Chapter 5
Consanguineous Marriage: Protective or Risk Factor for Intimate Partner Violence?

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Abstract Consanguinity is still common in the Middle East. This chapter uses the Demographic and Health Surveys (DHS) from Egypt (2005; $N=5{,}240$) and Jordan (2007; $N=3{,}444$) to examine the relationship between consanguinity and intimate partner violence (IPV). Binary logistic regression models used to assess the association revealed that IPV, namely physical, emotional, and sexual violence during the past year to the survey, was fairly similar in both countries. Physical violence was 18 % in Egypt and 12 % in Jordan; emotional violence was 10 % in both countries, while sexual violence was lower: 6 % in Jordan and 4 % in Egypt. Jordan has a higher rate of consanguinity (39 %) compared to Egypt (33 %). Findings show significant association between consanguinity and experience of emotional, but not physical, or sexual IPV in the past year in both countries. Duration of marriage, education, and wealth were also found to be important determinants.

Keywords Intimate partner violence • Arab world • Consanguinity • Physical violence • Emotional violence • Sexual violence

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Introduction

It is estimated that over six million people in the world have consanguineous parents. Although first-cousin marriage is illegal in certain areas (Bittles and Black 2010), many countries, especially the Arab world, continue to have high rates of consanguineous marriages when compared to Western countries (Bras et al. 2009; Freire-Maia 1968; Stoltenberg et al. 1998). However, it is difficult to compare rates of consanguinity among different countries given the various methodologies used and the differences in years and in populations studied; yet, it might be possible to obtain from available literature a general idea about estimates of consanguinity across the Arab world and the changing pattern over time.

Several studies have found differences in consanguinity prevalence across the Arab world. For instance, in Egypt, Hafez and colleagues' 1983 study showed a general prevalence of consanguinity of 28.9 % (Hafez et al. 1983). A study conducted in Beirut, Lebanon, showed a 25 % general incidence (Khlat 1988). A more representative and recent study across different regions of Lebanon in 2009 showed an overall consanguinity rate of 35.5 % (Barbour and Salameh 2009), comparable to the 35.4 % rate reported from Syria (Othman and Saadat 2009), but lower than the rates reported elsewhere: 40 % in Yemen (Jurdi and Saxena 2003), 40.6 % among Israeli Arabs (Vardi-Saliternik et al. 2002), 50.5 % in the United Arab Emirates (UAE) (Al-Gazali et al. 1997), 51.2 % in Jordan (Khoury and Massad 1992), and 54 % in Qatar (Bener and Alali 2006). A study published from the Kingdom of Saudi Arabia (KSA) revealed an overall rate of consanguinity of 57.7 % (El-Hazmi et al. 1995). Another national study from KSA conducted over 2 years (2004–2005) from each of the 13 regions of the Kingdom showed a national prevalence of 56 % (El-Mouzan et al. 2007). The percentage is even higher in north Jordan at 63.7 % (Al-Salem and Rawashdeh 1993).

Most of the studies agreed that first-cousin marriage is the most common type of inbreeding (Hafez et al. 1983; Barbour and Salameh 2009; Othman and Saadat 2009; Jurdi and Saxena 2003; Al-Gazali et al. 1997; Khoury and Massad 1992; Bener and Alali 2006; El-Hazmi et al. 1995; El-Mouzan et al. 2007; Al-Salem and Rawashdeh 1993). However, uncle-niece and aunt–nephew mating is prohibited by Islamic law and is not encountered in Arab countries.

Several factors including sociocultural, religious, economic, degree of isolation of the population, and current laws are assumed to play a role in the rate differences observed among countries of the Arab world. The influence of modernization on the practice of consanguineous marriage seems not to be identical in different areas. Whereas the practice of consanguineous marriage has steadily declined in some countries like Jordan (Hamamy et al. 2005), Palestinian territories (Assaf and Khawaja 2009) and Israeli Arabs (Jaber et al. 2000; Sharkia et al. 2008), and non-Bedouin communities in Kuwait (Radovanovic et al. 1999), the rate of consanguineous marriages has increased in Yemen (Jurdi and Saxena 2003), the UAE (Al-Gazali et al. 1997), and Qatar (Bener and Alali 2006).

