

DOMESTIC VIOLENCE AND OBESITY IN EGYPTIAN WOMEN

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## **ABSTRACT**

Domestic violence and malnutrition are global public-health problems. We explore the associations of prior exposures to domestic violence and the odds of being obese among 4,928 ever-married, non-pregnant women 15 – 49 years who participated in the 2005 Egypt Demographic and Health Survey. The mean body-mass-index (BMI) of women was 30.0 kg/m<sup>2</sup>, and more than three quarters of the women were overweight (35%) or obese (44%). More than one third (34%) had reported exposure to psychological, physical, or sexual domestic violence. The adjusted odds of being obese were marginally higher among women with prior exposure to sexual violence (aOR=1.32). A significant dose-response relationship remained between the adjusted odds of obesity and the number of forms of physical or sexual domestic violence experienced (aOR=1.00 for none, 1.03 for one, 1.19 for two, and 1.33 for three or more forms). Overnutrition among women in poorer settings may partly result from persistent gender inequality.

## **Global Scale of Domestic Violence and Malnutrition in Women**

Domestic violence refers to “assaultive and coercive behaviors that adults use against their intimate partners,”<sup>1</sup> who may include current or former (common-law) spouses and dating partners of the same or opposite sex.<sup>2</sup> Globally, between 13% and 61% of women have experienced physical domestic violence in their lifetime,<sup>3 4 5 6</sup> and psychological violence against women is similarly common.<sup>4</sup>

Malnutrition, especially in women, is another global public health problem. Body Mass Index (BMI, kg/m<sup>2</sup>) is a well-known indicator of energy reserves in adults. A BMI of < 18.5 kg/m<sup>2</sup> indicates chronic energy deficiency [CED] and is associated with fatigue, reduced work capacity, poor pregnancy outcomes, more frequent illness, and a higher risk of mortality.<sup>7,8</sup> BMIs of  $\geq 25$  kg/m<sup>2</sup> and  $\geq 30$  kg/m<sup>2</sup>, respectively, indicate overweight and obesity,<sup>9</sup> which are well-known risk factors for chronic illnesses and early mortality.<sup>8</sup> An estimated 27–51% of women of reproductive age in parts of Africa and South Asia have CED,<sup>10</sup> approximately one billion adults are overweight, and 300 million are clinically obese.<sup>11</sup>

## **Associations of Domestic Violence and Women’s Health and Nutrition**

Studies have found links between domestic violence against women and various aspects of their physical health,<sup>12</sup> such as stress-related physical health problems,<sup>13-16</sup> gynecological problems including sexually transmitted infections,<sup>13,17-21 22</sup> and associated risk behaviors such as smoking, alcohol or drug abuse, and having multiple sexual partners.<sup>20,23-26</sup> Studies of domestic violence and women’s nutritional status are common in pregnant women. Physical and/or sexual abuse before and during pregnancy and related injuries have been associated with smoking, alcohol use, poor nutrition, maternal infections and anemia, inadequate weight gain, and maternal mortality.<sup>27-35</sup> More limited research also suggests that violence in childhood or in intimate partnerships is associated with both deficit and excess energy reserves in adult women. In rural Karnataka, India, psychological and sexual abuse are positively associated with being underweight in mothers,<sup>36</sup> and nationally, prior-year physical domestic violence is associated

with higher risks of anemia and underweight in women 15 – 49 years.<sup>37</sup> Among members of a California health maintenance organization, being physically and/or verbally abused in childhood is associated with higher weight and higher relative risks of obesity and severe obesity (BMI  $\geq$  40 kg/m<sup>2</sup>).<sup>38</sup> To date, research on domestic violence and energy reserves is limited in poor settings where overweight is endemic, especially in women.

### **Mechanisms Linking Domestic Violence and Women's Energy Reserves**

Despite this gap, the mechanisms linking domestic violence to energy reserves is plausible. According to trauma theory,<sup>39,40</sup> a woman's experience of domestic violence may initiate immediate and long-lasting psychological symptoms, which may affect her eating practices, activity levels, and general health-care practices. In the U.S., domestic violence against women has been associated with higher levels of depression and life stress, anxiety, suicide ideation, and associated problems with sleep, appetite, energy, and wellbeing.<sup>41-44</sup> In parts of China, Kenya, India, and Zambia, the mental health burden of domestic violence also has been large.<sup>45</sup> Various forms of violence against women also are associated with poor eating practices and digestive problems, including a loss of appetite, abdominal pain, diarrhea or constipation, disordered eating and weight-control practices, and poorer treatment outcomes for eating disorders.<sup>46-56</sup> Being physically and/or verbally abused in childhood and experiencing domestic violence also are associated with more frequent physical inactivity and disabilities that prevent work.<sup>13,56,57</sup> Finally, only one fifth of women injured by abuse consent to medical care in selected U.S.-cities,<sup>58,59</sup> and prior abuse is associated with delayed prenatal care<sup>31,32,60-62</sup> and poorer access to a regular clinic.<sup>63</sup> Thus, the effects of domestic violence against women on their energy reserves are plausible, but this relationship is understudied in poorer countries outside the U.S. Here, we explore the relationship between prior domestic violence and the risk of obesity in a national sample of women in Egypt, where overweight and obesity are endemic in women.

