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Original Research

Impact of Violence against Women on Sexual and Reproductive Health: Research Protocol and Results from a Pilot Study

Loreto Mendoza-Huertas[1,2], Nicolas Mendoza[1,*]

[1]Department of Obstetrics and Gynecology, University of Granada, 18004 Granada, Spain
[2]Jaen-South Health District, 23009 Jaen, Spain
*Correspondence: nicomendoza@telefonica.net (Nicolas Mendoza)
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Abstract

Objectives: Violence against women (VAW) is associated with a deterioration of endocrine function with consequences similar to those of premature ovarian failure in women. The main objective of this study is to evaluate the hormonal repercussions of VAW and, secondly, to analyse the cardio-metabolic, bone, cognitive, psychological, and psychosexual consequences of hypoestrogenism secondary to VAW. **Materials and Methods**: A cross-sectional study will be conducted on women of any age who have suffered VAW at some point in their lifespan, whether psychological, sexual, or physical. Clinical, hormonal, cardio-metabolic, bone, psychological, and psychosexual parameters will be analysed. **Results**: The pilot study from the first 23 women show that all of them are suffering from severe sexual dysfunction. In addition, all women reported menstrual irregularity and hypoestrogenism (including two cases of premature ovarian failure) since the VAW episode. **Conclusions**: VAW is a pandemic that affects all women equally, regardless of their age, status, social background, or education. Despite the claims made by certain groups, VAW does not depend on women, but rather it affects women and is clearly harmful to their sexual, reproductive, and general health.

Keywords: violence against women; sexual assault; intimate violence; abuse; mistreatment

1. Introduction

Violence against women (VAW) includes all psychological abuse, coercion, threats and violent acts of any kind (sexual or physical) [1]. Increasing evidence suggests that it is a global pandemic [2,3].

The scale of the problem is reflected in the fact that more than one million women of all ages in the West have experienced VAW in recent years. In addition to those killed by VAW, the high number of women who are severely disabled by VAW is also of concern [4,5].

Hormonal disturbances after VAW have also been described, so it is important to determine whether these are prolonged, and whether their consequences are like those of hypoestrogenism [6,7].

In addition, VAW at any time in life has been found to worsen menopausal symptomatology and physical and sexual health conditions in later life [8,9].

Given these observations, we propose the Hormonal Impact Maltreated European Mujer (HIMEM) study, which aims to make VAW visible in women's health consultations in general and in endocrine gynaecology in particular. Furthermore, we suggest that active screening for VAW should be considered in any situation, particularly in women with symptoms of hypoestrogenism or impaired sexual function. In addition to the direct consequences of VAW, these women are at increased risk for other disabilities, which are sufficiently disturbing to warrant concern.

2. Methods

2.1 Study Design

This study will employ an analytical observational case-control design using face-to-face interviews.

2.2 Study Population

The study population consists of women who have suffered any act of VAW at some point in their lives. 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.

2.3 Inclusion and Exclusion Criteria

Inclusion criteria: Women over 18 years of age who have suffered VAW and have requested help or have reported such violence. This will be established at the discretion of the researcher conducting the interview, based on the definition of gender-based violence.

Exclusion criteria: Women with endocrine or gynaecological diseases before the episode of VAW will be excluded.

2.4 Sample Size and Sampling Procedure

The minimum sample size needed to conduct the age-matched case-control study is 121 cases and 121 controls. This calculation is based on a power (1-B) of 80%, 95%

confidence level, and a precision of 5%. Therefore, with a loss-adjustment of 5%, the sample size is 128 cases and 128 controls.

2.5 Variables (Dependent and Independent)

• Variables directly related to the type of VAW suffered: in-partner, out-of-partner abuse (specifying the type in both cases: economic, psychological, or physical), in-partner or out-of-partner sexual violence (the type of VAW will be established at the discretion of the person interviewing the woman based on knowledge of gender-based violence and its definition).

• Sociodemographic variables (age, educational level, profession, co-habitants, marital status, and other data that may influence the VAW received).

• Clinical variables: data from the directed anamnesis (menstrual and obstetric-gynaecological history) and general history, paying special attention to any disorders of any kind or consumption of drugs related to VAW history.

• Steroidogenesis variables: oestradiol, testosterone, cortisol, DHEA, DHEAS, 17OH progesterone, delta4, androstenedione.

• Non-steroidal endocrine variables: TSH, PRL, FSH, LH, SHBG.

• Cardio-metabolic variables: Framingham scale scores, lipid profile, HOMA-IR, blood pressure, BMI, hip and waist circumference.

• Bone variables: bone mineral density in the hip, spine, and history of fracture.

• Cognitive variables: education received and gender role. No questionnaire is required. The variables to be measured will be restrictive/permissive education; sexist/equality education (these cognitive variables will be established at the discretion of the person interviewing the woman).

• Psychological and psychosexual variables: Cervantes reduced quality of life scale, Beck anxiety-depression scale, and the TQ scale of post-traumatic stress. For sexual function, the Female Sexual Function Index (FSFI) will be used.

2.6 Data Analysis

First, a descriptive analysis of the main study variables will be presented. Then, the means and standard deviations (or median and percentiles in case of non-normality) will be calculated for quantitative variables. Finally, both absolute and relative frequencies will be used to express qualitative variables, and the data will be presented in frequency tables and graphs.

