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Abstract

Intimate Partner Violence (IPV) is the most widespread form of violence against women globally, affecting roughly one in three women. Although its direct consequences for women's health and well-being are well established, much less is known about how IPV affects the next generation. This study investigates the relationship between various forms of IPV and health outcomes among children under the age of five in Egypt, where mothers are the main caregivers. Drawing on nationally representative data from the 2014 Egyptian Demographic and Health Survey (DHS), we explore the effects of IPV on three key child health indicators: birth weight, morbidity, and nutritional status. To mitigate selection bias, we apply Propensity Score Matching (PSM) methods. The results reveal that exposure to IPV during pregnancy leads to significantly lower birth weights. Moreover, children of mothers who experience IPV face higher risks of illness and worse nutritional outcomes, particularly an increased likelihood of wasting.

Keywords: Intimate Partner Violence, Health, Wasting, Morbidity, Children, Egypt.
JEL Classifications: I10, J12, J13.

ملخص

يُعد عنف الشريك الحميم (IPV) أكثر أشكال العنف ضد المرأة انتشارًا على مستوى العالم، حيث يؤثر على واحدة من كل ثلاث نساء تقريبًا. على الرغم من أن عواقبه المباشرة على صحة المرأة ورفاهيتها معروفة جيدًا، إلا أنه لا يُعرف الكثير عن كيفية تأثير عنف الشريك الحميم على الجيل القادم. تبحث هذه الدراسة في العلاقة بين الأشكال المختلفة لعنف الشريك الحميم والنتائج الصحية بين الأطفال دون سن الخامسة في مصر، حيث الأمهات هن مقدمات الرعاية الرئيسيات. بالاعتماد على البيانات التمثيلية الوطنية من المسح الديموغرافي والصحي المصري لعام 2014 (DHS)، نستكشف آثار IPV على ثلاثة مؤشرات رئيسية لصحة الطفل: الوزن عند الولادة، والمراضة، والحالة التغذوية. للتخفيف من تحيز الاختيار، نطبق أساليب مطابقة درجات الميل (PSM). تكشف النتائج أن التعرض لـ IPV أثناء الحمل يؤدي إلى انخفاض كبير في الأوزان عند الولادة. علاوة على ذلك، يواجه أطفال الأمهات اللاتي يعانين من عنف الشريك الحميم مخاطر أعلى للإصابة بالأمراض ونتائج غذائية أسوأ، ولا سيما زيادة احتمال الهزال.

1. Introduction

According to the World Health Organization (WHO), approximately 30 percent of women globally have reported experiencing Intimate Partner Violence (IPV) at some point in their relationships. IPV encompasses various forms of abuse—including physical, sexual, emotional, economic, and psychological violence—intended to maintain power and dominance over a partner (UN, 2022). The WHO (2021) highlights that violence against women imposes both direct and indirect costs. Direct costs refer to the monetary and non-monetary burdens borne by the victims themselves, whereas indirect costs extend beyond the individual, thereby affecting families, communities, and the broader economy. Heise (2011) emphasizes that IPV significantly hinders women's health and limits their economic and social participation. Additionally, Duvvury et al. (2013) argue that the impact of IPV extends well beyond personal harm, imposing economic costs through healthcare expenditures, reduced productivity, and intergenerational effects.

Among those affected by IPV, children are often considered "silent witnesses" or "hidden victims" (Boeckel et al., 2017). Exposure to IPV has lasting consequences on children's psychological, social, and cognitive development (Evans et al., 2008). Research indicates that such exposure is linked to developmental delays and adverse health outcomes, as the trauma can disrupt brain development and immune function (Bogat et al., 2006). Studies in sociology and psychology suggest that IPV affects children through both direct and indirect mechanisms. In the direct channel, children may experience maltreatment within violent households. Indirectly, IPV can harm children by reducing parental investment and care, even when they are not the direct targets of violence (Lloyd, 2018).

In the case of Egypt, a 2021 report on the health of the Egyptian population highlights a rise in all forms of IPV. The prevalence of emotional violence increased from 18.8 percent in 2014 to 22.3 percent in 2021, physical violence rose to 25.5 percent from 25.2 percent, and sexual violence grew to 5.6 percent from 4.1 percent. This trend aligns with expectations that IPV would increase following COVID-19 lockdowns (ElSaid et al., 2022; AbuElenin et al., 2022). At the same time, health indicators for children under five years old in Egypt remain a challenge for the country's development. In 2014, 21 percent of children under five suffered from stunting, and eight percent experienced wasting. Although these rates improved in 2021, the issue persists, according to the report on the health of the Egyptian population. Given that mothers are the primary caregivers in Egyptian households (ERF and UN Women, 2020; Atallah and Hesham, 2024), their well-being, which is negatively affected by their exposure to IPV, has significant implications for child health. Thus, the increasing prevalence of IPV, combined with persistent child health concerns, underscores the need to examine this link in the development literature within the Egyptian context. However, existing studies on IPV in Egypt largely overlook its intergenerational effects.

On the policy front, the Egyptian government has launched several initiatives since 2014 to fight violence against women and promote women's empowerment across economic, political, and social spheres. The 2014 Constitution adopts a gender-sensitive approach, featuring approximately 20 articles aimed at protecting women's rights and combating discrimination and violence. In alignment with this agenda, this study examines the effects of IPV on child health, specifically children aged five years or younger, in Egypt. The remainder of this paper is structured as follows. Section 2 reviews the relevant literature, while section 3 outlines the data and estimation methodology. Section 4 presents the empirical findings and robustness checks. Finally, section 5 concludes the paper.

2. Literature review

Children are often regarded as silent witnesses or hidden victims of IPV, as outlined by Boeckel et al. (2017). Existing literature, particularly from sociological and psychological perspectives, posits that children suffer the greatest consequences of IPV, as they are the most vulnerable members of the household (Forke et al., 2019; Riedl et al., 2019; Carolin and Xavier, 2020). Children exposed to IPV often experience higher levels of stress, anxiety, and disruptions in functioning compared to their peers, and are at an increased risk for morbidity and malnutrition (Doyle and Aizer, 2018).

Research demonstrates that the negative impacts of IPV on children's health begin early, even at birth. A study by Aizer (2011) in California (1991-2002) finds that IPV during pregnancy results in a reduction of birthweight by approximately 163 grams. Similarly, in Zimbabwe, Shamu et al. (2018), using data from 2,000 women receiving postnatal care, find that IPV during pregnancy is associated with lower birthweight, premature births, and emergency caesarean sections. A study by Kpordoxah et al. (2024) in Ghana also confirms that IPV during pregnancy leads to significantly lower birthweights.

Other studies look at the effect of IPV on breastfeeding. Misch and Yount (2013) use data from the Demographic and Health Surveys (DHS) for eight African countries—Ghana, Kenya, Liberia, Malawi, Nigeria, Tanzania, Zambia, and Zimbabwe—to study the effects of IPV on breastfeeding. The results of the logistic regression show that Kenyan and Tanzanian mothers exposed to emotional IPV are 56 percent less able to breastfeed their children. Moreover, Zimbabwean mothers exposed to physical IPV have 60 percent lower odds of breastfeeding. Meanwhile, Zambian women exposed to sexual IPV are 0.42 times as likely to breastfeed compared to non-exposed women. Similar results are found by Caleyachetty et al. (2019), who explore the same relationship for 51 low- and middle-income countries, including Egypt. Applying logistic regressions on DHS data, they confirm that exposure to IPV reduces breastfeeding for women during the first six months after giving birth.