Consanguineous marriage is more common in those who get married at younger ages (Jurdi and Saxena 2003; Assaf and Khawaja 2009; Sharkia et al. 2008),

among those residing in rural areas (Hafez et al. 1983; Vardi-Saliternik et al. 2002; Bener and Alali 2006; Bener et al. 2009; Assaf and Khawaja 2009), and within Bedouin communities (Vardi-Saliternik et al. 2002; Radovanovic et al. 1999). Further, other factors that determine consanguineous unions include Muslim affiliation (Khlat 1988; Barbour and Salameh 2009; Vardi-Saliternik et al. 2002; Khoury and Massad 1992), husbands with low occupational status (Khlat 1988), women out of labor force (Barbour and Salameh 2009; Assaf and Khawaja 2009), lower socioeconomic status, and individuals with lower wealth index (Assaf and Khawaja 2009; Sharkia et al. 2008). However, the role of education in consanguineous marriage is not clear. Although some studies have shown that women and men with low educational level are more likely to be in consanguineous marriage (Khlat 1988; Barbour and Salameh 2009; Jurdi and Saxena 2003; Khoury and Massad 1992), this was not evident in other studies (Al-Salem and Rawashdeh 1993; Hamamy et al. 2005; Assaf and Khawaja 2009; Gunaid et al. 2004). Actually, the opposite was true in Yemen regarding the husband's education (Jurdi and Saxena 2003).

The effect of consanguineous marriage on pregnancy outcomes, congenital malformations, genetic diseases, and cancer risks has been well documented (Denic et al. 2005; Bener et al. 2009, 2010; Pedersen 2002; Kanaan et al. 2008; Tadmouri et al. 2009; Hamamy et al. 2011). However, the effect of such marriage on the family dynamic and sociological factors has not been well studied. A recent study examined the association between consanguinity and susceptibility to drug abuse among offspring (Saadat and Vakili-Ghartavol 2010). Saadat's study revealed an association between drug abuse and parental consanguinity in non-alcohol drinkers, but the relationship between consanguinity and domestic violence has not been well studied.

The few studies from the region that document intimate partner violence prevalence and consanguinity as a covariate report mixed results. For example, Fikree and colleagues examined postnatal women in Pakistan about intimate partner violence and its determinants (Fikree et al. 2006). The study showed that 44 % of interviewed women reported marital abuse and consanguinity was found to be a significant risk for violence. In contrast, a research study of pregnant women attending a family planning clinic in Jordan showed that 15.4 % reported physical abuse during pregnancy. Being married to a first or second cousin was a protective factor against violence in the multivariate model compared to unrelated or distantly related marriage (Clark et al. 2009). These findings were in line with another study from Egypt (El-Zanaty and Way 2006). However, a study from the city of Aleppo, Syria, showed that the prevalence of physical abuse was not statistically different between women who were married to a relative vs. a nonrelative (Maziak and Asfar 2003). Similarly, consanguinity was associated, but not significantly, with lower rates of sexual coercion among pregnant Palestinian refugees in Lebanon (Khawaja and Hammoury 2008).

Thus, the aim of this study is to analyze the existing data on intimate partner violence and evaluate its relation to consanguinity taking into account the various types of domestic violence and the confounding factors (educational level, rural vs. urban settlement, wealth index, religious affiliation, occupational status, and working females).

The availability of national-level survey data on intimate partner violence and consanguinity with comparable instruments and survey methodology from two countries in the region provides a unique opportunity to assess this association in detail.

Methods

This study is based on two fairly comparable household survey data sets from the Demographic Health Survey (DHS) program: The first is the 2005 EDHS (Egypt Demographic and Health Survey) in Egypt (El-Zanaty and Way 2006) and the second is the 2007 PFHS (Population and Family Health Survey) from Jordan (Department of Statistics [Jordan] and Macro International Inc. 2008). Both of these surveys include a module on domestic violence and questions on consanguinity for ever-married women aged 15–49 years. The 2005 EDHS is the latest survey to include data on domestic violence in Egypt and, for comparative purposes, the 2007 PFHS survey from Jordan is the closest to the 2005 EDHS.

