Influence of Intimate Partner Violence on the Nutritional Status of Children: Insights from Pakistan Demographic and Health Survey, 2017–2018

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Intimate partner violence (IPV) is a hidden pandemic affecting all regions and cadres of the society. The Pakistan Demographic and Health Survey (PDHS), 2017–2018 suggested that 30% of ever married women aged 15 to 49 years suffered from IPV. Literature suggests that IPV negatively impacts health of children under five years of age. We performed a secondary data analysis of PDHS 2017–18 to determine the association of emotional and physical IPV with nutritional status of children under five years of age. Stunting (height-for-age) and underweight (weight-for-age) were estimated using z-scores for defining chronic and acute malnutrition. Socio-demographic characteristics including age, education, and working status of mother and father, wealth index, and age and gender of child were included in purposeful variable selection. A total of 1,072 woman-child dyads were analyzed. No significant association was observed between emotional or physical IPV, and acute or chronic malnutrition. Mother's working status was positively associated with acute malnutrition in children U5Y. The study findings should be interpreted cautiously due to limitations in data availability and under-reporting of IPV in Pakistan.

Keywords: Violence, Domestic; Partner Violence, Intimate; Pakistan; Nutritional Status; Child, Preschool

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Intimate partner violence (IPV) is defined as "any physical, sexual or psychological harm by a current or former partner or spouse" (CDC, 2024). It is estimated that globally about 1 in 3 (30%) women have experienced physical and/or sexual IPV in their lifetime (WHO, 2024a). It is a hidden pandemic affecting all parts of the world (Bornstein, 2022), irrespective of race, sexual orientation, or socioeconomic status (Sugg, 2015). Target 5.2.1 of the sustainable development goals (SDGs) aims to "eliminate violence against women and girls" by 2030, but little progress has been made so far (WHO, 2024b). Nonetheless, the majority of countries recognize the importance of addressing harmful gender norms, attitudes, and beliefs for preventing IPV (WHO, 2024b).

Addressing IPV is critical to achieving universal health coverage. It adversely impacts physical, mental, and social well-being of women, with consequences including but not limited to bruises, lacerations, irritable bowel syndrome, fibromyalgia, anxiety and depression, and pregnancy complications (WHO, 2005). Furthermore, IPV effects the well-being of children who are born and raised in such homes (Wathen & Macmillan, 2013). IPV is considered a type of child maltreatment (Walker-Descartes et al., 2021). It is reported that a child's awareness that a caregiver is being harmed or at risk of harm is sufficient to induce harmful sequelae (Wathen & Macmillan, 2013). It is estimated that globally 275 million children per year are exposed to IPV (Rosser-Liminana et al., 2020). IPV has been linked with lower rates of vaccination, higher incidence of diarrhea and mortality among children under five years of age (U5Y) (Asling-Monemi et al., 2003; Silverman et al., 2009). Global literature suggests an association of IPV with acute (underweight; pooled OR: 1.11; 95% CI: 1.03, 1.20) and chronic malnutrition (stunting; pooled OR: 1.15; 95% CI: 1.06, 1.24) among children U5Y (Chai et al., 2016).

Pakistan is a lower-middle-income country (World-Bank, 2023) that hosts culture and values that support IPV. Pakistan has a patriarchal society that allows men to be seen as dominant, decision-makers of family and women are caught in a culture of subordination with little power over family and individual affairs (Ali et al., 2022). There is lack of conclusive evidence on the association of intimate partner violence and nutritional status of children in the context of Pakistan. We hypothesize that women and children become accustomed to social injustices such as IPV, since it is treated as a cultural norm by the society. We performed a secondary data analysis of Pakistan Demographic and Health Survey (PDHS) 2017–18 to probe if there is any association between emotional and physical IPV and nutritional status (underweight and stunting) of children U5Y in Pakistan.

Methods

Study Sample

Pakistan Demographic and Health Survey is conducted every five years to collect reliable and comprehensive data on various aspects of population health including family planning, fertility, maternal and child health, and nutrition. It provides vital statistics that help policymakers to monitor health indicators and guide health policies. PDHS collects data at the national level, across four provinces of Pakistan (Punjab, Sindh, Balochistan, KPK), and ICT Islamabad and Gilgit Baltistan districts

The latest PDHS of 2017–18 utilized a two-stage stratified sampling technique to draw a representative sample (Figure 1). Probability proportionate to size sampling technique was adopted in the first stage to draw *clusters* (primary sampling units) from urban and rural sampling frames, followed by systematic random sampling to draw households (secondary sampling units). All eligible women in the household (ever married between the age of 15–49 years) were interviewed; however, the domestic violence module was administered to a sub-set of participants (one-third) selected through Kish grid. The details of the sampling technique are provided in PDHS report 2017–18 (NIPS, 2019).