Focusing on nutritional outcomes for children, empirical evidence has shown that malnutrition may be induced by IPV exposure. Rico et al. (2010) analyze the case of five developing countries: Egypt, Honduras, Kenya, Malawi, and Rwanda. Based on data retrieved from DHS surveys, their findings reveal increased odds of stunting for children whose mothers were exposed to IPV in Malawi and Honduras. However, the effect is non-significant for those based in Egypt in the 2005 DHS wave. Additionally, Ziaei et al. (2012) explore the impact of being exposed to IPV on children's malnutrition in Bangladesh. They use data from the 2007 DHS of Bangladesh in which the main variable of interest is the exposure of women to any type of IPV. The results show that mothers exposed to IPV are 1.51 times more likely to have a stunted child compared to mothers not exposed to IPV. A more recent study by Lin et al. (2024) focuses on 29 Sub-Saharan African countries. By employing the DHS conducted between 2010 and 2021, they apply logistic regressions to detect associations between IPV exposure and children's malnutrition. Their findings reveal that mothers' exposure to sexual IPV is correlated with higher odds of stunting for children. In India, Pakrashi and Saha (2024) confirm that mothers' exposure to IPV significantly increases malnutrition for children, including stunting, wasting, and being overweight, based on data from the National Family Health Surveys.

Other studies focus on IPV's impact on children's health outcomes. Ferdousy and Matin (2015) study the impact of being exposed to IPV on children's health in three Asian countries: Bangladesh, India, and Nepal. They retrieve their data from the DHS of Bangladesh published in 2007, the DHS of Nepal published in 2011, and the National Health Survey (NHS) of India released in 2005/06. By applying a logistic regression, their findings reveal that exposure to IPV significantly increases the likelihood of children experiencing fever and acute respiratory infections by 66 and 76 percent, respectively, compared to children not exposed to IPV. Hernandez (2021) investigates the impact of violence against women with femicide risk on the physical and mental health of women and their children in Peru using the DHS (2015). Children's physical health was measured by assessing whether they had suffered from diarrhea, bloody stool, fever, or cough over the past two weeks. Using a propensity score matching approach, the results of the paper show that when mothers are victims of violence, their children's likelihood of suffering from health issues is higher by six to nine percent compared to their counterparts.

A broader overlook of the various potential IPV effects on children's well-being shows that exposure to IPV has a significant negative impact on mothers' caring activities as well as children's physical health, mental health, and nutrition. Using data from the Multiple Indicator Cluster Surveys (MICS) 2010/11 in Vietnam, Bui et al. (2018) assess the impact of being exposed to any type of IPV (physical, sexual, emotional) on children. They use a comprehensive approach to measure children's welfare, such as caring activities performed by the parents (reading books, stories, and playing with the child), the child's health (having a cough, as well as height and weight), and the child's nutrition (having milk, juice, and yogurt). Based on a 2SLS estimation methodology, the results reveal the significant negative impact of exposure of IPV on mothers' caring activities and

on children's health and nutrition. Seon et al. (2022) conduct a survey on the impacts of adverse childhood experiences (ACEs) on different measures of children's health. Among the ACEs, they explore the effects of IPV on physical and mental health, including depression. The survey was administered to university students in the US. The results of structural equation modeling show that exposure to IPV significantly affects children's physical and mental health, including depression, with consequences that can last until adulthood.

A systematic review of the literature from 2001 to 2020 by Holmes et al. (2022) shows that the effects of IPV on mental health were sufficiently studied in the literature, contrary to its effects on children's physical health and despite its significant effect. The few studies that they found and reviewed have confirmed that exposure to IPV increases the likelihood of emergency room visits as well as the frequency of seeking a pediatrician, as it negatively affects children's general health. Moreover, these children are more prone to lung malfunction and nutritional deficiencies.

Empirical evidence has also shown that the relation between IPV and children's health is complex and depends on the children's characteristics. Children are not affected in the same way by the IPV acts they witness in their households. When reasoning from the gender lens, girls tend to internalize their feelings towards violence, which appear in the form of stress and anxiety. Alternatively, boys externalize their behaviors in the form of aggressive attitudes and violent acts (Dodaj, 2020). The age of the children also affects the impact of being exposed to IPV. Babies exposed to IPV suffer from an inability to connect with their parents, which is expected to negatively affect their psychological and biological development. As for toddlers who are at the preschool level, they may suffer from eating or sleeping disorders. For a higher age cohort of children at school age, they tend to have more aggressive behaviors and suffer from more communication problems with their mates (Lloyd, 2018; Carolin and Xavier, 2020).

As highlighted in the literature review, the majority of the studies we reviewed belong to the medical, sociological, and psychological disciplines. Additionally, it is evident that most of these studies focus on cases from developed countries, particularly the UK and the US. In contrast, research on developing countries has been predominantly limited to Asian and Sub-Saharan nations. Therefore, this study contributes to the literature by offering novel evidence from Egypt, a context that remains largely underexplored.

3. Methodology and data

Building on the insights from the literature review, IPV is widely acknowledged for its harmful impact on children's health, underscoring its significance as a research topic. The literature also indicates that children aged five and under are among the most vulnerable members of a household. Therefore, this paper focuses on examining the effects of IPV on children within this specific age

group. This section details the empirical methodology; specifically, it delves into the identification strategy and the employed dataset.

3.1. Identification strategy

To assess the impacts of IPV on children's health, our identification strategy can be determined as follows:

$$y_{i,m,j,c} = \alpha + \beta IPV_m + \gamma X_i + \delta Z_m + \rho F_j + \sigma H_j + \vartheta R_c + \varepsilon_{i,m,j,c} \quad (1)$$

Where (i) is the child, (m) denotes the mother, (j) defines the household, and (c) is the governorate.

($y_{i,m,j,c}$) denotes children's health outcomes. It is measured by three main dimensions: birthweight, morbidity, and malnutrition. To measure morbidity, we use indicators of whether the child experienced fever or diarrhea in the two weeks preceding the survey. For malnutrition, we rely on anthropometric measures: height-for-age standard deviation (HAZ) to assess stunting, and weight-for-height standard deviation (WHZ) to assess wasting and overweight. These selected outcomes offer a comprehensive picture of how IPV may affect children at different stages within the first five years of life. For example, birthweight reflects the impact of IPV at the earliest stage, immediately after birth, while morbidity captures short-term health shocks and the child's vulnerability to infections, potentially linked to caregiving quality and household conditions. In contrast, malnutrition outcomes capture longer-term cumulative effects of IPV, as stunting, wasting, or overweight.

The main variable of interest is IPV_m. It is a binary variable that equals to 1 if the mother experienced any form of violence in the 12 months preceding the survey, 0 otherwise. As we investigate the impact of different forms of IPV, and to capture more nuanced effects, we construct three separate binary variables: one indicating whether the mother was subjected to emotional violence, another for physical violence, and a third for sexual violence. Each of these variables is included in separate regression models to disentangle the distinct effects of each form of IPV experienced within the same 12-month reference period.

A wide range of control variables is incorporated in the model. X_i is a vector of children's characteristics, including birth order, age, and sex. Z_m encompasses the mothers' characteristics: age at first cohabitation and educational level. We also account for their husbands' educational level and their occupations as marked in vector (F_j). Finally, for the households' characteristics (H_j), the area of residence (rural/urban) and wealth index are incorporated.

Moreover, variables from other data sources are included to capture the characteristics of the governorate (R_c) where the household is located. We include a binary variable taking the value of

1 if the governorate has a shelter for women victims of IPV, 0 otherwise. These shelters have been established by the Egyptian Ministry of Social Solidarity (MoSS) to provide the needed support for women victims of violence.[4] Such initiatives improve the likelihood that women may be able to escape an abusive relationship while having a suitable place to live with their children, especially for women who lack the required financial resources and family support. On the other hand, informal institutions represent the dominant culture and norms in society. To capture this dimension, we include the average perception vis-à-vis beating wives at the governorate level.

3.2. Estimation method

It's highly probable that children's health outcomes and the occurrence of IPV are not randomly selected across the different households. Given the complexity of the research question we are approaching, estimating causal effects becomes challenging due to selection bias. Therefore, we follow the work of Hernandez (2021) and use Propensity Score Matching (PSM) as an estimation method. Its intuition is to compare the outcome of interest between two groups of individuals. The first group, called the treatment group, is a group of individuals who have been exposed to a specific experience/policy/program defined as the treatment. The second group is the counterfactual group, which is a hypothetical group of individuals having the same characteristics of the treatment group. Yet, the counterfactual individuals, or the so-called control group, are not being exposed to the treatment.