The 2007 PFHS is a stratified sample selected in two stages from the 2004 census frame. A total of 30 sampling strata were constructed for urban and rural areas of the 12 governorates in Jordan. In the first stage, 890 sampling clusters were selected randomly with probabilities proportional to population size and independently in each stratum. In the second stage, 16 households were selected from each sampling cluster. All ever-married women aged 15–49 years in the selected households were interviewed. The final sample included 11,113 women, with a response rate of 97.9 %. This study is based on one-third subsample of the total clusters. Only one woman in each cluster was selected randomly for the domestic violence module, resulting in a total sample of 3,444 ever-married women for analysis.

The 2007 EDHS data are stratified, three-stage probability samples based on the 1996 census frame. In the first stage, a total of 682 primary sampling units (PSUs) consisting mainly of towns and villages were selected from rural and urban areas. In the second stage, the PSUs were divided into sampling segments of approximately equal size: one was selected from smaller towns (PSUs) and two from larger ones. In the third stage, a systematic sample of 22,807 households was selected from the chosen segments. The final sample included 19,565 eligible women with a response rate of 99.5 %. As in the Jordan sample, a subsample consisting of one-third of the sampled households were selected for anemia testing and domestic violence module. One eligible woman was selected from each of this subsample, yielding a total of 5,240 women for the domestic violence module.

The outcome variable is exposure to violence by an intimate partner (IPV) during the past year before the survey. Measures of physical, emotional, and sexual violence against women were included. Physical violence is considered present if the woman answered yes to any of the seven physical attacks (by her husband) included in the instrument from the standard Conflict Tactics Scales (Straus et al. 1996). Emotional violence was considered present if the woman answered yes to any of the two questions, “Did your husband say or do something to humiliate you in front of

others?" and "Did your husband threaten to hurt or harm you or someone close to you?" Sexual violence was considered present if the woman answered yes to the question, "Did your husband physically force you to have sexual intercourse with him even when you did not want to?"

The main independent variable is consanguinity. Although the two survey instruments are generally similar, as typical of DHS surveys, the question on consanguinity is not strictly comparable in the EDHS and JPFHS. In the EDHS, the answer categories consist of first and second cousins (from both father's and mother's side), other relative, or no relation. The answer categories for this question in the JPFHS in contrast are more detailed, consisting of six possible combinations for first-cousin marriage, depending on father's, mother's, and both sides, in addition to second cousin and marriage to other relatives. After checking frequencies of this variable in the two settings, we decided to measure consanguinity by a simple binary variable distinguishing if the woman was married to relative (consanguinity) or to nonrelative.

A range of demographic and socioeconomic risk factors were included as control variables, including age group (15–29, 30–39,40–49), age at marriage (<16, 16–19, 20–22, 22+), duration of marriage in years (<5, 5–19, 20+), educational level completed (less than secondary, secondary, more than secondary), residence (rural, urban), employment status (working, not working), and household wealth (quintiles). After bivariate analyses, multivariate analyses were conducted in the form of logistic regression models to assess the net effect of each of the independent variables on the IPV variables. These analyses were performed using the statistical package, Stata (version 12.0).

Results

Overall, the prevalence of physical violence reported during the past year was relatively higher in Egypt than in Jordan (Table 5.1). Nearly one woman out of five suffered from physical violence in Egypt and about one out of ten in Jordan. More than 10 % of women reported being emotionally abused within the past year in both countries. Sexual violence was lower at 6 % in Jordan and 4 % in Egypt. Over a third of women were married to relatives in both countries, with Jordan having a higher rate of consanguinity (39 %) than Egypt (33 %).

The age profile of women interviewed was fairly similar in both countries, with Egypt having a slightly younger sample. About 38 % of Egyptian women were aged less than 30 years old compared to 33 % in Jordan. On the other hand, Egyptian women were much less educated than their Jordanian counterparts. About one out of two Egyptian women had less than secondary education compared to one in ten in Jordan. Despite their higher educational level, Jordanian women were less likely to be employed (12 %) than Egyptian women (22 %). On average, most women were married before age 20 years in both countries. However, more women married at a younger age in Egypt than in Jordan. Marital duration was fairly similar in both countries, with about a fifth of women being married for less than 5 years. The vast

Table 5.1 Sample characteristics and prevalence of violence during past year, Jordan (2007) and Egypt (2005)

