

LECTURAS DE ECONOMÍA

Versión preliminar

Domestic violence against women and the probability of accessing higher education in Brazil

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El presente artículo ha sido aprobado para ser publicado en Lecturas de Economía 104. Sin embargo, se trata de una versión preliminar, la cual está sujeta a cambios asociados al proceso editorial de la revista. Próximamente se contará con una versión definitiva.

Domestic violence against women and the probability of accessing higher education in Brazil

Miria Ramalho Barbosa and Evandro Camargos Teixeira¹

Abstract

Women's access to higher education is an important means of reducing gender inequalities, while victimization by intimate partner violence may reduce their likelihood of attaining it. The aim of this study was to analyze the probability that women who experienced conjugal violence, considered a proxy for domestic violence, accessed higher education. Using microdata from the 2019 National Survey of Health, Logit models were estimated for each type of violence included in the Survey. The results indicate that physical and sexual violence are inversely associated with the probability of women accessing higher education. The study emphasizes the importance of implementing targeted policies, particularly those aimed at protecting and empowering women, while acknowledging education as a crucial component in this process.

Keywords: Conjugal violence, Higher Education, Logit, Brazil, Female empowerment.

JEL Classification: C25, I21, K38.

Violencia doméstica contra las mujeres y la probabilidad de acceder a la educación superior en Brasil

Resumen

El acceso a la educación superior por parte de las mujeres es un importante mecanismo para reducir las desigualdades de género, y la victimización por violencia conyugal puede disminuir la probabilidad de que ellas lo consigan. El objetivo de este artículo es analizar la probabilidad de que mujeres que sufrieron violencia conyugal —considerada un proxy de la violencia doméstica— hayan accedido a la educación superior. Con base en los microdatos disponibles de la Encuesta Nacional de Salud de 2019, se estimaron modelos Logit para cada tipo de violencia incluida en la encuesta. Los resultados indican que la violencia física y sexual se asocian de manera inversa con la probabilidad de que las mujeres accedan a la educación

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superior. El artículo resalta la necesidad de políticas específicas, en particular medidas de protección y empoderamiento femenino, reconociendo la educación como un componente fundamental en este proceso.

Palabras clave: violencia conyugal, educación superior, Logit, Brasil, empoderamiento femenino.

Violence domestique à l'encontre des femmes et probabilité d'accès à l'enseignement supérieur au Brésil

Résumé

L'accès des femmes à l'enseignement supérieur est un mécanisme important pour réduire les inégalités entre les sexes, et la victimisation par la violence conjugale peut diminuer la probabilité que les femmes y parviennent. L'objectif de cet article est d'analyser la probabilité que les femmes victimes de violence conjugale - considérée comme un indicateur de la violence domestique - aient accédé à l'enseignement supérieur. Sur la base des microdonnées disponibles dans l'enquête nationale sur la santé de 2019, des modèles logit ont été estimés pour chaque type de violence inclus dans l'enquête. Les résultats indiquent que la violence physique et sexuelle est inversement associée à la probabilité que les femmes accèdent à l'enseignement supérieur. L'article souligne la nécessité de mettre en place des politiques spécifiques, en particulier des mesures de protection et d'autonomisation des femmes, en reconnaissant que l'éducation est un élément fondamental de ce processus.

Mots-clés : violence conjugale, enseignement supérieur, Logit, Brésil, autonomisation des femmes.

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Introduction

Gender inequality is defined as the legal, social, and cultural condition in which sex and/or gender determine different rights and dignity for women and men, reflected in their unequal access to or enjoyment of rights, as well as in the assumption of stereotyped social and cultural roles (Okenwa-Emgwa & Von Strauss, 2018). This disparity, among other effects, translates into reduced access to education for women. In the Brazilian context, Ribeiro (2016) highlights that gender disparities are already evident prior to higher education, particularly in the completion of secondary education — a prerequisite for university admission.

In this regard, access to higher education is an important determinant of individuals' employability levels, which tends to reduce gender discrepancies (Okenwa-Emgwa and Von Strauss, 2018). Thus, raising educational attainment represents a fundamental factor for female empowerment, contributing to the reduction of all forms of violence against women, both in the public and private spheres (Nações Unidas Brasil, n.d.).

In this regard, domestic violence, particularly against women, represents a major barrier to economic development and is more prevalent in developing countries. According to the Pan American Health Organization (Paho, n.d.), one in three women in the Americas, aged between 15 and 49, has experienced physical and/or sexual violence either at the hands of an intimate partner or non-partner.