### **SETTING**

Egypt has the largest, most densely settled population among the Arab countries and is

highly heterogeneous economically and socially. In 2003/2004, the real Gross Domestic Product [GDP] per capita ranged from 2,300 to almost 9,100 purchasing-power-parity [PPP] dollars, with the poorest governorates concentrated in Southern, or Upper Egypt.<sup>64</sup> Average schooling attainments have increased nationally, but women remain less well represented than men in schools, the formal labor force, and the political system.<sup>65-67</sup> Relatively more Upper- than Lower- (or Northern) Egyptian women, however, have no schooling (55% versus 44%) and have never worked for cash (84% versus 74%).<sup>68</sup> Finally, although most Egyptians are Muslim, a notable minority is Christian (~5%), and Christians tend to live in Upper Egypt (~20%).<sup>69</sup>

In this context, overweight and obesity are the norm among women. Excluding those who are pregnant or less than two months postpartum, the mean BMI of ever-married women in the reproductive ages (15 – 49 years) is 30.1.<sup>70</sup> More than three quarters of these women are overweight (33%) or obese (47%); whereas, less than one percent are classified as underweight.<sup>70</sup>

Family violence in Egypt falls under the provisions of general law that cover all cases of abuse. The law, thus, does not specifically prohibit spousal abuse.<sup>71</sup> Certain criminal law articles, however, punish anyone who injures another or contributes to a woman's spontaneous abortion by violence. In 2000, women also received the right to divorce on grounds of incompatibility, provided that they give up their financial claims as wives. These changes resulted partly from growth in the number of nongovernmental organizations (NGOs) addressing women's issues, but few NGOs offer direct services to abused women. Existing shelters often have rigid rules for admittance, and like law-enforcement authorities, prioritize spousal reconciliation over women's protection.<sup>71</sup> In this context, more than one third (36%) of ever-married women of reproductive age have ever experienced domestic violence, and few abused women (35%) seek recourse.<sup>70</sup>

## **SAMPLE AND DATA**

This study uses data from the 2005 Egypt Demographic and Health Survey,<sup>70</sup> which collected extensive data on anthropometry and domestic violence in ever-married women of

reproductive age (15 – 49 years). The DHS follow rigorous guidelines for informed consent<sup>4</sup> and the translation of English forms into the local language.

The master sample for the 2005 EDHS was based on an updated version of the 1996 national census frame. A three-stage sample was selected separately in rural and urban areas. After systematically selecting 1,019 segments from 384 villages and 298 urban areas, a systematic random sample of households was selected from retained segments, and 99% (21,972 of 22,211) of identified households were interviewed. A domestic violence module was administered in a one quarter subsample of interviewed households. To ensure confidentiality, one ever-married woman aged 15 – 49 years per household was selected randomly to complete the module, and over 98% of selected women responded (5,613 of 5,711). Response rates in prior EDHS are similar<sup>65,68</sup> and corroborate our experience.<sup>72</sup> The final sample ( $n = 4,928$  of 5,613) excludes women who reported that they were pregnant (503) and who had missing data on BMI (54), domestic violence (98), and other covariates (30).

A household listing permitted the recording of age, gender, and relation to the head for all members, marital status for all adult members ( $\geq 15$  years), and the schooling and recent work status for all members at least six years of age. A household attributes form included questions about the head's religion, the dwelling, access to electricity, water, and sanitary facilities, and the ownership of consumer goods and durables. A woman's form included questions on marriage, education, work, religion, family planning and reproduction, and health knowledge and practices. The domestic violence module was based on the Revised Conflict Tactics Scale,<sup>73</sup> which has high cross-cultural reliability and validity. The module was administered following international guidelines for research on domestic violence.<sup>74</sup> Questions covered what Straus and colleagues<sup>73</sup> define as psychological violence (humiliate in front of others; threaten her or someone close to her with harm), minor physical violence (push, shake, or throw something; slap or twist arm), severe physical violence (punch with a fist or something that could hurt; kick or drag; try to strangle or burn; threaten with a knife, gun, or other weapon; attack with a knife, gun, or other

weapon), and forced sexual intercourse committed against a woman by her current or last husband ever and in the prior year. Questions also covered physical violence by women against their current or last husband in the same periods, and physical violence by a non-spouse against the woman since she was 15 years old. Other questions covered the injuries that abused women had incurred, and their help seeking. At the end of the module, interviewers noted whether it had been interrupted and any reasons for not completing it, if relevant.