For this study, we included all women who completed the domestic violence module (*n* = 4,085). We also incorporated all cases of children under five years of age (U5Y) whose anthropometric measurements, including height and weight were available. All observations with missing data to a single variable were eliminated. The analysis was run on a total of 1,072 women and children *dyads*.

Study Variables

Emotional and physical IPV were captured in PDHS via Conflict Tactics Scale (CTS), which is widely applied to assess
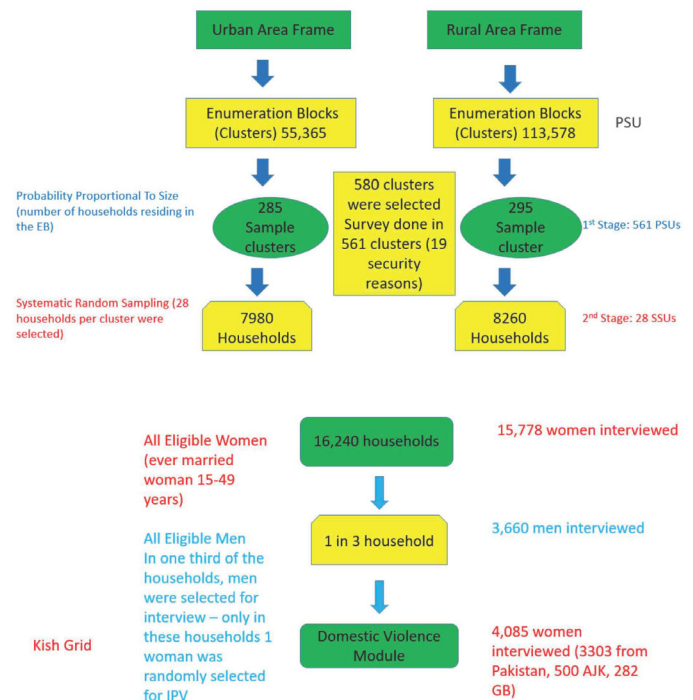

Figure 1. Sampling technique of PDHS: Two-stage Stratified Random Sampling

Table 1. Socio-demographic characteristics of mother-child dyads (n = 1,072) from PDHS 2017–18

	Weighted proportion or mean	SE	95% CI for proportion or mean
Woman's age in years, *Mean*	32.3	0.251	31.8–32.8
Husband's age in years, *Mean*	37.8	0.303	37.2–38.3
Woman's education			
No Education	50.7	0.020	46.7–54.8
Primary	12.5	0.013	10.0–15.4
Secondary	22.4	0.017	19.1–26.1
Higher	14.2	0.015	11.5–17.4
Husband's education			
No Education	32.0	0.019	28.4–35.8
Primary	15.4	0.015	12.5–18.8
Secondary	32.3	0.019	28.6–36.3
Higher	20.1	0.016	17.1– 23.4
Woman's occupation			
Not working	81.6	0.016	78.2–84.6
Working	18.3	0.016	15.3–21.7
Husband's occupation			
Not working	3.6	0.007	2.5–5.4
Skilled manual	22.1	0.017	18.8–25.9
Unskilled manual	22.4	0.017	19.2–25.9
Other	51.6	0.020	47.6–55.7
Wealth index			
Poorest	19.2	0.015	16.2–22.5
Poorer	20.2	0.016	17.2–23.5
Middle	20.9	0.016	17.8–24.4
Richer	21.2	0.017	17.9–24.8
Richest	18.3	0.016	15.3–21.8
Age of child in months, *Mean*	28.7	0.528	27.6–29.7
Gender of child			
Male	50.5	0.0207	46.5–54.6
Female	49.4	0.0207	45.3–53.4

Table 2. Prevalence of emotional and physical IPV, and acute (underweight) and chronic malnutrition (stunting) among children under 5 years of age in Pakistan (n = 1,072)