This type of violence, called conjugal violence, is predominantly perpetrated by male intimate partners (Madeira *et al.*, 2021) and occurs in a context of asymmetric power relations (Miura *et al.*, 2018). In this respect, men use violence as a form of control and to assert their authority over their partners. This authority derives from behaviors rooted in social, cultural and religious norms which shape gender roles (Sikweyiya *et al.*, 2020).

Conjugal violence is intrinsically related to patriarchy, a system that grants men power and privilege over women, both structurally and ideologically. Although the patriarchal family structure has weakened over time, this ideology persists and justifies marital abuse when wives do not conform to cultural norms (Tonsing and Tonsing, 2017).

This type of violence includes acts that result in physical, sexual, or psychological damage or suffering, such as coercion and deprivation of liberty, perpetrated by husbands, ex-husbands, boyfriends, and ex-boyfriends (Okenwa-Emgwa and Von Strauss, 2018). In this respect, intimate partner violence (IPV) is a major social and health problem, leading to severe consequences for victims, including chronic pain, depressive disorders, trauma, suicide, and

death (Hussain *et al.*, 2015). In addition, conjugal violence is a global phenomenon that causes suffering to victims' families (Krahé, 2018).

Evidence indicates that conjugal violence is more prevalent among women with lower schooling levels (Boyle *et al.*, 2009). Thus, formal female education is vital to reducing or eliminating violence against women and guaranteeing their basic rights (Khan *et al.*, 2013). In Brazil, a report by the Brazilian Public Security Forum (BPSF, 2023) revealed that 49% of women with incomplete primary education had experienced some form of conjugal violence at some point in their lives. These women reported a higher incidence of restrictions on communication and access to basic resources.

In the literature, higher education levels are associated with lower levels of IPV and serve as a protective measure (Amegbor & Rosenberg, 2019). Education-driven female empowerment increases autonomy and bargaining power while alleviating financial hardship (Bengesai & Khan, 2021). However, to reach higher educational levels, women need favorable conditions, including financial and emotional family support (Jury *et al.*, 2017). Violence in relationships hampers student progress and causes absenteeism, concentration problems and academic disinterest, which lead to poor performance and school dropout (Klencakova *et al.*, 2023).

Using data from the 2019 Brazilian National Survey of Health (NSH), this study aims to analyze the probability of women accessing higher education, conditioned on having experienced intimate partner violence in the last twelve months. This study is justified by its social, political and health implications, as education is a means of protecting against violence, yet access to it is hampered by domestic violence.

The study is also relevant to the literature in that it addresses an unexplored aspect at the national level: the extent to which violence impedes women's access to education. To date, no research examining this relationship in Brazil has been identified.

In addition to this introductory section, the study is composed of four other sections. The next section presents theoretical and empirical evidence related to the topic, followed by the methodology section, results and their discussion, and final considerations.

I. Theoretical and empirical evidence

Raising educational attainment, particularly access to higher education, is one of the fundamental ways to reduce gender inequalities. One of the main predictors of such access is victimization by domestic violence. Conjugal violence, a significant aspect of domestic

violence against women (DVAW), is characterized by its unique nature, primarily because it occurs within the home, which should be a safe environment, and also because it is rooted in patriarchal culture whereby men exercise control over not only social institutions, but also women's bodies and choices (Chege, 2007).

Typically, males are the perpetrators of domestic violence, while women are the victims or survivors. Violence can occur in the form of punches and slaps, kicks and hair pulling, biting and pinching, forced sex, beatings and cutting with sharp objects, disrespect, neglect and emotional blackmail, verbal abuse and swearing, prohibition of going out and/or seeing people, lies, harassment, and coercion through threats (Manisha, 2011).

Given the persistence of this behavior across generations and societies, mechanisms have been developed to mitigate it. Since preventing men from committing such violence is challenging, a viable approach is empowering women to leave abusive relationships. Empowerment, as defined by Paulo Freire, is a political process where oppressed groups strive to free themselves from oppression. Importantly, this process is achievable primarily through education (Marinho & Gonçalves, 2016).

Although the above description is merely one of many definitions, the literature indicates that empowerment is an important means for women to escape abusive relationships and regain control of their lives. This is because poverty and economic underdevelopment are major factors preventing women from leaving unequal and abusive relationships. Furthermore, empowerment is viable when women succeed in earning their own income, as well as when they participate in politics and the public domain (Bawa and Rao, 2021).