The Kolmogorov-Smirnov test will be used to check whether the data conform to a normal distribution. As appropriate, the student's *t*-test for independent samples or the Mann-Whitney test will be used for equality hypothesis testing. In the case of qualitative variables, Pearson's or Fisher's chi-square test will be used.

In situations where it is possible to quantify the effect of VAW on the risk of hormonal failure, the odds ratio (OR) of each category considered will be calculated using logistic regression.

Strategies to control for confounding bias will be stratification of the type of VAW analyzed, matching the data to a control group and multivariate regression analysis.

For all contrasts, a significance level of 0.05 will be adopted. The statistical software used will be the R 3.3 statistical package (www.r-project.org).

2.7 Ethical Considerations

2.7.1 Confidentiality

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

2.7.2 Informed Consent

Subjects have given their informed written consent and that the study protocol was approved by an appropriate ethics committee.

3. Result from a Pilot Study

The HIMEM project began in 2021, but for reasons related to the COVID pandemic, the women contacted who have suffered from VAW were not attended to until February 2022. Apart from this impediment, the main difficulty encountered at the beginning of the project was the lack of collaboration from the affected women, not so much because of the discomfort of the project itself but because of the shame and fear felt by most of the participants.

Nonetheless, it has been possible to contact most women currently being monitored in one of the most representative gender violence units in our study area. As this is the first centre of its type and because it includes almost all the women being treated for gender violence in that region, we will report on the characteristics and challenges faced by 23 survivors of VAW. This was their experience.

All of them have suffered VAW in the family environment, by their partners or ex-partners. Apart from unanimously agreeing that they are ashamed and fearful of the VAW they have suffered, they have all excluded sexuality from their lives. Put simply, none of them have fully recovered their sexuality. Part of the study involves analysing the participant's responses to a FSFI. This test revealed that all participants have "severe sexual dysfunction". And while this is an expected finding for a discipline such as ours, it is still a remarkable and significant observation.

In addition to generalised sexual dysfunction, all the women observed reported menstrual irregularity (including two cases of premature ovarian failure) since the VAW

episode. Although most of them have children (now in their care), half of them have acknowledged reproductive difficulties while living with their aggressor.

Half of the women who attended were of menopausal age or had reached menopausal status after VAW, and all reported much more intense symptoms than normal. More than 80% reported taking psychotropic drugs.

Recorded hormonal levels indicate hypoestrogenism and a decline in DHEA in 80% of the women observed. In addition, osteoporosis has been diagnosed by bone densitometry in 40% of the sample.

From a demographic standpoint, almost all the women affected admitted to having the minimum income indicated in this survey (less than €1000 per month). These figures were reported after the VAW episode because if we look at their income pre-VAW, it does not point to any particularly unprotected sector of the population. In addition, no differences were found between women from rural and urban areas.

Similarly, women of higher economic, social, cultural, and education level are not protected against VAW.

4. Discussion

Despite the growing importance of VAW for overall health, few studies have focused on its gynaecological measures, particularly regarding the health problems resulting from the cessation of endocrine function in women. Therefore, this project aims to determine what percentage of women who have experienced VAW show hormonal alterations (mainly hypoestrogenism) and the associated consequences.

Apart from the physical or psychological consequences of VAW, women are also at greater risk of other injuries and disabilities [10,11].

The great strength of this project lies in the analysis between VAW and any ovarian cycle disorders that could be responsible for endocrine or reproductive problems of various types, including symptoms of hypoestrogenism, anovulation, reproductive difficulty, menstrual alterations, and late consequences of hypoestrogenism such as osteoporosis, cognitive deterioration, or cardiovascular disease. In addition, some conditions already seem to be recognized as being caused by VAW, such as sexually transmitted infections, vaginal bleeding, pelvic pain, and urinary tract infections, together with an increased risk of cervical cancer [12,13].

This project was initially designed for Spanish women who have suffered abuse and has already been approved by two different ethical committees. However, our goal is to develop a project of supranational scope, with the possibility of extending our sample and collaborating with other Spanish or European clinical research groups on women's health.

5. Conclusions

VAW is a pandemic that affects all women equally, regardless of their age, status, social background, or education. Despite the claims made by certain groups, VAW does not depend on women, but rather it affects women and is clearly harmful to their sexual, reproductive, and general health.

Data Availability Statement

All data generated or analysed during this study are included in this article. Further enquiries can be directed to the corresponding author.

Authors Contributions

LMH, NM—conception and design of the idea, data interpretation, statement and approved the final version of the manuscript.

Ethics Approval and Consent to Participate

This study protocol was reviewed and approved by the Ethics and Research Committees of the provinces of Granada (code number: 6hWMS752PFIRMAVHc6wPtZT2+f1x4Y) and Jaen (23.Feb 21.CEI). Written informed consent was obtained from participants to participate in the study.

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Conflict of Interest

The authors declare no conflict of interest. NM is serving as one of the Guest editors of this journal. We declare that NM had no involvement in the peer review of this article and has no access to information regarding its peer review. Full responsibility for the editorial process for this article was delegated to MHD.

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