Matching between individuals in the treatment and control groups is done based on a set of observables (covariates), which are expected to affect the exposure to the treatment and the outcome of interest. Yet, these covariates should be pre-determined in order not to be influenced by the treatment. In technical terms, the PSM uses these covariates to calculate the p-score defined as the probability to be treated. Based on the p-scores, individuals are matched from the control and treatment groups. Therefore, using this method of estimation reduces the possible bias in the results. In our model, the counterfactual allows us to measure the difference in children's health due to the difference in their mothers' exposure to IPV. This difference would yield to the Average Treatment Effect (ATE), calculated as follows:

$$\text{Average Treatment Effect (ATE)} = E[Y(1)/\ T=1, \theta] - E[Y(1)\ /\ T=0, \theta] \qquad (2)$$

The treatment identified in the previous equation as (T) is the exposure of mothers to different forms of IPV. The studied outcome identified as (Y) refers to the different measures of children's health discussed above. To calculate the ATE, we use the PSM, where treated and control

[4] Although the exact establishment dates of individual shelters could not be identified, a report by UN ESCWA (2019) confirms that the development of these shelters began in 2003. Consequently, the majority were already established and operational prior to 2014.

observations will be matched based on the closest p-score estimated from the set of observables (θ), which is our list of control variables discussed earlier. An essential condition to be verified for the PSM approach is the common support. There must be no significant difference in the different observable characteristics between treated and control groups. Hence, we run a post-regression test to ensure the quality of the match. Regarding the matching methods, we essentially relied on the nearest five neighbors (N5) matching method.

While the PSM is well-suited to our research question and the nature of the available data, it is important to acknowledge its limitations. First, the PSM can only adjust for observed characteristics, and thus cannot account for unobserved confounding, which may bias the estimated effects. Second, the results are sensitive to the choice of covariates included in the model. Third, the common support assumption must hold, that is, there must be sufficient overlap in the propensity scores between the treated and control groups to allow for meaningful comparison. Fourth, the estimated effects may vary depending on the matching technique used.

In light of these limitations, we took several steps to strengthen the credibility of our results. We carefully select a comprehensive set of covariates that are likely to influence both the treatment and outcomes, while avoiding variables that may themselves be affected by the treatment. We conduct post-matching balance checks to assess whether the treated and control groups have non-significantly different means of observables. Finally, we visualize the common support areas to verify that the matching procedure achieved sufficient overlap between groups.

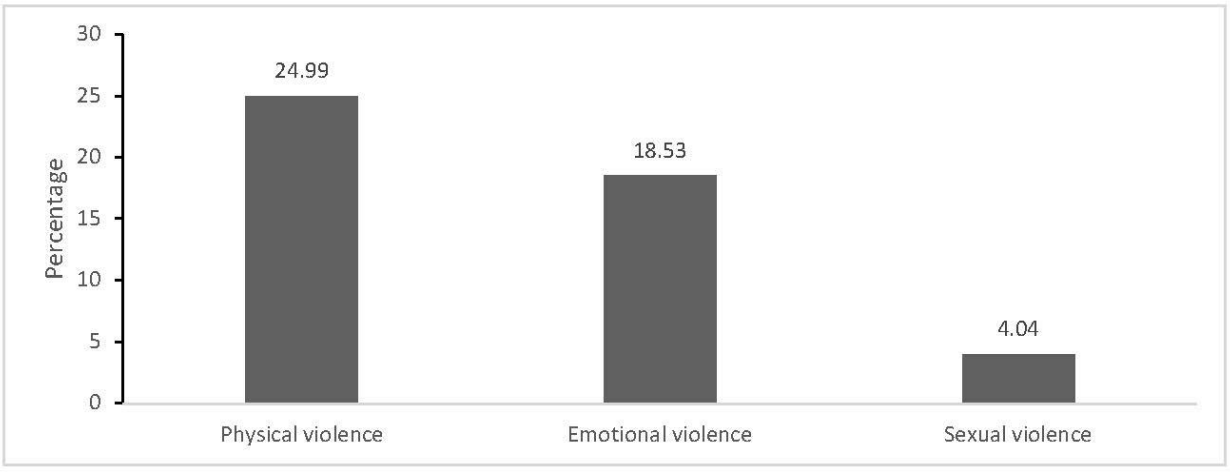
Moreover, to check the robustness of our findings, two sensitivity analyses are provided. The first is the matching method used to build the counterfactual, which is an essential pillar of the PSM approach. Since employing different matching methods is expected to lead to different results, a sensitivity analysis must be performed using different matching methods to verify the reliability of the results. Therefore, we use the kernel matching approach as a robustness check. It is a more complex method as it matches one treated individual to all the individuals in the control group where each one of them is given a weight based on its distance from the propensity score of the treated individual. Individuals in the control group who have a p-score that is very different compared to the treated individual will be given a small weight and vice-versa (Caliendo and Kopeinig, 2005). In the second robustness check, we use the Inverse Propensity Weighting (IPW). The propensity scores estimated using the PSM method are employed as weights for probit regressions. We utilize the latter to confirm that the generated propensity scores based on the set of observables that we selected have truly reduced the selection bias. Hence, using them as weights in probit regressions should yield the same results (Austin, 2011).

3.3. Data and descriptive statistics

The main available source of data to study IPV in Egypt is the DHS. It provides data at the household and individual levels on population characteristics, health measures, IPV, fertility, HIV, and female genital mutilation. It is a nationally-representative household survey used in monitoring and evaluation in several fields, including studies on demography, health, and nutrition. The surveys include several questionnaires such as household, women, and children surveys. A sub-sample of the overall women sample can be chosen in specific countries to respond to the IPV survey. Using the 2014 DHS wave for Egypt, it comprehends 21,762 ever-married women who responded to the module of IPV and who are aged between 15 and 49 years old, drawn from 25 governorates in Egypt.

As per Figure 1, physical violence is the most prevalent form of IPV, followed by emotional and sexual violence. Around 25 percent of ever-married women have reported being victims of physical violence, while 18.53 percent of women have confirmed suffering from emotional violence. Only four percent of women have reported sexual violence. However, it should be noted that sexual violence may be under-reported due to the sensitivity of the issue, especially in the light of the traditional norms and values in Egypt.

Figure 1. IPV rates among women aged 15-49, Egypt (2014)



Source: Constructed by the authors based on the EDHS 2014 wave.

Each woman in the survey had to respond to questions related to her children's characteristics and health. Based on statistics reported in Table 1A, nearly all of them were single births, and more than half of them were males. As for health outcomes, 14 percent of children are born with low birthweight, while for morbidity, women reported that their children were more vulnerable to fever compared to diarrhea. Regarding malnutrition, stunting was more prevalent compared to being overweight and wasting.

Table 1A. Summary statistics of children's characteristics and health outcomes, children aged five years old and under

		Frequency/Mean
Children's Characteristics		
Sex	Male	51.80%
	Female	48.20%
Twin Birth	Single birth	96.43%
	1st of multiple	1.74%
	2nd of multiple	1.77%
	3rd of multiple	0.05%
	4th of multiple	0
Current Age of the Child		2.4 years
Children's Health Outcomes		
Low Birthweight		14%
Morbidity	Had diarrhea recently	13%
	Had fever recently	23.71%
Malnutrition	Stunted	16%
	Wasted	9.42%
	Overweighed	8.72%

Source: Constructed by the authors based on the EDHS 2014 wave.

Table 1B presents the summary statistics for the control variables included in the econometric model. More than half of the women who have responded to this survey reside in a rural area. We can also observe that around 38 percent of women live in poor households, 22 percent in middle-class households, and 40 percent in the richest households. On the educational level, the highest percentage of women (52 percent) has a secondary educational level. The average age at the first cohabitation is 20 years old. On the other hand, for the fathers, half of them have a secondary education, and higher shares of men have either a primary education or a higher university education compared to their wives. As for their labor market participation, only 2.63 percent of the husbands are not working. Among the husbands active in the labor market, the majority occupy high-profile positions, either professional/technical/managerial positions or those related to skilled manual tasks.

Finally, at the governorate level, there is a dummy taking the value of 1 if this specific governorate has shelter for victims of IPV, 0 otherwise. This data was retrieved from the official website of the Egyptian MoSS. As shown in Table 1B, there are eight shelters in Egypt.