The binary outcome in this analysis is whether or not the woman is obese, or has a BMI of at least  $30\text{kg}/\text{m}^2$ . A woman's experience of domestic violence is the main exposure and is conceptualized in two primary ways. The first set of measures captures a woman's lifetime exposure to the main forms of domestic violence, and specifically whether she reported ever experiencing psychological, minor physical, severe physical, sexual, physical or sexual, or either psycho-logical, physical, or sexual domestic violence. The second set of measures capture the number of different forms of domestic violence to which a woman was ever exposed, and specifically whether she reported experiencing none, one, or two forms of psychological violence; none, one, or two forms of minor physical violence; none, one, or two or more forms of severe physical violence; any sexual violence; none, one, two, or three or more forms of physical or sexual violence; and none, one, two, or three or more forms of psychological, physical, or sexual violence. Finally, covariates are included that may confound the relationship between a woman's experience of domestic violence and her risk of obesity. Five continuous socio-demographic covariates include the woman's age at interview, age at first marriage, completed grades of schooling, score for household standard of living, and number of live births. The score for household standard of living was derived from the scoring coefficients of the first principle component of a principle components analysis of responses about the assets and amenities of each respondent's household.<sup>75</sup> Missing scores ( $n = 258$ ) were imputed using the mean of observed scores, and an indicator for whether the score was imputed was included. Two categorical socio-demographic variables include the woman's religion (Christian vs. Muslim)

and region of residence (Urban/Cairo, Urban Lower Egypt, Rural Lower Egypt, Urban Upper Egypt, Rural Upper Egypt, and the Frontier governorates most peripheral to the Nile River).

## **ANALYTIC METHODS**

Univariate analyses were conducted of all covariates, outcomes, and variables from which covariates were derived to assess their completeness and distributional properties. Bivariate associations among all covariates were estimated to assess potential collinearities among them. Finally, logistic regression using the method of generalized estimating equations was used to estimate the unadjusted and adjusted odds ratios (ORs) of obesity according to the types of domestic violence that women experienced. All control variables were included in all multivariate logistic regressions, and adjusted models also controlled for mutually exclusive indicators for the other types of domestic violence that women may have experienced. Robust variance estimators were used in this analysis to account for the sample design.<sup>76</sup>

## **RESULTS**

Table 1 summarizes the measures of BMI, exposure to domestic violence, and other covariates. The mean BMI of women was 30.0. Less than 1% of women was underweight, and more than three quarters were overweight (35%) or obese (44%). Women's exposure to domestic violence also was high, with more than one third (34%) of women having ever experienced some form of psychological, physical, or sexual domestic violence. 17% of women had experienced any psychological violence, 30% minor physical violence, 13% severe physical violence, and 6% sexual domestic violence. Almost one third (31%) had experienced physical or sexual violence. Most often, women had experienced only one form of psychological violence (12%), two forms of minor physical violence (19%), and one form of severe physical violence (8%). One half (17%) of the 34% of women who had experienced some form of domestic violence had experienced three or more forms of psychological, physical, or sexual violence. Such findings underscore the co-occurrence of multiple forms of domestic violence in this sample.

[Table 1]



Regarding other demographic attributes of the women, the average age was 34 years, and the average age at first marriage was just under 20 years. On average, women had completed 6.6 grades of schooling and had had three live births. Approximately six percent of the sample was Christian, and three quarters of the women were living in rural Upper Egypt (31%), rural Lower Egypt (22%), or highly urbanized governorates (20%).

The top panel of Table 2 shows the unadjusted and adjusted odds of being obese according to the discrete forms of domestic violence to which women were ever exposed. Women's prior exposure to any psychological domestic violence was not significantly associated with their odds of being obese. However, the odds of being obese were higher among women with any prior exposure to minor physical violence (uOR=1.19) or sexual violence (uOR=1.35). These odds also were marginally higher among women with any prior exposure to severe physical violence (uOR=1.19), physical or sexual violence (uOR=1.17), and any form of domestic violence (uOR=1.16). Adjusting for other covariates, as well as any prior exposure to other forms of domestic violence, the odds of being obese were marginally higher among women with any prior exposure to sexual violence (aOR=1.32).

[Table 2]

The bottom panel of Table 2 shows the unadjusted and adjusted odds of being obese according to the number of forms of domestic violence to which women were ever exposed. Any prior exposure to one or two forms of psychological violence was not associated with the odds of being obese. A dose-response relationship is apparent between the unadjusted odds of being obese and the number of forms of minor physical violence (uOR=1.00 for none, 1.11 for one form, and 1.23 for two forms), sexual violence (uOR=1.00 for none, 1.35 for any form), physical or sexual violence (uOR=1.00 for none, 1.04 for one, 1.15 for two, and 1.28 for three or more forms), and for all forms of domestic violence combined (uOR=1.00 for none, 0.98 for one form, 1.22 for two forms, and 1.22 for three or more forms). Adjusting for other covariates and other forms of domestic violence shows that marginal dose-response relationships remain for prior

exposure to sexual violence (aOR=1.31 for any versus no form) and to domestic violence generally (aOR=1.00 for no form, 0.96 for one form, 1.21 for two forms, and 1.20 for three or more forms). A significant dose-response relationship remained between the adjusted odds of being obese and the number of forms of physical or sexual violence to which women were exposed (aOR=1.00 for none, 1.03 for one, 1.19 for two, and 1.33 for three or more forms).

