five experiencing menopause under the age of 40. While the far-reaching consequences of VAW, especially in terms of mental and cardiovascular health, are well-documented and associated with increased premature mortality from causes other than physical aggression [2,3,10–12], there is limited evidence on the association between VAW and earlier menopause or increased risk of POI. To our knowledge, this is the first published account detailing the risk of accelerated menopause due to VAW.

Although the precise reasons for this finding remain unclear, it could potentially be attributed to the greater propensity of these women to engage in behaviours such as the use of psychotropic drugs and harmful habits such as smoking, which are more frequently observed in this group. All forms of VAW predispose women to lifestyle-related risk factors, increasing the risk of more severe menopausal symptoms and earlier onset of menopause. For instance, smoking has been associated with a one-year reduction in age at natural menopause and could potentially explain the relationship between VAW and early menopause [19]. However, according to our multifactorial analysis, this advancement was not dependent on these factors, suggesting that VAW itself may itself contribute to the earlier onset of menopause.

Another plausible explanation revolves around the increased risk of gynaecological interventions in women exposed to VAW, potentially due to the increased risk of diseases that necessitate such procedures (infections, tumours) [20]. However, in our study, only one patient underwent hysterectomy and double adnexectomy, but it was not the cause of POI. Nevertheless, we should be cautious about this association between VAW and POI due to the small sample size, which will require further studies.

5. Conclusion

In this cross-sectional study, VAW was found to be associated with menopausal symptomatology and poor QoL. These associations persisted after adjustment for multiple factors, and women who had experienced any form of VAW showed a worse QoL during menopause. Moreover, VAW-exposed women reached menopause approximately 20

months earlier, 20.7 % of whom developed POI.

Experiencing any form of VAW at any point in a woman's life can have a detrimental impact on her overall health, particularly during mid-life and postmenopausal stages.

Contributors

Loreto Mendoza-Huertas contributed to conception and design of the study, acquisition, analysis and interpretation of data, and drafting and revising the article critically for important intellectual content.

Nicolás Mendoza conception and design of the study, analysis and interpretation of data, and drafting and revising the article critically for important intellectual content.

Débora Godoy-Izquierdo contributed to conception of the manuscript and analysis and interpretation of data, and drafting and revising the article critically for important intellectual content.

All authors have seen and approved the final version of the manuscript, and warrant that the article is the authors' original work, has not been published previously, is not under consideration for publication elsewhere, and will not be published elsewhere in any format.

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Ethical approval

This study was approved by the FIBAO ethics committee (file number 6hWMS752PFIRMAVHc6wPtZT2+f1x4Y). All personal data obtained in this study were confidential and stored and processed following the EU Regulation 2016/679 of the European Parliament. Individuals participating in this study were able to exercise the rights of access, rectification, deletion, limitation of processing, data portability, and opposition established in the regulation mentioned above. All women involved in the study gave their informed written consent.

Provenance and peer review

This article was not commissioned and was externally peer reviewed.

Research data (data sharing and collaboration)

There are no linked research data sets for this paper. Data will be made available on request.

Declaration of competing interest

The authors declare that they have no competing interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.maturitas.2023.107899.

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