On the other hand, perceptions of IPV, as a measure of informal institutions, are assessed using the average acceptance of wife-beating across various reasons at the governorate level. These reasons include burning food, neglecting children, arguing with one's husband, talking to men, wasting money, and refusing sexual relations. On average, 29 percent of women have declared that it's acceptable for husbands to beat their wives. The averages are derived from the 2018 round of the Egyptian Labor Market Panel Survey (ELMPS), published by the Economic Research Forum (ERF). Given the strong correlation between IPV perceptions and self-reported IPV

experiences, we compute these governorate-level averages using a separate dataset to mitigate potential correlation concerns.

Table 1B. Summary statistics of control variables

		Frequency/Mean
Women's Characteristics		
Age Groups	15-19	3.51%
	20-24	14.04%
	25-29	21.84%
	30-34	18.97%
	35-39	16.06%
	40-44	13.16%
	45-49	12.43%
Highest Educational Level	No education	24.04%
	Primary	10.26%
	Secondary	51.83%
	Higher	13.87%
Age at First Cohabitation (Mean)		20 years
Husbands' Characteristics		
Highest Educational Level	No education	17.84%
	Primary	14.76%
	Secondary	51.59%
	Higher	15.82%
Husband's Occupation	Not working	2.63%
	Professional/technical/managerial positions	21.73%
	Clerical	4.61%
	Sales	4.57%
	Agricultural – self employed	6.14%
	Agricultural – employee	7.88%
	Services	11.69%
	Skilled manual	32.09%
	Unskilled manual	8.22%
Household's Characteristics		
Place of Residence	Urban	35.03%
	Rural	64.97%
Wealth Index	Poorest	17.86%
	Poorer	19.65%
	Middle	22.24%
	Richer	20.87%
	Richest	19.38%
Institutional Framework		
Victims Shelters (Count)		8 shelters
IPV Acceptance		29.21%

Source: Constructed by the authors based on the EDHS 2014 wave.

4. Empirical findings

In this section, we present the empirical findings of this study. First, we provide an overview of the key results obtained using the PSM methodology. Second, we assess the robustness of our findings through two robustness checks.

4.1. Main findings

4.1.1. PSM first stage results: drivers of IPV

The first stage of the PSM analysis examines how the selected set of predetermined control variables influences the likelihood of experiencing different forms of IPV. As presented in Table A1 in the Appendix, the findings reveal the following patterns. First, regarding children's characteristics, we find that the child's age, sex, and birth order are not significantly associated with the occurrence of IPV.

Second, for mothers' characteristics, the relationship between education and IPV appears mixed. Having a primary education, compared to no education, is significantly associated with a higher likelihood of experiencing emotional and physical violence. In contrast, attaining secondary education or higher significantly reduces the risk of physical violence. Additionally, age at first cohabitation is negatively associated with physical violence, indicating that women who marry at older ages are less likely to experience such abuse. This may suggest that later marriage enhances women's empowerment within marital relationships, providing greater protection against IPV. These findings are consistent with the work of Yaya et al. (2021) in Egypt and Coll et al. (2023) in other developing countries.

Third, in relation to husbands' characteristics, higher levels of education are associated with a lower likelihood of perpetrating IPV. However, the results regarding labor force participation are somewhat unexpected. While existing literature suggests that unemployed men may be more prone to using violence as a means of asserting masculinity—particularly in settings of economic stress (Bhalotra et al., 2020)—our findings indicate that employed men, particularly those working in various occupations, are more likely to commit acts of IPV compared to their unemployed counterparts. This pattern may be explained by the Male Peer Support Theory, which posits that attitudes condoning violence against women are reinforced through male social networks. Employed men may have greater exposure to such networks, where peer approval or normalization of violent behavior contributes to higher IPV prevalence (Berggren and Gottzén, 2022). In contrast, unemployed men may have less engagement in these social circles, thereby reducing exposure to peer reinforcement of violence.

Fourth, concerning household characteristics, a higher wealth index is associated with a reduced likelihood of experiencing emotional and physical violence. However, the effect is statistically significant only for physical violence among women in the richest wealth quintile. Finally, we examine the role of informal and formal institutions. For informal institutions, governorate-level perceptions regarding IPV are positively associated with a woman's individual experience of violence. Specifically, women residing in governorates where IPV is more socially accepted are significantly more likely to experience IPV themselves. This finding underscores the role of broader social norms in shaping individual vulnerability.

In contrast, the effect of formal institutions, such as the presence of shelters, appears limited. The availability of shelters does not show a statistically significant effect in reducing any form of IPV. Interestingly, the presence of shelters is positively associated with physical violence at the governorate level. This counterintuitive finding may be explained by reverse causality: shelters are more likely to have been established in governorates with already high levels of IPV, rather than having a preventive effect on its incidence.

4.1.2. PSM findings: IPV and children's health

Moving to the second stage and the main analysis using the PSM, the effects of IPV on children's health outcomes are presented in Table 2. Women who experience physical or sexual violence during pregnancy are significantly more likely to give birth to children with lower birthweight. Among the different forms of violence, sexual violence shows the strongest negative association with birthweight, indicating a higher magnitude of impact compared to physical or emotional violence. Additionally, various forms of IPV significantly increase the likelihood of child morbidity, measured through the incidence of fever and diarrhea. However, the magnitude of these effects differs across types of violence. These findings align with the work of Ferdousy and Matin (2015) and Bui et al. (2018).

To assess the impact of IPV on malnutrition, we use two anthropometric indicators: height-for-age standard deviation (HAZ) as a measure of stunting, and weight-for-height standard deviation (WHZ) as a measure of wasting and overweight. As shown in Table 2, IPV appears to have a limited or statistically insignificant effect on HAZ. This is consistent with prior findings suggesting that stunting in Egypt is primarily influenced by inherited maternal characteristics, such as height and weight, and by the household's income, which affects access to adequate nutrition and healthcare (Hashad, 2019). In contrast, all forms of IPV significantly reduce children's WHZ scores, indicating a higher risk of wasting among children whose mothers have been exposed to IPV. These results are consistent with those reported by Mondal and Paul (2020) and Yalcin et al. (2022), who find a significant association between maternal exposure to IPV and child malnutrition in India and Turkey, respectively—two developing countries that share important contextual similarities with Egypt.

Theories derived from collective cooperative household models suggest that family resources are pooled and that intra-household bargaining typically leads to Pareto-efficient outcomes. However, the presence of IPV or other forms of abuse that constrain women's access to resources disrupts this equilibrium, shifting power dynamics in favor of men (Mattila-Wiro, 1999; Nuhu, 2015; Giovanis and Ozdamar, 2022). In Egypt, as in many other developing countries, children's well-being is predominantly shaped by women's caregiving practices, as women generally serve as the primary caregivers within households. As a result, households where women hold weaker bargaining positions relative to men often exhibit poorer child outcomes. Given that IPV is expected to further erode women's bargaining power, it is likely to exert negative effects on

children's development, particularly in terms of health outcomes (Conti and Heckman, 2012; Bruins, 2017; Li and Sun, 2023).

In summary, our findings are consistent with the broader literature on the consequences of IPV on children's health outcomes. To assess the quality of the estimation method, we conduct post-estimation tests of the propensity scores. The results indicate no significant differences in observable characteristics between the treated and control groups, supporting the quality of the matching procedure based on pre-treatment covariates.[5] Additionally, Figure A2 illustrates the region of common support across different treatments and outcomes. As shown, there is substantial overlap between individuals in the treatment and control groups, confirming the validity of the common support assumption.