## **CONCLUSIONS**

Overweight and obesity are emergent, and in many cases endemic, public-health problems in poorer countries. In settings such as Egypt, rates of overweight and obesity are especially high in adult women. To date, the major determinants of overweight and obesity among women in poorer settings are assumed to be related to women's reproductive history and to overall socioeconomic changes in the household and society.<sup>77</sup> Some prior research has shown, however, that measures of women's status vis-à-vis men also may be associated with women's risk of being overweight or obesity.<sup>78</sup> Although understudied even in Western industrialized societies, the mechanisms linking women's prior experiences of domestic violence to their energy reserves are plausible. Whether these prior experiences translate into energy deficient or excess energy reserves may depend partly on the stage of the nutrition transition in the country under study. The translation of domestic violence into deficient or excess energy reserves in women also may depend on whether the household's allocation of food customarily favors its male members. In such settings, the denial of adequate food to women may be an unmeasured form of domestic violence.<sup>37</sup>

Egypt, by contrast, is a setting in which overweight and obesity are endemic in ever-married women of reproductive age. In this context, our results show that prior experiences of sexual domestic violence, and especially the number of forms of sexual or physical violence experienced, are associated with higher odds of being obese. Such findings suggest that Egyptian women who experience multiple forms of physical and sexual domestic violence may experience psychological after-effects, which lead to excess energy intake and/or to higher levels of physical

inactivity. Exploring the pathways by which this association operates would help to identify suitable interventions to treat domestically abused women, thereby reducing the after-effects that contribute to obesity. More broadly, such findings underscore that the problem of overnutrition in poorer settings partly may have its roots in persistent gender inequality.

**Table 1.** Characteristics of the Sample, Ever-Married Non-Pregnant Women 15-49 Years, Egypt 2005 (*n* = 4,928)

	%	Mean	(SD)	Min	Median	Max
<b>Anthropometry</b>						
BMI in kg/m <sup>2</sup>		30.0	(6.0)	15.3	29.3	57.9
Underweight, or BMI < 18.5	0.4					
Normal weight, or 18.5 ≤ BMI < 25	20.6					
Overweight, or 25 ≤ BMI < 30	34.7					
Obese, or BMI ≥ 30	44.3					
<b>Ever any violence, by type:</b>						
Psychological (ref: never)	17.3					
Minor physical (ref: never)	30.3					
Severe physical (ref: never)	12.7					
Sexual (ref: never)	5.6					
Physical or sexual (ref: never)	31.3					
Psychological, physical, or sexual (ref: never)	33.8					
<b>Number of specific acts of violence ever experienced:</b>						
Psychological (ref: none)		0.2	(0.5)	0.0	0.0	2.0
One	11.8					
Two	5.5					
Minor physical (ref: none)		0.5	(0.8)	0.0	0.0	2.0
One	11.2					
Two	19.2					
Severe physical (ref: none)		0.2	(0.6)	0.0	0.0	5.0
One	7.9					
Two or more	4.8					
Sexual (ref: never)		0.1	(0.2)	0.0	0.0	1.0
Ever	5.6					
Physical or sexual (ref: none)		0.7	(1.3)	0.0	0.0	8.0
One	8.8					
Two	10.2					
Three or more	12.3					
Psychological, physical, or sexual (ref: none)		1.0	(1.7)	0.0	0.0	10.0
One	8.4					
Two	8.3					
Three or more	17.2					
<b>Other Sociodemographic Characteristics</b>						
Age, in years		34.3	(8.4)	16.0	35.0	49.0
Age at first marriage, in years		19.5	(4.3)	9.0	19.0	42.0
Completed grades of schooling		6.6	(5.9)	0.0	6.0	20.0
Score of household standard of living		0.0	(2.7)	-9.4	0.1	6.0
Number of live births		3.0	(2.2)	0.0	3.0	13.0
Religion Christian (ref: Muslim)	5.6					
<b>Region of Residence<sup>a</sup></b>						
Urban governorates	20.1					
Urban Lower Egypt	8.9					
Rural Lower Egypt	21.9					
Urban Upper Egypt	13.7					
Rural Upper Egypt	31.0					
Frontier governorates	4.5					

Notes. Reference categories are indicated in parentheses.

<sup>a</sup> Urban governorates : Cairo, Alexandria, Port Said, Suez

Lower Egypt : Damietta, Dakahlia, Sharkia, Kalyubia, Kafr El-Sheikh, Gharbia, Menoufia, Behera

Upper Egypt : Giza, Beni Suef, Fayoum, Menya, Assuit, Souhag, Qena, Aswan

Frontier governorates : Red Sea, New Valley, Matroh, North Sainai, South Sainai

**Table 2.** Unadjusted and Adjusted Odds of Obesity, by Types and Recency of Domestic Violence Experienced, Ever-Married Women 15-49 Years in Egypt, 2005 (*n* = 4,928)