	Weighted proportions (%)	*SE*	95% CI for proportions
Intimate partner violence			
Emotional violence	23.9	0.017	20.7–27.4
Physical violence	20.6	0.016	17.6–24.1
Emotional or physical violence	30.0	0.018	26.5–33.8
Nutritional status of children under 5 years of age			
Underweight	20.2	0.016	17.2– 23.6
Stunting	35.0	0.019	31.3– 38.9

their arm or pulled their hair, (4) punched them with a fist, (5) kicked, dragged, or beat them, (6) tried to choke or burn them on purpose, or (7) threatened or attacked them with a knife, gun, or other weapon. A positive response to a single question was coded as a victim of emotional or physical IPV, respectively. We combined the variables of emotional and physical IPV to form a composite variable of "any form of violence" (emotional *or* physical) (Walker-Descartes et al., 2021).

The variables of underweight (acute malnutrition) and stunting (chronic malnutrition) were created by calculating z-scores for weight-for-age and height-for-age respectively. If the z-score was less than −2, a child was labeled as "underweight" or "stunted," according to World Health Organization's (WHO) child growth standards (WHO, 2024c, 2024b). We applied the WHO 2006 child growth standards, which are globally endorsed and designed to reflect optimal growth in all populations under ideal conditions.

We accounted for socio-demographic characteristics of the participants in the analysis: woman's and husband's age in years, education (no education, primary education, secondary education, higher education), woman's occupation (not working, working), husband's occupation (not working, skilled manual worker, unskilled manual worker, other), wealth index (poorest, poorer, middle, richer, richest), and age (in months) and gender of the child.

Statistical Analysis

Sampling weights were applied to adjust data for the sampling design. Weighted proportions, means and 95% CI were estimated. Purposeful variable selection (Bursac et al., 2008) was applied to build multivariable logistic regression models for underweight and stunting. We applied Hosmer-Lemeshow goodness of fit test (HL) and Area Under Curve (AUC) to determine model fit and predictability. The variables of underweight and stunting were created in WHO Anthro Plus (WHO, 2024b, 2024d; World Health Organization, 2024) rest of the analysis was performed using Stata.v.17 (STATA, 2024).

Results

Table 1 depicts the socio-demographic characteristics of study participants (*n* = 1,072). The mean age of women was 32.3 years, around half of them had no formal education, and more than 80% were not working. Husband's mean age was estimated to be 37.8 years, one-third of them (32%) had no formal education, and almost all of them were working (96.4%). The mean age of children was 29 months, with an equal gender distribution.

Table 2 illustrates high prevalence of emotional (24%) and physical IPV (21%) among ever married women aged 15–49 years. One-third of the women were victims of either emotional or physical IPV (30%, SE: 0.018). Moreover, 20% of the children U5Y suffered from acute and 35% from chronic malnutrition. Figures 2 and 3 draw a comparison of acute and chronic malnutrition in children U5Y, with the population standards set by WHO. It is evident that the children in Pakistan suffered considerably from wasting and stunting.
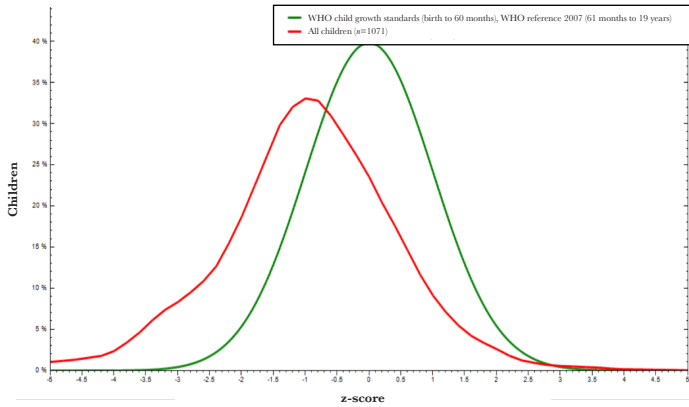
violence (CHIPTS, 2010). The CTS assesses emotional and physical IPV by means of a series of questions. Emotional IPV was measured by asking women if their husband or partner ever (1) humiliated, (2) threatened or, (3) insulted them, (4) did something to scare them, (5) accused them of being unfaithful, (6) did not permit to meet friends and family, (7) insisting on knowing the whereabouts all the time, and (8) limited contact with family. Physical IPV was assessed through questions on whether the husband or partner ever (1) pushed, (2) slapped them, (3) twisted