Table 2. PSM results of children's health effects, women aged 15-49, children under the age of five[6]

	Emotional Violence		Physical Violence		Sexual Violence		Matching Method
	Treatment	**Observations**	**Treatment**	**Observations**	**Treatment**	**Observations**	
Birth Weight	-0.0675	1,243	-0.1011**	1,225	-0.2025*	1,243	N(5)
	(0.0498)		(0.0422)		(0.1127)		
Morbidity							
Diarrhea	0.1210***	4,685	0.1282***	4,681	0.1543**	4,681	N(5)
	(0.0312)		(0.0279)		(0.0647)		
Fever	0.0859***	4,685	0.0944***	4,681	0.1033***	4,681	N(5)
	(0.0188)		(0.0167)		(0.0389)		
Malnutrition							N(5)
Height/Age	-14.3531*	4,200	-10.9113	4,196	-0.7295	4,196	N(5)
Standard Deviation	(8.1127)		(7.1249)		(14.7875)		
Weight/Height	-26.3547***	4,200	-16.8187**	4,196	-32.8370***	4,196	N(5)
Standard Deviation	(6.5921)		(5.8015)		(12.0626)		

*Notes: SE in parentheses, *** p<0.01, ** p<0.05, * p<0.1.*

4.2. Sensitivity analysis

4.2.1. Matching methods

As previously discussed, the choice of matching method can influence the results obtained through the PSM, and this sensitivity is often cited as a key limitation of the PSM method. To assess the robustness of our findings, we re-estimate the models using the Kernel matching method instead of the nearest-neighbor (5) approach. As discussed above, kernel matching is a more complex technique that matches each treated observation to all control group observations, assigning weights based on the proximity of their propensity scores. The results, presented in Table 3, confirm the robustness of our previous findings. Experiencing physical or sexual violence during pregnancy significantly reduces the child's birthweight. Furthermore, the probability of morbidity increases significantly for children whose mothers are victims of any form of IPV. Regarding malnutrition, the effect of IPV on HAZ remains limited, whereas all forms of IPV are associated

[5] Tables of the post-estimation tests are available upon request.

[6] To assess the impact on birthweight, we limit the sample to children aged one year or younger to capture the effect of violence during pregnancy.

with a significant negative impact on WHZ, indicating an elevated risk of wasting among children exposed to IPV environments.

4.2.2. Propensity score weighting

Following the approach of Austin (2011), we employ the IPW as a second robustness check. This method utilizes the propensity scores estimated using the PSM procedure to assign weights to each observation in the sample, thereby adjusting for differences in covariates between treated and control groups. After applying the weights, we estimate a Probit regression and compute the marginal effects to assess the impact of each form of IPV on children's health outcomes.

As shown in Table 4, sexual violence during pregnancy emerges as a key determinant of lower birthweight. In addition, all forms of IPV significantly increase the likelihood of child morbidity. With respect to malnutrition, the results reaffirm that HAZ is not significantly affected by IPV exposure. However, the probability of wasting increases in association with certain forms of IPV, indicating that children in such contexts are at greater nutritional risk.

In summary, our results support the hypothesized effects of IPV on children's health outcomes. First, women who experience IPV during pregnancy, particularly physical or sexual violence, are significantly more likely to give birth to children with low birthweight, a factor strongly associated with long-term impairments in growth and nutritional status (Binkin et al., 1988; Hack et al., 1995). Second, exposure to IPV is linked to increased child morbidity, which may stem from the mother's reduced capacity to provide adequate care due to psychological distress or limited decision-making power over health-related matters. Third, children's nutritional outcomes are also adversely affected. Specifically, children born to mothers who have experienced violence are more likely to suffer from wasting, likely reflecting the compounded effects of low birthweight and subsequent challenges in achieving appropriate weight relative to their height.

Table 3. PSM results for children's health effects, women aged 15-49, children under the age of five, kernel matching

	Emotional Violence		Physical Violence		Sexual Violence		Matching Method
	Treatment	**Observations**	**Treatment**	**Observations**	**Treatment**	**Observations**	
Birth Weight	-0.0794*	1,243	-0.8343**	1,243	-0.2051**	1,235	Kernel
	(0.0461)		(0.0394)		(0.1063)		
Morbidity							
Diarrhea	0.1175***	4,685	0.1390***	4,681	0.1233***	4,681	Kernel
	(0.0287)		(0.0256)		(0.0596)		
Fever	0.0916***	4,685	0.0945***	4,681	0.0988***	4,681	Kernel
	(0.0172)		(0.0153)		(0.0354)		
Malnutrition							
Height/Age	-15.1271**	4,200	-8.0394	4,196	-11.8235	4,196	Kernel
Standard Deviation	(7.2972)		(6.4175)		(12.8775)		
Weight/Height	-20.3113***	4,200	-14.2745***	4,196	-29.5297***	4,196	Kernel
Standard Deviation	(5.9602)		(5.3035)		(10.6045)		

*Notes: SE in parentheses, *** p<0.01, ** p<0.05, * p<0.1.*

Table 4. PSM results for children's health effects, women aged 15-49, children under the age of five, propensity score weighting

	Emotional Violence		Physical Violence		Sexual Violence	
	Marginal Effect	Observations	Marginal Effect	Observations	Marginal Effect	Observations
Low Birthweight	0.0518*	1,243	0.0278	1,243	0.1668***	1,243
	(0.0271)		(0.0234)		(0.0621)	
Morbidity						
Diarrhea	0.0618***	4,685	0.0638***	4,685	0.0429	4,685
	(0.0144)		(0.0125)		(0.0279)	
Fever	0.0990***	4,685	0.0999***	4,685	0.1283***	4,685
	(0.0176)		(0.0156)		(0.0372)	
Malnutrition						
Stunted	0.0032	4,196	-0.0153	4,200	-0.0278	4,196
	(0.0149)		(0.0131)		(0.0275)	
Wasted	0.0329***	4,196	0.0127	4,200	0.0264	4,196
	(0.0119)		(0.0109)		(0.0237)	
Overweighed	-0.0167	4,196	-0.0139	4,196	-0.0483***	4,196
	(0.0111)		(0.0101)		(0.0165)	

*Notes: SE in parentheses, *** p<0.01, ** p<0.05, * p<0.1.*

5. Concluding remarks and policy recommendations

Children are often the silent victims of IPV, facing a range of risks, including serious health consequences, even when they are not directly targeted. Although existing research underscores the harmful effects of IPV on children, much of it relies on non-representative samples, which can lead to biased estimates and limit the generalizability of the findings. Moreover, most of this research focuses on developed countries or, to a lesser extent, on developing nations in Asia or Sub-Saharan Africa. In contrast, the Arab region, and Egypt in particular, remains underrepresented in this literature.

This study addresses these gaps by examining the impact of IPV on child health in Egypt using nationally representative microdata from the 2014 DHS. It focuses on three key health outcomes—birthweight, morbidity, and malnutrition—while accounting for different forms of IPV exposure. To address potential selection bias, we apply the PSM to compare children of women exposed to IPV with those unexposed, based on a range of observable characteristics.

The findings reveal significant negative effects of IPV on children's health, highlighting its transgenerational consequences. Physical and sexual violence are associated with lower birthweight, while exposure to any form of IPV increases the likelihood of illness, such as fever and diarrhea, as well as malnutrition, particularly wasting. These results are robust across various sensitivity checks, including different matching approaches and weighting strategies.

Based on the findings, this study reinforces evidence from various countries regarding the adverse impact of IPV on children's health. As highlighted in the literature, IPV negatively affects four critical health dimensions: birth outcomes, infections and morbidity, nutritional status, and long-

term mental health. In line with studies conducted in the US, Zimbabwe, and Ghana (Aizer, 2011; Shamu et al., 2018; Kpordoxah et al., 2024), this analysis confirms a significant association between IPV during pregnancy and reduced birthweight. Similarly, consistent with findings from Bangladesh, India, Nepal, and Peru (Ferdousy and Matin, 2015; Hernandez, 2021), IPV is shown to increase children's exposure to morbidity and other health complications. Moreover, in line with evidence from Bangladesh, Vietnam, and Sub-Saharan Africa (Ziaei et al., 2012; Misch and Yount, 2013; Bui et al., 2018), the study finds that IPV has a detrimental effect on children's nutritional outcomes in Egypt.

Despite the paper's contribution to literature, the study has several limitations that open avenues for future research. First, on the methodological front, the PSM was the most appropriate approach given the available data and the need to address selection bias based on observable characteristics. Nevertheless, the presence of unobserved confounders cannot be ruled out, which may still bias the estimated effects. To mitigate this concern in future research and control for observables and unobservable characteristics, panel updated data observing mothers and their children over the years are required. Second, underreporting, particularly with regard to sexual violence, may result in underestimated impacts, pointing to the need for improved data collection efforts in future research.