	Unadjusted			Adjusted		
	OR	<i>p</i> <sup>6</sup>	<i>p</i> <sup>7</sup> (95% CI)	OR	<i>p</i> <sup>6</sup>	<i>p</i> <sup>7</sup> (95% CI)
<b>Ever any violence, by type:</b>						
Psychological <sup>1</sup>	1.09		(0.90 , 1.32)	0.92		(0.74 , 1.17)
Minor physical <sup>2</sup>	1.19 *		(1.00 , 1.40)	1.16		(0.93 , 1.44)
Severe physical <sup>3</sup>	1.19 †		(0.97 , 1.45)	1.02		(0.79 , 1.32)
Sexual <sup>4</sup>	1.35 *		(1.06 , 1.74)	1.32 †		(1.00 , 1.74)
Physical or sexual <sup>5</sup>	1.17 †		(1.00 , 1.38)	1.17		(0.97 , 1.42)
Psychological, physical, or sexual	1.16 †		(0.99 , 1.36)	1.14		(0.96 , 1.37)
<b>Number of specific acts of violence ever experienced:</b>						
Psychological (ref: none) <sup>1</sup>						
One	1.07		(0.86 , 1.32)	0.89		(0.69 , 1.15)
Two	1.15		(0.84 , 1.57)	0.95		(0.63 , 1.43)
Minor physical (ref: none) <sup>2</sup>						
One	1.11		(0.90 , 1.39)	1.09		(0.85 , 1.39)
Two	1.23 *		(1.02 , 1.48)	1.25		(0.95 , 1.64)
Severe physical (ref: none) <sup>3</sup>						
One	1.22		(0.95 , 1.58)	0.99		(0.72 , 1.34)
Two or more	1.13		(0.85 , 1.51)	0.96		(0.65 , 1.43)
Sexual (ref: never) <sup>4</sup>						
Ever	1.35 *		(1.06 , 1.74)	1.31 †		(0.99 , 1.73)
Physical or sexual (ref: none) <sup>5</sup>						
One	1.04		(0.83 , 1.36)	1.03		(0.79 , 1.33)
Two	1.15		(0.91 , 1.45)	1.19		(0.91 , 1.58)
Three or more	1.28 *		(1.04 , 1.56)	1.33 *		(1.03 , 1.71)
Psychological, physical, or sexual (ref: none)						
One	0.98		(0.76 , 1.28)	0.96		(0.73 , 1.26)
Two	1.22		(0.96 , 1.54)	1.21		(0.92 , 1.58)
Three or more	1.22 *		(1.00 , 1.47)	1.20 †		(0.97 , 1.49)

Note: All adjusted models control for the woman's region of residence, age in years, number of live births completed grades of schooling, household standard of living score, religion, age at first marriage.

<sup>1</sup> controls also for minor physical, severe physical, and sexual domestic violence

<sup>2</sup> controls also for psychological, severe physical, and sexual domestic violence

<sup>3</sup> controls also for psychological, minor physical, and sexual domestic violence

<sup>4</sup> controls also for psychological, minor physical, and severe physical domestic violence

<sup>5</sup> controls also for psychological domestic violence

<sup>6</sup> p-value for odds ratio

<sup>7</sup> p-value for trend test

## REFERENCES

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- <sup>1</sup> Holden, GW. 2003. Children exposed to DV and child abuse: terminology and taxonomy. *Clinical Child and Family Psychology Review* 6(3): 151–160.
- <sup>2</sup> Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. 2002. *CDC Injury Research Agenda*. Atlanta, GA: DHHS, CDC, NCIPC.
- <sup>3</sup> Garcia-Moreno, C, Jansen, H F M, Ellsberg, M, Heise, L, & Watts, C H. 2006. Prevalence of intimate partner violence: findings from the WHO multi-country study on women's health and domestic violence. *Lancet*, 368: 1260 – 1269.
- <sup>4</sup> Kishor, S., and Johnson, K. 2004. *Profiling Domestic Violence—A Multi-Country Study*. Calverton, MD: ORC Macro.
- <sup>5</sup> Tjaden, P. and Thoennes, N. (2000, November). Full report of the prevalence, incidence, and consequences of violence against women: Findings from the National Violence Against Women Survey (NCJ183781). Washington, DC: National Institute of Justice, Office of Justice Programs, U.S. Department of Justice and the Centers for Disease Control and Prevention.
- <sup>6</sup> Watts, C, & Zimmerman, C. (2002). Violence against women: Global scope and magnitude. *Lancet*, 359, 1232 – 1237.
- <sup>7</sup> Shetty PS, WPT James. 1994. Body mass index - A measure of chronic energy deficiency in adults. *FAO Food and Nutrition Paper* 56. Rome: Food and Agriculture Organization of the United Nations.
- <sup>8</sup> World Health Organization. 2002. *World Health Report 2002*. Geneva: World Health Organization.
- <sup>9</sup> WHO Expert Committee. 1995. *Physical Status: the use and interpretation of anthropometry*. WHO Technical Report Series 854. Geneva: World Health Organization (p. 47).
- <sup>10</sup> Administrative Committee on Coordination Sub-Committee on Nutrition (ACC/SCN). 2000. *Fourth report on the world nutrition situation: nutrition throughout the life cycle*. Geneva: United Nations.
- <sup>11</sup> World Health Organization. 2000. *Obesity: preventing and managing the global epidemic*. Technical Report Series, No. 894. Geneva: World Health Organization.
- <sup>12</sup> National Research Council [NRC]. 2003. *Advancing the Federal Research Agenda on Violence Against Women*. Washington, DC: National Academy Press.
- <sup>13</sup> Campbell, J. A Snow Jones, J Dienemann, J Kub, J Schollenberger, P O'Campo, A Carlson Gielen, and C Wynne. 2002. Intimate Partner Violence and Physical Health Consequences. *Arch Int Med* 162: 1157-1163.
- <sup>14</sup> Sutherland, C, D Bybee, and C Sullivan. 1998. The longterm effects of battering on women's health. *Women's Health* 4: 41–70.
- <sup>15</sup> Koss, MP and L Heslet. 1992. Somatic consequences of violence against women. *Archives of Family medicine* 1: 53 – 59.
- <sup>16</sup> Coker, AL, HP Smith, L Bethea, MJ King, RE McKeown. 2000. Physical Health Consequences of Physical and Psychological Intimate Partner Violence. *Arch Fam Med* 9:451 – 457.
- <sup>17</sup> Coker, AL, PH Smith, RE McKeown, & MJ King. 2000a. Frequency and correlates of intimate partner violence by type: physical, sexual, and psychological battering. *American Journal of Public Health* 90: 553–9.