According to Sen (1999), although employment is a key factor in female empowerment, social support and education are more effective means of resisting and abandoning situations of abuse, as shown by data collected in Calcutta, India. In fact, Morais and Rodrigues (2016) present three types of female empowerment, with education identified as a method of achieving them, a point also noted by Marinho and Gonçalves (2016).

Empowerment manifests in various forms: social empowerment, which promotes women's empowerment through access to information, knowledge, techniques, social organizations, and financial resources; political empowerment, which fosters a sense of belonging through participation in social movements and decision-making, enabling women to view conjugal violence as a collective rather than individual issue; and psychological empowerment, involving the ability to take control of one's life and make decisions, which is

crucial for escaping violence and closely linked to the other forms (Morais and Rodrigues, 2016).

In view of the above, it can be reaffirmed that female empowerment is made possible through education and that both are effective means towards combating conjugal violence. The literature provides examples of studies on the relationship between education and domestic violence, with results often highlighting the value of education, particularly access to higher education.

Notably, the literature examining this relationship in developing countries is more extensive than that at the national level. A study in Tehsil Ahmadpur, Pakistan, used the qualitative snowball technique to analyze married women aged 18 to 60 who reported domestic violence. Participants had varying educational levels, ranging from illiterate to those holding master's degrees. Types of violence reported included beatings, torture, and suffocation, with illiterate women experiencing multiple forms more frequently. The study found a negative correlation between education level and domestic violence, showing that higher female education significantly reduces physical violence. Among illiterate women, 32% reported experiencing physical violence, compared to 13% with a bachelor's degree and 9% with a master's degree (Khan *et al.*, 2013).

Marium (2014) conducted a study in Bangladesh, examining the link between schooling and domestic violence against women by husbands and fathers-in-law. In Bangladeshi culture, married women, often in their teens, typically live with their husband's family, increasing the likelihood of violence. The findings indicate that highly educated women without dowries experienced less violence from their husbands. The author explains that education enhances marital communication, reduces violence, and enables women to use digital technologies, understand gender rights and equality, and earn higher salaries.

Considering the above-mentioned studies, the literature suggests that education can reduce conjugal violence in the long term. Nevertheless, a study conducted by Taghdisi *et al.* (2014) revealed that the effects of education can also be observed in the short term. This indicates that awareness and educational activities, such as courses, workshops and lectures aimed at mitigating conjugal violence, are also effective in instructing women about their rights and consequently reducing violence.

In the study, the authors investigated 91 Iranian women through interviews carried out before and after an intervention aimed at educating women about situations of violence. The intervention, drafted based on participants' responses, focused on empowerment and was

conducted in three one-hour sessions through group discussions, consultations, lectures, among other methods. After an interval of 14 days, new questionnaires were administered to verify the results of the intervention. The outcome showed that the frequency of conjugal violence decreased (from 41 to 12 women) when compared to the pre-intervention period. In addition, scores for the constructs of awareness, attitude, self-esteem, self-efficacy, and total power were significantly higher after the intervention.

The results of Taghdisi *et al.* (2014) make a major contribution to the literature by emphasizing the value of female empowerment and group meetings, where women can exchange experiences and feel part of a group, thereby building a support network, as mentioned by Sen (1999). In the meetings, discussion groups are formed, and lectures are delivered, providing women with the opportunity to ask questions and express themselves. Accordingly, it could be suggested that education should be designed based on the reality of each group, considering that individuals have different levels of understanding, and that social support is decisive if education is to be an effective tool against domestic violence.

Thus, the literature on the relationship between education and conjugal violence has been more extensively explored in terms of the effect of education as a “layer of protection” against violence. However, according to Klencakova *et al.* (2023), when referring to the effects of violence on women’s access and performance in education, the topic is relatively unexplored. In their review, the authors found that conjugal violence leads to distancing from school, higher school dropout rates, and lower academic progression. In other words, it is less likely that a woman or teenager will access higher education if they have already been victims of this type of violence.

Krebs *et al.* (2007) discussed a mechanism by which violence hampers the pursuit of education in a study with university students who participated in an investigation called *the campus sexual assault* (CSA) study. According to the authors, victims attempt to avoid their aggressors by dropping out of classes, changing schools, courses or universities, leaving their jobs, and changing residence. As a result, their access to further studies is compromised.