Variable	No. of women (%)	
	Jordan	Egypt
Physical violence		
Yes	412 (12.0)	1,022 (18.2)
No	3,032 (88.0)	4,591 (81.8)
Emotional violence		
Yes	354 (10.4)	575 (10.2)
No	3,054 (89.6)	5,038 (89.8)
Sexual violence		
Yes	193 (5.6)	217 (3.9)
No	3,229 (94.4)	5,396 (96.1)
Consanguinity		
Relative	1,332 (38.7)	1,861 (33.2)
Nonrelative	2,112 (61.3)	3,45 (66.7)
Age		
15–29	1,151 (33.4)	2,122 (37.8)
30–39	1,361 (39.5)	1,876 (33.4)
40–49	932 (27.1)	1,614 (28.8)
Education		
Less than secondary	346 (10.1)	2,812 (50.1)
Secondary	2,060 (59.8)	2,178 (38.8)
Higher than secondary	1,037 (30.1)	624 (11.1)
Employment		
Not working	3,024 (87.8)	4,365 (77.8)
Working	420 (12.2)	1,248 (22.2)
Age at first marriage		
<16	245 (7.1)	887 (15.8)
16–19	1,288 (37.4)	2,138 (38.1)
20–22	951 (27.6)	1,420 (25.3)
23+	959 (27.8)	1,168 (20.8)
Marital duration		
<5	728 (21.1)	1,175 (20.9)
5–19	1,907 (55.4)	2,822 (50.3)
20+	809 (23.5)	1,617 (28.8)
Place of residence		
Urban	2,938 (85.3)	2,339 (41.7)
Rural	506 (14.7)	3,274 (58.3)
Wealth index		
Poorest	646 (18.7)	1,048 (18.7)
Poorer	761 (22.1)	1,018 (18.1)
Middle	707 (20.5)	1,129 (20.1)
Richer	701 (20.4)	1,226 (21.8)
Total	3,444 (100.0)	5,613 (100.0)

majority of Jordanian women resided in urban areas (85 %) while more than 50 % of Egyptian women lived in rural areas. The wealth index distribution frequency looks similar in both countries.

Table 5.2 displays the bivariate (unadjusted) associations between physical violence and background variables. Consanguinity was significantly associated with physical violence in Jordan but not in Egypt, with women married to relatives

Table 5.2 Prevalence of physical violence during past year by selected background variables, Jordan (2007) and Egypt (2005)

	Jordan		Egypt	
Variable	*N* (%)	*P*-values*	*N* (%)	*P*-values*
Consanguinity				
Relative	136 (10.2)	0.012	350 (18.8)	0.388
Nonrelative	276 (13.1)		669 (17.9)	
Age				
15–29	156 (13.6)	0.052	440 (20.7)	0.000
30–39	162 (11.9)		358 (19.1)	
40–49	94 (10.9)		224 (13.1)	
Education				
Less than secondary	56 (16.1)	0.001	624 (22.2)	0,000
Secondary	260 (12.6)		358 (16.4)	
Higher than secondary	95 (9.2)		40 (6.4)	
Employment				
Not working	363 (12.0)	0.731	821 (10.1)	0.509
Working	48 (11.4)		201 (10.7)	
Age at first marriage				
<16	37 (15.1)	0.024	173 (19.5)	0.000
16–19	159 (12.3)		457 (21.4)	
20–22	90 (9.5)		221 (15.6)	
23+	126 (13.1)		171 (14.6)	
Marital duration				
<5	95 (13.0)	0.010	198 (16.9)	0.000
5–19	244 (12.8)		590 (20.9)	
20+	72 (8.9)		235 (14.5)	
Place of residence				
Urban	352 (12.0)	0.925	355 (15.2)	0.000
Rural	60 (11.8)		667 (20.4)	
Wealth index				
Poorest	97 (15.0)	0.002	240 (22.9)	0.000
Poorer	105 (13.8)		227 (22.3)	
Middle	66 (9.3)		229 (20.3)	
Richer	85 (12.1)		200 (16.3)	
Richest	59 (9.4)		127 (10.7)	
Total	412 (100.0)		1,022 (100.0)	

**P*-values of chi-square statistics

in Jordan being less at risk for physical violence than women married to nonrelatives. Younger age, low education, low age at marriage, shorter marital duration, and low level of wealth were also associated with physical violence in both countries. It should be noted that marital duration was not consistently related to physical violence in Egypt, but longer marital duration (>20 years) was associated with lower rates of physical violence. Finally, Egyptian women residing in rural areas were more likely to suffer from physical abuse than urban women.