Figure 2. Comparison of "weight-for-age" (underweight, acute malnutrition) of children of Pakistan under five years of age with the WHO standards (PDHS 2017–18).
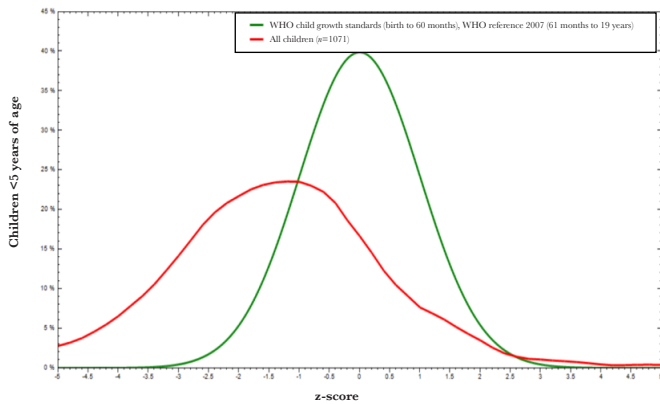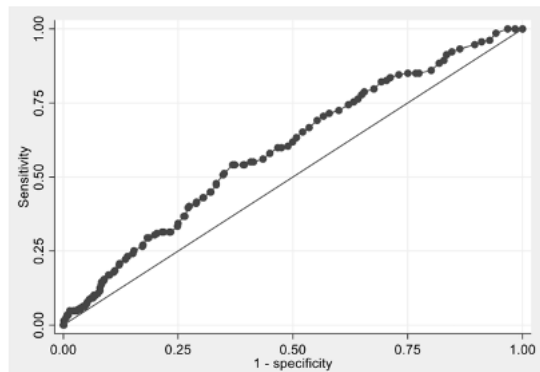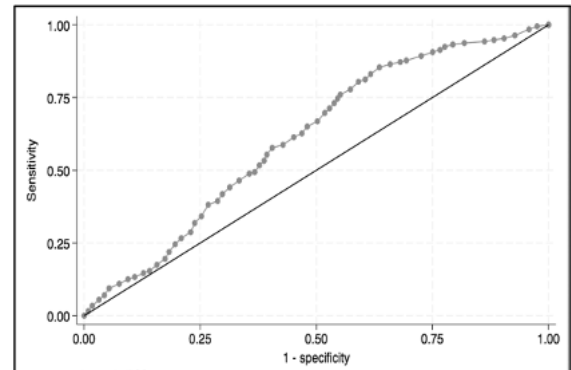

Figure 3. Comparison of "height-for-age" (stunting, chronic malnutrition) of children of Pakistan under five years of age with the WHO standards (PDHS 2017–18).

Table 3 demonstrates the final multivariate logistic regression models built to determine the association of IPV and malnutrition among children. The model elaborated no significant association between IPV and acute (aOR: 0.88; 95% CI: 0.63, 1.21) and chronic malnutrition (aOR: 0.81; 95% CI: 0.61, 1.06). Working status of women was a significant factor for acute malnutrition among children U5Y (aOR: 1.69; 95% CI: 1.15, 2.48). The odds of being underweight or stunted also increased with increasing age of the child. The Hosmer-Lemeshow Goodness of fit test for the association of IPV and underweight demonstrated a good fit ($p = 0.918$), whereas it showed a poor fit for stunting ($p = 0.0003$). Figure 4 elaborates the receiver operating curve (ROC)/area under curve (AUC) for multivariate models built to determine the association of IPV and underweight and stunting. The AUC was 59.5% for underweight and 61.1% for stunting respectively.

Table 3. Multivariate logistic regression model of the association of emotional or physical IPV and acute (underweight) and chronic malnutrition (stunting) among children under five years of age in Pakistan (n = 1,072)

	Adjusted ORs	95% CI	p–value
Underweight			
Any form of IPV (emotional or physical)	0.88	0.63 − 1.21	0.440
Occupation of the woman			
Working	1.69	1.15 − 2.48	0.007
Age of the child (months)	1.01	1.00 − 1.02	0.002
Stunting			
Any form of IPV (emotional or physical)	0.81	0.61−1.06	0.12
Age of the child (months)	1.02	1.01−1.03	0.00

Area under ROC curve = 0.5957

Underweight

Area under ROC curve = 0.6113

Stunting

Figure 4. Receiver operating characteristic curve/ area under the curve demonstrating model fit for the association of IPV with Underweight and Stunting.