The findings point to several policy recommendations aimed at prevention, support, and the advancement of research in the context of IPV. First, it is essential to challenge and change social norms that condone IPV, given its detrimental impact on both women and children. Addressing the root causes of violence should be prioritized, as this would help in its prevention. Reshaping social norms requires a coordinated approach targeting both parents and children. Community-level interventions that engage both men and women are particularly effective in altering attitudes toward violence (Reyal et al., 2024). Awareness campaigns should focus on educating fathers about the consequences of IPV on children, while also informing women about their rights and self-protection strategies. For younger generations, expanding educational initiatives in schools and communities that address harmful gender norms and raise awareness about IPV can help challenge attitudes that normalize violence (Roess and Aranda, 2013).

Second, institutions must provide comprehensive support services for IPV victims, particularly women and children. The healthcare system, for example, should be equipped to handle IPV cases, as healthcare providers play a critical role in identifying abuse among women and children. Early detection can prevent cases from going unnoticed or being underreported, and healthcare providers can connect victims with appropriate support networks (Ragavan and Murray, 2023). A key component of the support network is the establishment of shelters and specialized counseling centers for IPV victims. These facilities offer therapy to help mitigate the physical and psychological harm caused by IPV, and they also provide long-term resources, such as housing, employment, and legal aid, promoting stability and resilience (Yount and Li, 2009). Schools also

play a pivotal role in supporting children, particularly by offering psychological support and helping children reintegrate into educational and social systems to ensure their development is not hindered.

Finally, strengthening data systems is key to informing more effective policy and research. Policymakers should ensure the regular collection of nationally representative data that tracks the prevalence and impact of IPV, especially on children. This would allow for more precise targeting of interventions and monitoring of progress over time. In sum, the risks that IPV poses to children's health and development are substantial and cannot be overlooked. A comprehensive, multi-sectoral response is critical to mitigating its transgenerational harm and fostering safer environments for future generations.

References

AbuElenin, M. M., Elshora, A. A., Sadaka, M. S., and Abdeldaim, D. E. (2022). IPV Against Married Women During the COVID-19 Pandemic in Egypt. *BMC Women's Health, 22*(1), 94. DOI: 10.1186/s12905-022-01674-5.

Aizer, A. (2011). Poverty, Violence, and Health: The Impact of IPV During Pregnancy on Newborn Health. *The Journal of Human Resources, 46*(3), 518-538. DOI: 10.3368/jhr.46.3.518.

Atallah, M. and Hesham, M. (2024). Unpaid Care Work in Egypt: Gender Gaps in Time Use. Economic Research Forum Working Paper No. 1755. Retrieved January 15, 2025, from https://erf.org.eg/publications/unpaid-care-work-in-egypt-gender-gaps-in-time-use/.

Austin, P. (2011). An Introduction to Propensity Score Methods for Reducing the Effects of Confounding in Observational Studies. *Multivariate Behavioral Research, 46*(3), 399–424. DOI: 10.1080/00273171.2011.568786.

Berggren, K. and Gottzén, L. (2022). Rethinking Male Peer Support Theory: Social Network Responses to Young Men's Violence Against Women. *Journal of Men's Studies, 30*(2), 291-307. https://doi.org/10.1177/10608265211068.

Binkin, N. J., Yip, R., Fleshood, L., and Trowbridge, F. L. (1988). Birth Weight and Childhood Growth. *Pediatrics, 82*(6), 828-834. PMID: 3186371.

Boeckel, M., Wagner, A., and Grassi-Oliveira, R. (2017). The Effects of Intimate Partner Violence Exposure on the Maternal Bond and PTSD Symptoms of Children. *Journal of Interpersonal Violence, 32*(7), 1127–1142. DOI: 10.1177/0886260515587667.

Bogat, G. A., DeJonghe, E., Levendosky, A. A., Davidson, W. S., and von Eye, A. (2006). Trauma Symptoms Among Infants Exposed to Intimate Partner Violence. *Child Abuse & Neglect, 30*(2), 109–125. https://doi.org/10.1016/j.chiabu.2005.09.002

Bruins, M. (2017). Women's Economic Opportunities and the Intra-Household Production of Child Human Capital. *Labour Economics, 44*, 122-132. https://doi.org/10.1016/j.labeco.2016.12.007.

Bui, N., Hoang, T. X., and Le, N. T. V. (2018). The Effect of IPV Against Women on Child Welfare in Vietnam. *Children and Youth Services Review, 94*, 709-719. DOI: 10.1016/j.childyouth.2018.09.024.

Caleyachetty, R., Uthman, O. A., Bekele, H. N., Martín-Cañavate, R., Marais, D., Coles, J., Steele, B., Uauy, R., and Koniz-Booher, P. (2019). Maternal Exposure to Intimate Partner Violence and Breastfeeding Practices in 51 Low-Income and Middle-Income Countries: A Population-Based Cross-Sectional Study. *PLOS Medicine, 16*(10), e1002921. https://doi.org/10.1371/journal.pmed.1002921.

Caliendo, M. and Kopeinig, S. (2008). Some Practical Guidance for the Implementation of Propensity Score Matching. *Journal of Economic Surveys, 22*(1), 31-72. DOI: 10.1111/j.1467-6419.2007.00527.x.

Carolin, P. A. and Xavier, G. G. (2020). Impact of IPV on Children: Causes and Preventive Measures. *BCM Journal of Social Work, 16*(1), 45-58.

Central Agency for Public Mobilization and Statistics (CAPMAS). (2022). Egypt Family Health Survey-2021. Cairo: CAPMAS. Retrieved January 15, 2025, from https://censusinfo.capmas.gov.eg/Metadata-en-v4.2/index.php/catalog/665.

Coll, C. V. N., Wendt, A., Santos, T. M., Bhatia, A., and Barros, A. J. D. (2023). Cross-National Associations Between Age at Marriage and Intimate Partner Violence Among Young

Women: An Analysis of Demographic and Health Surveys from 48 Countries. *International Journal of Environmental Research and Public Health, 20*, 3218. DOI: 10.3390/ijerph20043218.

Conti, G. and Heckman, J. (2012). The Economics of Child Well-Being. *Institute for the Study of Labor, Discussion Paper No. 6930*.

Demographic and Health Surveys (DHS). (2023). *Nutritional Status*. Guide to DHS Statistics DHS-7. Retrieved March 4, 2022, from https://dhsprogram.com/data/Guide-to- DHS-Statistics/Nutritional_Status.htm.

Dodaj, A. (2020). Children Witnessing IPV. *Journal of Children's Services, 15*(3), 161-174. https://doi.org/10.1108/jcs-04-2019-0023

Doyle, J. and Aizer, A. (2018). Economics of Child Protection: Maltreatment, Foster Care, and Intimate Partner Violence. *Annual Review of Economics, 10*, 87–108. doi: 10.1146/annurev-economics-080217-053237. PMID: 31007830; PMCID: PMC6469872.

Duvvury, N., Grown, C., and Redner, J. (2013). Costs of Intimate Partner Violence at the Household and Community Levels: An Operational Framework for Developing Countries. *International Center for Research on Women*. Retrieved January 25, 2023, from https://www.icrw.org/wp-content/uploads/2016/10/Costs-of-Intimate-Partner-Violence- at-the-Household-and-Community-Levels-An-Operational-Framework-for-Developing-Countries.pdf.

Egyptian Ministry of Social Solidarity (n.d.). *Women Housing Centers*. Retrieved April 15, 2022, from https://www.moss.gov.eg/Sites/MOSA/ar-eg/Pages/WomensHostingCenters-aspx.aspx.

ElSaid, N., Shehata, S. A., Sayed, H. H., Mohammed, H. S., and Abdel-Fatah, Z. F. (2022). IPV Against Women During Coronavirus (COVID-19) Pandemic Lockdown in Egypt: A Cross-Sectional Study. *Journal of the Egyptian Public Health Association, 97*(1), 23. https://doi.org/10.1186/s42506-022-00117-1.