Another mechanism by which conjugal violence hampers studies is presenteeism, the inability to concentrate in class due to depressive symptoms related to conjugal violence. Fletcher (2010a) linked the incidence of conjugal violence with depressive symptoms in young women, and his results confirm this relationship. In a simple estimation, the significant effect found by the author was 0.66 on the depression scale. With the addition of controls related to depression, the coefficient decreased to 0.42 but remained statistically significant. Therefore,

according to Fletcher (2010b), depressive symptoms are associated with a 25%–30% increase in the probability of dropping out of school, in turn affecting the likelihood of accessing higher education, which is conditional on completing high school.

Finally, it is important to note that while most studies suggest an inverse relationship between educational level and domestic violence, consensus is lacking. For example, Noughani and Mohtashami (2011) studied 44 Iranian women employed at Tehran University of Medical Sciences in 2004. Participants first completed a questionnaire on types, causes, and consequences of domestic violence, followed by receiving an educational booklet on managing reported violence. Six months later, a second questionnaire revealed no change in the violence rate. The authors concluded that education alone does not impact domestic violence and that addressing this issue in the short term is neither feasible nor practical.

II. Methodology

B. Data source

The 2019 National Survey of Health (PNS), conducted by the Brazilian Institute of Geography and Statistics (IBGE) in partnership with the Brazilian Ministry of Health, serves as the study's data source. The research collects detailed information about the health conditions of the Brazilian population, including aspects related to access to health services, lifestyle, chronic diseases, and other relevant factors. The 2019 PNS employs a sample research methodology on a representative sample of the Brazilian population at the national level, covering urban and rural areas. As it is a complex sample, expansion factors are considered in the estimation. Since this study focuses on women who accessed higher education, observations from individuals under the age of 18 and over 65 were excluded.

B. Identification strategy

To analyze the effect of domestic violence on the probability of women accessing higher education, the study employs a statistical technique to model the probability of occurrence of a binary variable, such as the presence or absence of a characteristic, based on explanatory variables. In this case, the probability of women having accessed higher education, irrespective of whether they completed it, is examined. The dependent variable is dichotomous, where 1 represents women who accessed higher education, and zero those who did not.

Among the statistical methods for data analysis in which the dependent variable is binary, the Logit and Probit models stand out. Freitas *et al.* (2013) recommend using the Logit

link function for sample sizes smaller than 20, and either the Logit or Probit link function for samples with more than 20 observations. In this regard, according to Stock and Watson (2004), the Logit link function is similar to the Probit, except for the cumulative distribution function used to calculate probability. Thus, while the Logit link function uses logistic distribution, the Probit link function uses normal distribution. Accordingly, the Shapiro-Wilk test was performed, in which the null hypothesis denotes that the data distribution approximates a normal distribution. The null hypothesis was rejected, and therefore, the model used in the present study was the Logit model.

Three econometric models were estimated, one for each type of violence — verbal, physical, and sexual — perpetrated by male intimate partners, including husbands, ex-husbands, male cohabiting partners, ex-cohabiting partners, boyfriends, and ex-boyfriends, considered as the variable of interest. The questions in Chart 1 served as the basis for the construction of the violence variables, with a value of 1 indicating the occurrence of at least one type of violence and 0 otherwise. The estimations were conducted using Stata version 15. The chart below displays the additional explanatory factors derived from the relevant literature.

A control for women's birth cohorts was added to control for temporal differences that may impact both exposure to violence and access to higher education. This is done because socioeconomic and cultural changes, as well as public policies, can affect these variables over time (Ribeiro, 2016).

Table 1. *Explanatory variables of the Logit model estimated*

Variable	Description	Expected Sign
Verbal Violence	<ul style="list-style-type: none"> - In the last twelve months, has anyone insulted, humiliated or ridiculed you in front of other people? - In the last twelve months, has anyone shouted at you or called you names? - In the last twelve months, has anyone used social media or a cell phone to threaten, insult, swear at or expose images of you without your consent? - In the last twelve months, has anyone threatened to hurt you or harm someone close to you? - In the last twelve months, has anyone destroyed anything belonging to you on purpose? <p><i>Dummy</i> corresponding to verbal violence, which takes a value of 1 if at least one type of violence occurred, and 0 otherwise.</p>	-
Physical Violence	<ul style="list-style-type: none"> - In the last twelve months, has anyone slapped or smacked you? - In the last twelve months, has anyone shoved you, held you tightly or thrown something at you to hurt you? - In the last twelve months, has anyone punched, kicked or dragged you by your hair? - In the last twelve months, has anyone tried to strangle, suffocate or burn you? - In the last twelve months, has anyone threatened or injured you with a knife, firearm or any other weapon or object? 	-