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- <sup>18</sup> Letourneau, EJ, M Holmes, and J Chasedunn-Roark. 1999. Gynecologic health consequences to victims of interpersonal violence. *Women's Health Issues* 9: 115–120.
- <sup>19</sup> Golding, JM. 1996. Sexual assault history and women's reproductive and sexual health. *Psychological women Quarterly* 20: 101-121.
- <sup>20</sup> Wingood, G.M., R.J. DiClemente, A. Raj. 2000. Adverse Consequences of Intimate Partner Abuse among Women in Urban Domestic Violence Shelters. *Am J Prev Med* 19(4): 270–275.
- <sup>21</sup> Johnson, PJ & WL Hellerstedt. 2004. Current or Past Physical or Sexual Abuse as a Risk Marker for Sexually Transmitted Disease in Pregnant Women. *Perspectives on Sexual and Reproductive Health* 34(2):62–7.
- <sup>22</sup> Plichta, SB and C Abraham. 1996. Violence and bynecologic health inwomen < 50 years old. *American Journal of Obstetrics and Gynecology* 174: 903-907.
- <sup>23</sup> Lemon, SC, W Verhoek-Oftedahl, and EF Connelly. 2002. Preventive health care use, smoking, and alcohol use among Rhode Island women experiencing intimate partner violence. *Journal of Women's Health Issues and Gender-based Medicine* 11(6): 555–562.
- <sup>24</sup> Bailey BA, Daugherty RA. 2007. Intimate partner violence during pregnancy: incidence and associated health behaviors in a rural population. *Matern Child Health J.* 11(5):495-503.
- <sup>25</sup> Coker AL.2007. Does physical intimate partner violence affect sexual health? A systematic review. *Trauma Violence Abuse.* 8(2):149-77.
- <sup>26</sup> Diop-Sidibé N, Campbell JC, Becker S. 2006. Domestic violence against women in Egypt-- wife beating and health outcomes. *Social Science and Medicine* 62(5):1260-77.
- <sup>27</sup> Kearney, MH, LA Haggerty, BH Munro, JW Kawkins. 2003. Birth outcomes and maternal morbidity in abused pregnant women with public versus private health insurance. *Journal of Nursing Scholarship* 35(4): 345–49.
- <sup>28</sup> McFarlane J, B Parker, K Soeken. 1996. Abuse during pregnancy: Associations with maternal health and infant birth weight. *Nurs Res* 45(1): 37–42.
- <sup>29</sup> Boy, A, HM Salihu. 2004. Intimate Partner violence and birth outcomes: a systematic review. *Int J Fertile Womens med.* 49(4): 159–64.
- <sup>30</sup> Berenson, AB, Wiemann CM, Rowe TF, Rockert VI. 1997. Inadequate weigh gain among pregnant adolescents: risk factors and relationship to infant birth weight. *Am J Obstet Gynecol* 176: 1220–4.
- <sup>31</sup> Parker, B, McFarlane, J, and Soeken, K. 1994. Abuse during pregnancy: effects on maternal complications and birth weight in adult and teenage women. *Obstetrics and Gynecology* 84: 323–8.
- <sup>32</sup> McFarlane, J, Parker, B, and Soeken, K. 1996. Abuse during pregnancy: Associations with maternal health and infant birthweight. *Nursing Research* 45(1): 37–42.
- <sup>33</sup> Siega-Riz AM, Hobel CJ. 1997. Predictors of poor maternal weight gain from baseline anthropometric, psychosocial, and demographic information in a Hispanic population. *J Am Diet Assoc.* 97(11):1264-8.
- <sup>34</sup> Johnson, PJ, Hellerstedt, WL, Pirie, PL. 2002. Abuse History and Non-optimal prenatal weight gain. *Public Health Reports* 117: 148–156.
- <sup>35</sup> Boy, A, HM Salihu. 2004. Intimate Partner violence and birth outcomes: a systematic review. *Int J Fertile Womens med.* 49(4): 159–64.
- <sup>36</sup> Sethuraman, K., R. Lansdown, K. Sullivan. 2006. Women's empowerment and domestic violence: The role of sociocultural determinants in maternal and child undernutrition in tribal and rural communities in South India. *Food and Nutrition Bulletin* 27(2): 128–143.