Economic Research Forum (ERF) and UN Women (2020). The Role of the Care Economy in Promoting Gender Equality. Retrieved January 15, 2025, from https://arabstates.unwomen.org/sites/default/files/Field%20Office%20Arab%20States/Attachments/2021/01/UNW_ERF_Report_Final_8%20December.pdf.

Evans, S. E., Davies, C., and DiLillo, D. (2008). Exposure to IPV: A Meta-Analysis of Child and Adolescent Outcomes. *Aggression and Violent Behavior, 13*(2), 131–140. doi 0.06/j.avb.2008.02.005.

Ferdousy, E. and Matin, M. A. (2015). Association Between Intimate Partner Violence and Child Morbidity in South Asia. *Journal of Health, Population and Nutrition, 33*, 16. https://doi.org/10.1186/s41043-015-0016-y.

Forke, C., Catallozzi, M., Localio, A. R., Grisso, J. A., Wiebe, D. J., and Fein, J. A. (2019). Intergenerational Effects of Witnessing IPV: Health of the Witnesses and Their Children. *Preventive Medicine Reports, 15*, 100942. doi: 10.1016/j.pmedr.2019.100942. PMID: 31321205; PMCID: PMC6614529.

Giovanis, E. and Ozdamar, O. (2022). Intra-Household Bargaining, Resource Allocation, and Cost of Gender-Based Violence in Egypt: The Role of Asset Ownership and Gender Role Attitudes. *ERF 29th Annual Conference*. Retrieved December 15, 2024, from https://erf.org.eg/app/uploads/2023/05/1683082274_898_1296027_22erf29ac_gndr_oznur_eleftherios.pdf

Guide to DHS Statistics. (n.d.). Nutritional status. Retrieved March 4, 2022, from https://dhsprogram.com/data/Guide-to-DHS-Statistics/Nutritional_Status.htm.

Hack, M., Klein, N. K., and Taylor, H. G. (1995). Long-Term Developmental Outcomes of Low Birth Weight Infants. *The Future of Children, 5*(1), 176–196. PMID: 7543353.

Hashad, R. (2019). Changes in Height-for-Age of Egyptian Children 1995 to 2014. *ERF Working Paper No. 1357*. Retrieved December 15, 2025, from https://erf.org.eg/app/uploads/2019/10/1357.pdf.

Heise, L. (2011). What Works to Prevent Partner Violence? An Evidence Overview. *STRIVE Research Consortium*. Retrieved January 19, 2024, from https://assets.publishing.service.gov.uk/media/57a08abde5274a31e0000750/60887-PartnerViolenceEvidenceOverview.pdf.

Hernandez, W. (2021). Violence with Femicide Risk: Its Effects on Women and Their Children. *Journal of Interpersonal Violence, 36*(11–12), 6465–6491. doi: 10.1177/0886260518815133.

Holmes, M., Berg, K. A., Bender, A. E., Evans, K. E., Kobulsky, J. M., Davis, A. P., and King, J. A. (2022). The Effect of Intimate Partner Violence on Children's Medical System Engagement and Physical Health: A Systematic Review. *Journal of Family Violence, 37*, 1221–1244. 10.1007/s10896-021-00291-4.

Kpordoxah, M., Adiak, A., Issah, A., Yeboah, D., Abdulai, N., and Boah, M. (2024). Magnitude of Self-Reported Intimate Partner Violence Against Pregnant Women in Ghana's Northern Region and its Association with Low Birth Weight. *BMC Pregnancy and Childbirth, 24*, 29. https://doi.org/10.1186/s12884-023-06229-6.

Li, C. and Sun, D. (2023). Women's Bargaining Power and Spending on Children's Education: Evidence from a Natural Experiment in China. *International Journal of Educational Development, 100*, 102787. https://doi.org/10.1016/j.ijedudev.2023.102787.

Lin, K., Zhou, P., Liu, M., Chen, B., Zhou, Z., Zhang, Y., Zhou, Y., Jiang, Y., Bao, S., Chen, D., Zhu, Y., and Xing, Y. (2024). The Relationship Between Intimate Partner Violence and Child Malnutrition: A Retrospective Study in 29 Sub-Saharan African Countries. *Frontiers in Public Health, 11*, 1231913. https://doi.org/10.3389/fpubh.2023.1231913.

Lloyd, M. (2018). IPV and Education: Examining the Impact of IPV on Young Children, Children, and Young People and the Potential Role of Schools. *Frontiers in Psychology, 9*, 2094. https://doi.org/10.3389/fpsyg.2018.02094

Mattila-Wiro, P. (1999). Economic Theories of the Household: A Critical Review. *World Institute for Development Economics Research, Working Paper No. 159.*

Misch, E. and Yount, K. (2013). Intimate Partner Violence and Breastfeeding in Africa. *Maternal and Child Health Journal, 18*(3), 688–697. doi: 10.1007/s10995-013-1294-x. PMID: 23807715.

Mondal, D. and Paul, P. (2020). Association Between Intimate Partner Violence and Child Nutrition in India: Findings from Recent National Family Health Survey. *Children and Youth Services Review, 119*, 105493. https://doi.org/10.1016/j.childyouth.2020.105493.

Nuhu, A. S. (2015). IPV, Intrahousehold Bargaining and Child Health Development in Ghana. *EconStor Preprints* 125776, ZBW - Leibniz Information Centre for Economics. Retrieved January 25, 2023, from https://ideas.repec.org/p/zbw/esprep/125776.html.

OAMDI (2024). Labor Market Panel Surveys (LMPS), http://erf.org.eg/data-portal/. Version 3.0 of Licensed Data Files; ELMPS 2018-Central Agency For Public Mobilization & Statistics (CAPMAS). Egypt: Economic Research Forum (ERF).

Pakrashi, D. and Saha, S. (2024). Intergenerational Consequences of Spousal Violence: Effect on Nutritional Status of Children. *Review of Economics of the Household*, 22(1), 67–94. https://doi.org/10.1007/s11150-023-09678-2.

Ragavan, M. and Murray, A. (2023). Supporting Intimate Partner Violence Survivors and Their Children in Pediatric Healthcare Settings. *Pediatric Clinics of North America, 70*, 1069–1086. https://doi.org/10.1016/j.pcl.2023.06.016.

Reyal, H. P., Perera, M. N., and Guruge, G. N. D. (2024). Effectiveness of a Community-Based Participatory Health Promotion Intervention to Address Knowledge, Attitudes, and Practices Related to Intimate Partner Violence: A Quasi-Experimental Study. *BMC Public Health, 24*(1), 1417. https://doi.org/10.1186/s12889-024-18893-0.

Rico, E., Fenn, B., Abramsky, T., and Watts, C. (2011). Associations Between Maternal Experiences of Intimate Partner Violence and Child Nutrition and Mortality: Findings from Demographic and Health Surveys in Egypt, Honduras, Kenya, Malawi, and Rwanda. *Journal of Epidemiology & Community Health, 65*, 360–367. https://doi.org/10.1136/jech.2008.081810.

Riedl, D., Beck, T., Exenberger, S., Daniels, J., Dejaco, D., Unterberger, I., and Lampe, A. (2019). Violence from Childhood and Adulthood: The Influence of Child Victimization and IPV on Physical Health in Later Life. *Journal of Psychosomatic Research, 116*, 68-74. https://doi.org/10.1016/j.jpsychores.2018.11.019.

Roess, A. A. and Aranda, E. L. (2013). Justification of Intimate Partner Violence in Egypt. *Research Days 2013*, 5. Retrieved December 15, 2024, from https://hsrc.himmelfarb.gwu.edu/researchdays_2013/5/

Seon, J., Cho, H., Choi, G.-Y., Son, E., Allen, J., Nelson, A., and Kwon, I. (2022). Adverse Childhood Experiences, Intimate Partner Violence, Victimization, and Self-Perceived Health and Depression Among College Students. *Journal of Family Violence, 37(4): 691-706*. DOI 10.1007/s10896-021-00286-1.