	<i>Dummy</i> corresponding to the occurrence of physical violence, which takes a value of 1 if at least one type of violence occurred, and 0 otherwise.	
Sexual Violence	<p>- In the last twelve months, has anyone touched, groped, kissed or exposed parts of your body against your will?</p> <p>- In the last twelve months, has anyone threatened or forced you to have sexual relations or other sexual acts against your will?</p> <p><i>Dummy</i> corresponding to sexual violence, which takes a value of 1 if at least one type of violence occurred, and 0 otherwise.</p>	-
Urban	Type of census situation.	+
Age	<p><i>Dummies</i> that correspond to the age group of respondents. The reference group is women between 18 and 44 years old.</p> <p>Age2: <i>Dummy</i> that takes a value of 1 if the woman is between 45 and 65</p>	+
White	<i>Dummy</i> that takes a value of 1 if the woman is white or yellow, and 0 otherwise.	+
Employed	<i>Dummy</i> that takes a value of 1 if the woman was employed at the time of the research, and 0 otherwise.	-
Income	Total household income in reals (not including income of those on a pension, domestic workers or relatives of domestic workers).	+
Single	<i>Dummy</i> that takes a value of 1 if the woman was single at the time of the research, and 0 otherwise.	+
Regions	<p><i>Dummy</i> that corresponds to Brazil's regions. The South is the region of reference.</p> <p>Northeast: Takes a value of 1 if a woman is a resident of a State belonging to the Northeast region, and 0, otherwise.</p> <p>North: Takes a value of 1 if a woman is a resident in a State belonging to the North region, and 0 otherwise.</p> <p>Southeast: Takes a value of 1 if a woman is a resident of a State belonging to the Southeast region, and 0 otherwise.</p> <p>Midwest: Takes on a value of 1 if a woman is a resident of a State belonging to the Midwest region, and 0 otherwise.</p>	- - - -

Source: Own elaboration.

III. Results and Discussion

A. Descriptive analysis

Before proceeding with the description of the sample used in the study, some clarifications are necessary. The sample was considerably reduced due to the exclusion of males, those under 18, and those over 65 years of age. However, not all participants responded to the “V- Violence” module of the PNS. Therefore, the number of women included in the descriptive analysis of violence differs from the total number of research participants, which is 93,952. The average age of the women sampled is 40.05 years. Other characteristics, such as marital status, color, employment status, and regions of the country, are presented in Table 2.

Table 2. General characteristics of the sample

Variable	Number	Percentage
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Single	47,009	50.03
Married	36,570	38.92
Divorced/Separated	6,619	7.04
Widow	3,759	4.00
White	33,429	35.58
Black	9,874	10.51
Yellow	613	0.65
Brown	49,375	52.55
Indigenous	661	0.70
Employed	57,983	61.71
Urban	74,548	79.35
North	19,352	20.60
Northeast	33,392	35.54
South	10,770	11.46
Southeast	19,717	20.99
Midwest	10,721	11.41

Source: Own elaboration.

The primary objective of the study is to analyze the probability of female victims of domestic violence having accessed higher education. Therefore, the schooling level of the sampled women is presented in Figure 1 below.

Figure 1. *Percentage breakdown of the schooling level of Brazilian women*

[OBJ]

Source: Own elaboration.

Estimates from the 2022 Continuous National Household Survey (PNAD) were comparable to those observed in this study for the entire country, irrespective of sex (IBGE, 2022). Nevertheless, according to information from the Ministry of Education, women form the majority of those accessing and completing higher education, as well as those who are graduate students (Ministério da Educação, 2023).

The variable of interest, conjugal violence, was reported by 7,985 women in the sample. For the purpose of this study, it is categorized into physical, sexual, and verbal violence, highlighting the main aggressors and the locations where this violence occurs. The results show a marked overlap of acts of physical violence. In terms of the most prevalent subtype, shoving and slapping stand out. As regards the frequency of physical aggression, most victims who positively responded that they experienced some type of violence (47.57%) reported that the aggression only happened “once”. The lowest figure is for those who reported that they were

assaulted “very often” (12.87%). A considerable number of women report having been assaulted “sometimes” (39.56%).

It is noteworthy that the largest proportion of aggressors involves ex-spouses or ex-partners (25.79%). Nonetheless, when considering the total of women’s intimate partners, as defined by Sardinha *et al.* (2022)—including formal or informal, cohabiting or non-cohabiting, current or former partners—intimate partners accounted for 55.24% of aggressors, while others (family members or outsiders) represented 44.76%. In other words, more than half of all physical assaults are perpetrated by people with whom the woman had or has an intimate relationship, as shown in Table 3.