- 
- <sup>37</sup> Ackerson LK and Subramanian SV. 2008. Domestic Violence and Chronic Malnutrition among Women and Children in India. *American Journal of Epidemiology* 167(10): 1188 – 1196.
- <sup>38</sup> Williamson DF, Thompson TJ, Anda RF, Dietz WH, Felitti V. Body weight and obesity in adults and self-reported abuse in childhood. *Int J Obes Relat Metab Disord.* 2002 Aug;26(8):1075-82.
- <sup>39</sup> Herman, J.L. (1992a). Complex PTSD: A syndrome in survivors of prolonged and repeated trauma. *J. Trauma. Stress* 5: 377 – 91.
- <sup>40</sup> Herman, J.L. (1992b). *Trauma and Recovery*. New York: Basic Books.
- <sup>41</sup> Kramer A, Lorenzon D, Mueller G.. 2004. Prevalence of intimate partner violence and health implications for women using emergency departments and primary care clinics. *Women's Health Issues.* 14(1):19-29.
- <sup>42</sup> Roberts TA, Klein JD, Fisher S. 2003. Longitudinal effect of intimate partner abuse on high-risk behavior among adolescents. *Arch Pediatr Adolesc Med.* 157(9):875-81.
- <sup>43</sup> Diaz A, Simantov E, Rickert VI. 2002. Effect of abuse on health: results of a national survey. *Arch Pediatr Adolesc Med.* 156(8):811-7.
- <sup>44</sup> Hurwitz EJ, Gupta J, Liu R, Silverman JG, Raj A. 2006 Intimate partner violence associated with poor health outcomes in U.S. South Asian women. *J Immigr Minor Health.* Jul;8(3):251-61.
- <sup>45</sup> Fischbach RL, Berbert B. 1997. Domestic violence and mental health: correlates and conundrums within and across cultures. *Social Science and Medicine* 45: 1161–1176.
- <sup>46</sup> Ackard DM, Neumark-Sztainer D. Date violence and date rape among adolescents: associations with disordered eating behaviors and psychological health. *Child Abuse Negl.* 2002 May;26(5):455-73.
- <sup>47</sup> Silverman JG, Raj A, Mucci LA, Hathaway JE. 2001. Dating violence against adolescent girls and associated substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality. *JAMA.* 286(5):572-9.
- <sup>48</sup> Thompson KM, Wonderlich SA, Crosby RD, Mitchell JE. Sexual victimization and adolescent weight regulation practices: a test across three community based samples. *Child Abuse Negl.* 2001 Feb;25(2):291-305.
- <sup>49</sup> Leonard S, Steiger H, Kao A. Childhood and adulthood abuse in bulimic and nonbulimic women: prevalences and psychological correlates. *Int J Eat Disord.* 2003 May;33(4):397-405.
- <sup>50</sup> Fonseca H, Ireland M, Resnick MD. 2002. Familial correlates of extreme weight control behaviors among adolescents. *Int J Eat Disord.* 32(4):441-8.
- <sup>51</sup> McNutt LA, Carlson BE, Persaud M, Postmus J. Cumulative abuse experiences, physical health and health behaviors. *Ann Epidemiol.* 2002 Feb;12(2):123-30.
- <sup>52</sup> Felitti VJ. 1993. Childhood sexual abuse, depression, and family dysfunction in adult obese patients: a case control study. *South Med J.* 86(7):732-6.
- <sup>53</sup> Leserman J, Li Z, Drossman DA, Hu YJ. Selected symptoms associated with sexual and physical abuse history among female patients with gastrointestinal disorders: the impact on subsequent health care visits. *Psychol Med.* 1998 Mar;28(2):417-25.
- <sup>54</sup> Drossman DA, Leserman J, Nachman G, Li ZM, Gluck H, Toomey TC, Mitchell CM. Sexual and physical abuse in women with functional or organic gastrointestinal disorders. *Ann Intern Med.* 1990. 113(11):828-33.
- <sup>55</sup> Rodriguez M, Perez V, Garcia Y. 2005 Impact of traumatic experiences and violent acts upon response to treatment of a sample of Colombian women with eating disorders *Int J Eat Disord.* 37(4):299-306.