Discussion

Our study findings demonstrate that 30% of ever-married women in Pakistan suffered from emotional or physical intimate partner violence, at least once in their lifetime. We found a high proportion of malnutrition among children U5Y: 20% were underweight and 35% were stunted. However, our models demonstrate lack of association of IPV and acute and chronic malnutrition among children U5Y in Pakistan. Working status of mothers was positively associated with acute malnutrition among children.

The study findings corroborate our hypothesis that women and children get accustomed to witnessing abuse and violence at home. Although the impact of IPV is not apparent in adversely affecting the physical health (weight and height) of children, we fear it could have profound consequences on their emotional, mental, and social well-being. Repeated exposure can lead to anxiety, depression, poor self-esteem, and post-traumatic stress disorder (PTSD) (Office-of-Women's-Health, 2021). Over time, children may develop unhealthy relationship dynamics, struggle with academic performance, or exhibit aggressive behavior. In adolescence, children who witnessed domestic violence may turn to substance abuse or self-harming behaviors as coping mechanisms for the emotional distress they endured (Crichton, 2020). In some cases, witnessing abuse can normalize violent behavior, leading children to repeat similar patterns in their adult relationships (Plumptre, 2023).

Our study findings contrast with the results reported by Shaukat et al. (2018), by utilizing the PDHS dataset of 2012–13. It was reported that women who suffered from emotional violence had children with significantly higher odds of being underweight (OR, 95% CI: 1.57, 1.04–2.36) and stunted (OR, 95% CI: 1.54, 1.05–2.24) respectively. Only univariate regression models were utilized in the study, whereas we have adopted a robust analytical approach of multivariate analysis, followed by assessing model fits. This may explain the discrepancy observed between the results of two consecutive demographic and health surveys. In a similar vein, the findings of our study remain inconclusive due to inherent limitations. Firstly, conflicts tactics scale was used in PDHS, which is universally utilized in most demographic and health surveys. However, it has not been validated in the context of Pakistan. Iqbal et al. (2021) propose a more flexible analytical approach for interpreting CTS results within the Pakistani context. Given the prevailing patriarchal norms, they recommend that women meeting at least two criteria of violence should be classified as victims of IPV. This approach reflects the nuanced understanding of gender dynamics and societal structures that influence the manifestation and recognition of IPV in patriarchal settings (Iqbal & Fatmi, 2021; Shaukat et al., 2018). Key covariates such as vaccination status (Solis-Soto et al., 2020) and breastfeeding practices (WHO, 2024e), which significantly influence nutritional outcomes in children, were not accounted for in our study. The absence of these variables may impact the comprehensiveness of our findings.

We utilized the variables of occupation and wealth index as provided in the dataset. However, the categorization of occupation (e.g., skilled manual, unskilled manual) lacks sufficient clarity for meaningful interpretation. A more rigorous approach, such as applying multinomial logistic regression instead of binary logistic regression, could have yielded a more robust analysis by accounting for the complexity of the variables. Additionally, the issue of under-reporting IPV cannot be overlooked. Given the sensitive nature of IPV and the associated social stigma in Pakistan, many women may conceal its occurrence, which likely impacts the accuracy of our findings (Hadi, 2020). We did not include "sexual violence" due to significant underreporting influenced by sociocultural taboos and stigma prevalent in Pakistan, and limited our study to emotional and physical IPV for maintaining methodological rigor. Furthermore, while PDHS categorizes physical violence into "less severe" and "severe," our study combined all forms of physical IPV into a single variable. This decision was made due to small sample size within each subcategory. Our primary focus in this study was to assess overall exposure to violence rather than the severity. However, we acknowledge that the intensity and frequency of violence may differentially affect child health outcomes.

Another important factor to consider is women's acceptance of IPV, which was not included in our analysis. The PDHS includes questions about whether women think wife-beating is justified in certain situations, such as arguing with the husband, going out without permission, or neglecting the children. When women believe that IPV is acceptable, it can make the violence seem normal and affect how they report it and how it impacts them emotionally. Women who accept IPV may be less likely to recognize or report the abuse, and may respond to it differently. This could influence the effect of IPV on child nutrition. Future research should examine how women's attitudes about IPV, along with their actual experiences, affect child health. Nonetheless, the biggest strength of our study is the nationally representative sample which is generalizable to Pakistan. We recommend a deeper analysis of PDHS dataset, after stratification by provinces and incorporation of key variables for more comprehensive results.

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