Table 3. *Aggressors of the victims of physical violence*

Aggressor	Number	Percentage
Spouse or partner	380	21.44
Ex-spouse or ex-partner	457	25.79
Partner, boy/girlfriend, ex-partner, ex-boy/girlfriend	142	8.01
Others	793	44.76
Total	1,772	100.00

Source: Own elaboration.

It is also important to identify the places where such aggressions occur to characterize the violence as domestic. It is noteworthy that the majority of physical assaults on women occur in the domestic sphere, with 72.35% of occurrences, followed by public settings, with 18.23%.

Verbal violence exhibits more dramatic numbers, with a frequency of 7640, which corresponds to 95.68% of the total number of women who have experienced some form of violence. These results are similar to those of a study conducted in Turkey involving 1481 women over 18 years of age and who had been married, in which the most prevalent form of violence reported was verbal (Basar & Demirci, 2018).

Once again, there is a notable overlap in the forms of violence, with significant numbers in almost all subtypes, indicating that women who are assaulted are subject to different forms of verbal aggression. The most frequent aggressions included shouting and swearing, followed by insults, humiliation and ridicule, which occur within the context of relationships of superiority between aggressor and victim, according to Charaudeau (2019).

Unlike physical violence, instances of verbal violence were more frequent. In this case, the most prevalent response was “sometimes”, a frequency that cannot be measured, as it depends on what the woman considers as “very often”.

Table 4. *Aggressors of victims of verbal violence*

Aggressor	Number	Percentage
Spouse or companion	1,163	15.22
Ex-spouse or ex-companion	1,036	13.56
Partner, boy/girlfriend, ex-partner, ex-boy/girlfriend	340	4.45
Others	5,101	66.76
Total	7,640	100.00

Source: Own elaboration.

In the case of verbal violence, the main perpetrators were once again partners or ex-partners (33.33%). However, in this scenario, the predominant forms of violence were those perpetrated by friends, colleagues and neighbors (18.32%) and by strangers (13.61%). In terms of the location where the violence occurred, the residence remains the most common, accounting for 53.89%. Nevertheless, there are other prominent places, such as public spaces, workplaces and the internet, which shows that verbal violence is not exclusively a domestic problem; it also occurs dramatically in other environments, according to Bastomski & Smith (2017).

Finally, statistics referring to sexual violence are presented. Although fewer incidents have been recorded, this type of aggression against women is multifaceted. The fact that 259 of the 465 women were threatened and 370 were touched indicates that a significant portion of them had non-consensual physical contact in threatening circumstances.

This is the form of violence least reported by women in the last twelve months; however, when asked whether this violence has ever occurred in their lives, the figure goes from 0.49% to 3.54%. This result is in line with that found by Potter *et al.* (2021), whose study showed that in Brazil, psychological violence against women is the most recurrent, followed by physical and sexual violence, respectively.

The authors discovered that this type of violence, particularly when coupled with another form of aggression, was associated with a deterioration in mental health status (Potter *et al.*, 2021). As regards the frequency with which this form of violence occurred, the percentage of women reporting a single occurrence is close to the number of those reporting a few occurrences, 44.30% and 41.51%, respectively. The report of being assaulted many times was given by 14.19% of the women.

Concerning aggressors, there is a strong presence of intimate partners. 50.96% of the total number of aggressors reported by the women in the sample are either current or former partners (Table 5).

Table 5. *Aggressors of victims of sexual violence*

Aggressor	Frequency	%
Spouse or companion	86	18.49
Ex-spouse or ex-companion	105	22.58
Partner, boy/girlfriend, ex-partner, ex-boy/girlfriend	46	9.89
Others	228	49.05
Total	465	100.0

Source: Drawn up by the authors.

A large percentage of indecent assaults committed by intimate partners is reported in the literature, as pointed out by Larsen *et al.* (2014), who investigated 2541 women who attended a Center for Victims of Sexual Violence in Denmark between 2001 and 2010. The results suggest that more than 70% of the victims know their attackers.

In addition, in a study that interviewed women who were sexually assaulted while attending college, Potter *et al.* (2018) discovered that the percentage of indecent assaults perpetrated by strangers was significantly lower than that committed by acquaintances. This suggests that sexual violence against women is mostly perpetrated by acquaintances of the victim, notably, their intimate partners.