Shamu, S. et al. (2018). Intimate Partner Violence Forced First Sex, and Adverse Pregnancy Outcomes in a Sample of Zimbabwean Women Accessing Maternal and Child Health Care. *BMC Public Health, 18*, 595. https://doi.org/10.1186/s12889-018-5464-z.

United Nations (UN) (2005). The Economic Costs of Violence Against Women: An Evaluation of the Literature. Retrieved February 6, 2024, from https://www.un.org/womenwatch/daw/vaw/expert%20brief%20costs.pdf.

UN (n.d.). What is Domestic Abuse? Retrieved February 6, 2024, from https://www.un.org/en/coronavirus/what-is-domestic-abuse.

World Health Organization (WHO) (2013). Global and Regional Estimates of Violence Against Women: Prevalence and Health Effects of Intimate Partner Violence and Non-Partner Sexual Violence. WHO Press. Retrieved March 4, 2022, from https://www.who.int/publications/i/item/9789241564625.

WHO (2021). Violence Against Women. Retrieved March 4, 2022, from https://www.who.int/news-room/fact-sheets/detail/violence-against- women

Yalcin, S., Dinc, S., Zonp, Z., and Bilgin, H. (2022). An Examination of Effects of Intimate Partner Violence on Children: A Cross-Sectional Study Conducted in a Pediatric Emergency Unit in Turkey. *Journal of Nursing Management*, 1-10. PMID: 35560694. DOI: 10.1111/jonm.13673.

Yaya, S., Hudani, A. Z., Buh, A., and Bishwajit, G. (2021). Prevalence and Predictors of Intimate Partner Violence Among Married Women in Egypt. *Journal of Interpersonal Violence, 36* (21-22), 10686–10704. PMID: 31718407. DOI: 10.1177/0886260519888196.

Yount, K. and Li, L. (2009). Women's Justification of Domestic Violence in Egypt. *Journal of Marriage and Family, 71*(5), 1125-1140. https://doi.org/10.1111/j.1741-3737.2009.00659.x.

Ziaei, S., Naved, R. T., and Ekstrom, E.-C. (2012). Women's Exposure to Intimate Partner Violence and Child Malnutrition: Findings from Demographic and Health Surveys in Bangladesh. *Maternal and Child Nutrition, 10*, 347-359. DOI: 10.1111/j.1740-8709.2012.00432.x.

Appendix

Table A1: Determinants of IPV occurrence in Egypt, 2014

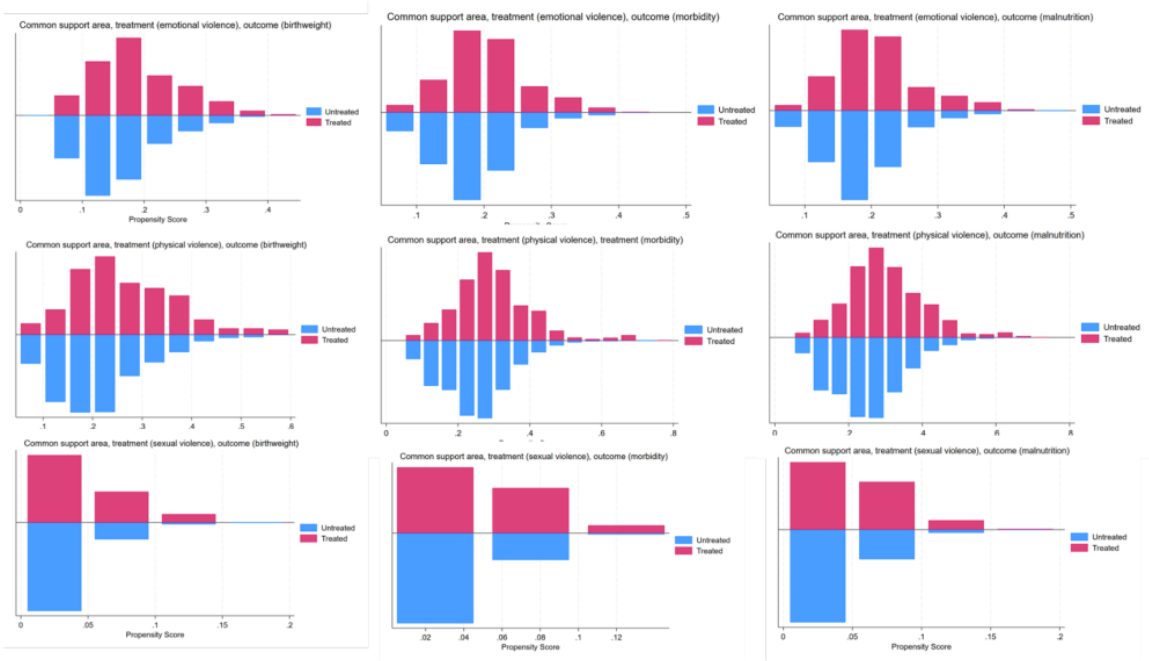
	(1) Emotional Violence	(2) Physical Violence	(3) Sexual Violence
Children characteristics			
Child is a twin: Reference group single birth			
1st of multiple	0.0521	0.0536	0.0870
	(0.158)	(0.151)	(0.238)
2nd of multiple	0.00652	0.0957	0.287
	(0.147)	(0.138)	(0.195)
3rd of multiple	-0.118	-0.416	
	(0.573)	(0.600)	
4th of multiple	-	-	-
Sex of the child: Reference group male			
female	0.0549	0.0423	-0.00754
	(0.0394)	(0.0371)	(0.0622)
Current age of the child	0.00938	0.0149	0.0297
	(0.0116)	(0.0109)	(0.0183)
Women's characteristics			
Women's highest educational level: Reference group no education			
Primary	0.312***	0.157**	0.0172
	(0.0774)	(0.0729)	(0.116)
Secondary	0.0149	-0.120**	-0.0954
	(0.0609)	(0.0561)	(0.0898)
Higher	-0.133	-0.450***	-0.162
	(0.0926)	(0.0884)	(0.149)
Age at first cohabitation	-0.00530	-0.0134**	0.00796
	(0.00571)	(0.00539)	(0.00877)
Husbands' characteristics			
Husband's highest education level: Reference group no education			
Primary	-0.110	0.00825	-0.0809
	(0.0771)	(0.0722)	(0.111)
Secondary	-0.116*	-0.0242	-0.230**
	(0.0638)	(0.0604)	(0.0933)
Higher	-0.214**	-0.168*	-0.530***
	(0.0937)	(0.0890)	(0.160)
Husband's occupation: Reference group not working			
Agriculture	0.191	0.247	0.0638
	(0.175)	(0.165)	(0.308)
Services	0.173	0.195	0.272
	(0.175)	(0.165)	(0.307)
Manual work	0.282*	0.370**	0.333
	(0.167)	(0.158)	(0.296)
Administrative work	0.304*	0.233	0.416
	(0.176)	(0.168)	(0.308)
Professional/technical/managerial occupations	0.0413	0.170	0.193
	(0.173)	(0.163)	(0.306)

Table A1: Continued

Household characteristics			
Area of residence: Reference group urban			
Rural	-0.0375	0.000356	0.154
	(0.0640)	(0.0606)	(0.104)
Wealth index: Reference group poorest			
Poorer	-0.148**	-0.197***	0.0498
	(0.0649)	(0.0596)	(0.0969)
Middle	-0.118*	-0.266***	-0.0768
	(0.0662)	(0.0616)	(0.105)
Richer	0.0250	-0.114	0.0613
	(0.0766)	(0.0717)	(0.121)
Richest	-0.134	-0.242***	0.0169
	(0.0966)	(0.0905)	(0.156)
Institutions			
Presence of shelters for victims of IPV	0.00491	0.127***	0.0647
	(0.0473)	(0.0449)	(0.0776)
Governorate perceptions on IPV	0.270	0.484***	0.522*
	(0.169)	(0.162)	(0.275)
Constant	-0.933***	-0.583***	-2.267***
	(0.226)	(0.213)	(0.379)
Observations	5,566	5,566	5,559

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure A2. Common support area for PSM matching



Source: authors' calculation based on the EDHS 2014 data using n(5) matching technique.