- 
- <sup>56</sup> Deborah Loxton, Margot Schofield, Rafat Hussain and Gita Mishra. History of Domestic Violence and Physical Health in Midlife. *Violence Against Women*. 12(8): 715 – 731.
- <sup>57</sup> Williamson DF, Thompson TJ, Anda RF, Dietz WH, Felitti V. Body weight and obesity in adults and self-reported abuse in childhood. *Int J Obes Relat Metab Disord*. 2002 Aug;26(8):1075-82.
- <sup>58</sup> Greenfeld, LA, Rand, MR, Craven, D, Claus, PA, Perkins, CA, Ringel, C, Warchol, G, Maston, C, Fox, JA. 1998. Violence by intimates: Analysis of data on crimes by current or former spouses, boyfriends, and girlfriends. US Department of Justice (Bureau of Justice Statistics Factbook, No. NCJ-167237).
- <sup>59</sup> Duncan MM, Stayton, CD, Hall, CB. 1999. Police reports on domestic incidents involving intimate partners: injuries and medical help-seeking *Women Health*. 30(1):1-13.
- <sup>60</sup> McFarlane, J, Parker, B, Soeken, K, Bullock, L. 1992. Assessing for abuse during pregnancy. Severity and frequency of injuries and associated entry into prenatal care. *JAMA* 267: 3176–8.
- <sup>61</sup> Taggart, L. and Mattson, S. 1996. Delay in prenatal care as a result of battering in pregnancy: cross-cultural implications. *Health Care Women International*. 17(1):25-34.
- <sup>62</sup> Dietz PM, Gazmararian JA, Goodwin MM, Bruce FC, Johnson CH, Rochat RW. 1997. Delayed entry into prenatal care: effect of physical violence. *Obstetrics and Gynecology* 90(2):221-4.
- <sup>63</sup> Brokaw, J. Fullerton-Gleason, L, Olson, L, Crandall, C, MCLAughlin, S, Sklar, D. 2002. Health Status and Intimate Partner Violence: A Cross-Sectional Study. *Annals of Emergency Medicine* 39(1): 31–38.
- <sup>64</sup> United Nations Development Programme [UNDP] and the Institute for National Planning [INP]. 2005. *Egypt 2005 human development report*. Cairo: UNDP.
- <sup>65</sup> El-Zanaty, Fatma and Ann A.Way. 2001. *Egypt Demographic and Health Survey 2000*. Calverton, MD: Macro International, Inc.
- <sup>66</sup> United Nations Development Program [UNDP] and the Institute for National Planning [INP]. 2003. *Egypt 2003 human development report*. Cairo: United Nations Development Program.
- <sup>67</sup> World Bank Group. 2002. *Gender Stats: Database of gender statistics* Retrieved May 17, 2007 <<http://genderstats.worldbank.org/home.asp>>.
- <sup>68</sup> El-Zanaty, Fatma, Enas M. Hussein, Gihen A. Shawky, Ann A. Way, and Sunita Kishor. 1996. *Egypt Demographic and Health Survey 1995*. Calverton, MD: Macro International, Inc.
- <sup>69</sup> Yount, Kathryn M. 2004. “Symbolic Gender Politics, Religious Group Identity, and the Decline in Female Genital Cutting in Minya, Egypt.” *Social Forces* 82:1063 – 1090.
- <sup>70</sup> El-Zanaty, Fatma and Ann A.Way. 2006. *Egypt Demographic and Health Survey 2005*. Cairo, Egypt: Ministry of Health and Population, National Population Council, El-Zanaty and Associates, and ORC Macro.
- <sup>71</sup> Ammar, N. H. 2006. “Beyond the Shadows: Domestic Spousal Violence in a “Democratizing” Egypt.” *Trauma, Violence, and Abuse* 7(4): 244 – 259.
- <sup>72</sup> Yount, K.M. 1999. *Persistent inequalities: Women’s status and differentials in the treatment of sick boys and girls. Case study of Minya, Egypt*. Baltimore: Johns Hopkins University.
- <sup>73</sup> Straus, M. A., Hamby, S. L., Boney-McCoy, S., & Sugarman, D. B. (1996). The revised conflict tactics scale (CTS2). Development and preliminary psychometric data. *Journal of Family Issues*, 17(3), 283–316.
- <sup>74</sup> World Health Organization. 2001. *Putting women first: Ethical and safety recommendations for research on domestic violence against women*. Geneva, Switzerland: WHO.

---

<sup>75</sup> Filmer, Dean, and Lant Pritchett. 1999. "The Effect of Household Wealth on Educational Attainment: Evidence from 35 Countries." *Population and Development Review* 25: 85 – 120.

<sup>76</sup> Liang, K. Y., & Zeger, S. L. (1986). Longitudinal data analysis using generalized estimating equations. *Biometrika*, 73, 13 – 22.

<sup>77</sup> Kim SA, KM Yount , U Ramakrishnan , R Martorell . 2007. The relationship between parity and overweight varies with household wealth and national development. *International Journal of Epidemiology* 36(1):93-101.

<sup>78</sup> United Nations Development Programme, Arab Fund for Economic and Social Development, and the Arab Gulf Programme for United Nations Development Organizations. 2006. *Arab Human Development Report 2005: Towards the Rise of Women in the Arab World*. Stanford: Stanford University Press.