These assaults occurred primarily in homes, and the percentage perpetrated by strangers was comparable to that occurring in public spaces. This behavior is repeated in other forms of violence, but is particularly significant in the case of sexual violence. On analyzing notifications of sexual violence throughout Brazil from 2009 to 2013, Gaspar and Pereira (2018) found that the occurrences of sexual violence evolved positively in the domestic sphere and negatively in public spaces, which suggests that sexual violence is primarily perpetrated by acquaintances and family members, as mentioned by Larsen *et al.* (2014).

B. Econometric results

This subsection presents the results of the estimations of the three econometric models, while varying the variable of violence perpetrated against women, as explained in the methodological section. Table 6 presents the findings and provides an explanation of the marginal effects for estimating physical, verbal, and sexual violence. Initially, it is important to highlight the estimated values for the area under the Receiver Operating Characteristic (ROC) curve, which ranged from 0.7117 to 0.7970, indicating a good fit for the three estimated models.

Table 6. Econometric results - Logit

Variable	Model I	Model II	Model III
Physical Violence	-0.0887*** (0.0240)	-	-
Verbal Violence	-	-0.0312 ^{NS} (0.0195)	-
Sexual Violence	-	-	-0.0931** (0.0404)
Urban	0.0244 ^{NS} (0.0505)	0.1767*** (0.0329)	0.1548* (0.0859)
Age2	0.2108** (0.0885)	-0.0847 ^{NS} (0.1044)	1.2818*** (0.2185)
Whites	0.0100 ^{NS} (0.0266)	0.0638*** (0.0203)	-0.0515 ^{NS} (0.0591)
Employed	0.0687** (0.0266)	0.0317 ^{NS} (0.0331)	0.1202 ^{NS} (0.0971)
Income	0.00001*** (0.0000)	0.00001*** (0.0000)	0.00001*** (0.0000)
Not Single	-0.0436 ^{NS} (0.0274)	-0.0265 ^{NS} (0.0207)	-0.0858 ^{NS} (0.0540)
Northeast	0.0054 ^{NS} (0.0867)	0.0227 ^{NS} (0.0599)	-0.1066 ^{NS} (0.1436)
Southeast	-0.0722 ^{NS} (0.0619)	0.0051 ^{NS} (0.0423)	-0.0991 ^{NS} (0.0914)
Midwest	0.0002 ^{NS} (0.0040)	0.0009 ^{NS} (0.0026)	-0.0062 ^{NS} (0.0062)
North	0.0348 ^{NS} (0.1311)	0.0561 ^{NS} (0.0882)	-0.0918 ^{NS} (0.2076)
Control by birth cohorts	Yes	Yes	Yes
ROC Curve	0.7434	0.7117	0.7970
Number of observations	1000	4476	193

Note: ***: Significant at 1%; **: Significant at 5%; *: Significant at 10%. Standard error in brackets.

Source: Own elaboration.

Regarding the types of violence analyzed, only physical and sexual violence showed an inverse and statistically significant association with the probability of women accessing higher education. That means that when considering a confidence interval of at least 10%, the fact of having suffered physical or sexual violence in the last 12 months negatively impacts the probabilities of women having accessed higher education by approximately 8.87 and 9.31 percentage points (p.p.), respectively.

When considering the positive effects of years of education, such as increased salaries, social mobility, as well as their impact on individuals' health and well-being (Heckman *et al.*, 2018), it is important to understand the mechanisms that facilitate or hinder women's access to higher education. Such access not only allows for greater social involvement but also empowers women to make decisions about their lives and leave abusive relationships (Bawa *et al.*, 2021).

It is crucial to examine how domestic violence affects women's ability to access or complete higher education. Voth Schrag and Edmond (2017) conducted a descriptive study

with social service providers at community universities to identify how men sabotaged the education of IPV victims. Tactics included withdrawing financial support, physical assaults, stalking on campus, and preventing them from leaving home by disrupting childcare or forcing pregnancies. As a result, women often experienced emotional distress, shame, depressive symptoms, fear, and a decline in academic performance, leading to missed classes and difficulties in completing their studies.

For Brewer *et al.* (2018), one of the ways that violence can affect the likelihood of women completing their higher education is through the Conservation of Resources theory, which states that traumatic events cause a negative spiral, with higher initial losses, which deplete resources and limit choice. This theory could explain why the violence experienced in the last 12 months negatively affected the probability of not completing their degree; experiencing a traumatic episode that causes mental health disorders due to the forms of violence perpetrated by their intimate partner could lead to missed classes, which reduces the likelihood of achieving satisfactory academic performance.

Another mechanism by which violence prevents access to higher education is discussed by Strenio (2017) based on a longitudinal study of data on American intimate partner violence. The results suggest that victimization reduces the probability of women completing high school. Thus, since completing high school is a requirement for admission to higher education, a woman who is unable to do so will not be able to pursue further education.

Regarding the other explanatory variables, the one indicating whether the household is in an urban area shows a positive and statistically significant coefficient in the models that consider victimization by verbal and sexual violence, which is consistent with the literature. Therefore, residing in an urban area increases the likelihood of young women remaining in school and consequently, accessing higher education, *ceteris paribus*. According to Vasconcelos (2018), there is a disparity in access to higher education between young people living in rural and urban areas, which could explain the positive probability that women living in urban areas are more likely to access higher education than their peers living in rural areas.

As regards age, there was a positive and significant relationship in the models of physical and sexual violence, with the reference age ranging between 16 and 44 years old. It should be stressed that older women are more likely to have accessed higher education. This is shown by the fact that women whose most advanced schooling level is higher education have an average age of 42.53 years. These results corroborate the findings of Rocha and Carvalhaes (2023), which point to an increase in demand for higher education among older women,

especially in undergraduate teaching courses. This trend could be attributed to a series of factors, including a return to education for professional development or to pursue new career opportunities.

With reference to color, the results of the model for verbal violence indicate that white women are more likely to access higher education, which is not unprecedented in the literature. In general, various studies point out that despite the quota policies that have broadened the access of non-whites to higher education, whites continue to be the majority, as exemplified in the study by Costa and Picanço (2020). In a wider-ranging study, Carvalhaes *et al.* (2023) found that, even within the same income stratum, non-whites are less likely to transition to higher education than their white peers. In the other models estimated, this variable did not show statistical significance.

The results also showed that being employed is positively associated with the probability of having accessed higher education in the first model on physical violence. In the other models, the relationship was not significant. Macedo (2019) found a similar result in an analysis using data from the 2015 PNAD, but emphasizes that unpaid domestic work has a negative effect on the probability of access. The literature also demonstrates the positive aspects of being employed in accessing and remaining in higher education, such as forming connections for future employment and the potential to cover the costs of studies (McCormick *et al.*, 2023).

The level of the income variable, measured by total household earnings, also had a positive impact on the probability of women accessing higher education, which is corroborated in the literature. According to Jury *et al.* (2017), the issue of income level is so relevant in terms of a student's access to and remaining in higher education that it is crucial to consider not only the financial dimensions of income, but also the psychological dimensions of financial hardships and their implications for an individual's ability to continue their higher education.

The civil status of women was also considered in the analysis, as some studies indicate that single women comprise the majority in Brazilian higher education (Bonaldo & Pereira, 2016; Instituto Semesp, 2021). However, this finding was not statistically significant. In the non-single category, married, divorced, and widowed women were considered. Prior tests were carried out with each category separately, but they were non-significant. For this reason, they were all combined into a single variable. Research conducted by Sales *et al.* (2017) using data from Minas Gerais revealed that single students were more likely to access higher education after completing high school compared to their married counterparts.

Finally, regional dummies were considered, with the South serving as the reference region. The probability of women accessing higher education was non-significant in all regions, suggesting a female majority in higher education across all regions (Macedo, 2019; Alves, 2023).

Conclusions

The aim of the present study, based on data from the 2019 Brazilian National Survey, was to investigate whether violence, in its various manifestations, impacts the probability of women accessing higher education. Logit models were estimated to evaluate the probability of accessing higher education.

The results suggest that the relationship is negative; in other words, conjugal violence reduces the likelihood of women accessing higher education. In the case of this study, the effects were significant for physical and sexual violence, which is in line with the literature. The idea that violence perpetrated against women is primarily domestic is corroborated by the descriptive results of the sample, which suggest that sexual and physical violence is typically perpetrated by intimate partners or ex-partners and within the domestic sphere.

Overall, the study contributes to the literature by offering the perspective that education, as represented by access to higher education, acts as a form of protection for women against the violence perpetrated by their intimate partners, particularly in its physical and sexual manifestations.

Based on the results, public policies aimed at reducing victimization from intimate partner violence are essential. Through such policies, it would be possible to increase women's access to higher education, thereby contributing to the reduction of gender inequalities. These policies could include the establishment of shelters for victims, as well as educational and awareness campaigns.

Ethics Statement

This research article did not work with a person or groups of persons to generate the data used in the methodology; therefore, it did not require the endorsement of an Ethics Committee for its realization.

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