Table 5.3 shows overall analogous associations with emotional violence. Women married to relatives had significantly lower rates of emotional abuse than those married to nonrelatives, but the relation was statistically significant only in Jordan. Education, age at first marriage, marital duration, and wealth index were statistically significantly associated with emotional IPV in both countries. Women with higher educational attainment were less likely to report emotional abuse than their counterparts with lower education. The association between emotional abuse and age at first marriage was linear in Egypt but not in Jordan. Nonetheless, in both countries, women who were married at the age of 23 or older were significantly less likely to report emotional abuse than those women who married at younger ages.

The effect of duration of marriage on emotional abuse was statistically significant in both countries but the pattern of association was slightly different. In Jordan, the association was clearly positive: women who have been married for a longer time were more likely to experience emotional abuse. In contrast, in Egypt, the risk of emotional abuse was higher among those who have been married for 5–19 years. In both countries, women who lived in poorer households were significantly more likely to report emotional abuse than those in richer households. The data in Table 5.3 also show that nonworking women were more at risk of being emotionally abused only in Jordan. In contrast, rural women were more likely than urban women to report experiencing emotional violence in the past year only in Egypt.

Table 5.4 indicates that consanguinity was not associated with sexual abuse in both countries unlike for physical and emotional violence. Younger age, lower education, shorter marital duration, and lower wealth were associated with sexual abuse in both countries. Rural residence and unemployment were significantly associated with sexual abuse in Egypt but not in Jordan.

Table 5.5 displays adjusted associations between the three forms of violence and background variables. The results of the multivariate model indicate that consanguineous marriages are protective of abuse across types, but the association is only statistically significant for emotional abuse in both countries. Women married to relatives were about 1.5 times less at risk for emotional violence in both countries. This association is marginally significant for physical and sexual abuse. Interestingly, being younger and married at a younger age was no longer statistically significantly associated with IPV in the multivariate models. On the other hand, low educational level was significantly associated with both physical and emotional violence even after controlling for other factors. Women who have less than secondary education were twice more at risk for physical and emotional violence in Jordan and about four times in Egypt. Women with secondary education were also more vulnerable to physical and emotional violence than women with higher than secondary education,

Table 5.3 Prevalence of emotional violence during past year by selected background variables, Jordan (2007) and Egypt (2005)

	Jordan		Egypt	
Variable	*N* (%)	*P*-values*	*N* (%)	*P*-values*
Consanguinity				
Relative	113 (8.6)	0.007	178 (9.6)	0.242
Nonrelative	241 (11.5)		396 (10.6)	
Age				
15–29	106 (9.3)	0.249	221 (10.4)	0.076
30–39	141 (10.4)		211 (11.2)	
40–49	107 (11.6)		144 (8.9)	
Education				
Less than secondary	58 (17.2)	0.000	381 (13.5)	0.000
Secondary	224 (11.0)		177 (8.1)	
Higher than secondary	72 (7.0)		17 (2.7)	
Employment				
Not working	325 (10.9)	0.022	441 (10.1)	0.509
Working	30 (7.2)		134 (10.7)	
Age at first marriage				
<16	24 (9.9)	0.017	131 (14.8)	0.000
16–19	156 (12.3)		250 (11.7)	
20–22	96 (10.1)		102 (7.2)	
23+	78 (8.2)		93 (8.0)	
Marital duration				
<5	52 (7.1)	0.000	80 (6.8)	0.000
5–19	194 (10.3)		344 (12.2)	
20+	108 (13.5)		152 (9.4)	
Place of residence				
Urban	304 (10.5)	0.759	200 (8.6)	0.000
Rural	50 (10.0)		375 (11.5)	
Wealth index				
Poorest	87 (13.7)	0.003	160 (15.3)	0.000
Poorer	90 (11.9)		129 (12.7)	
Middle	53 (7.6)		129 (11.4)	
Richer	64 (9.2)		95 (7.7)	
Richest	61 (9.9)		62 (5.2)	
Total	354 (100.0)		575 (100.0)	

**P*-values of chi-square statistics

but this association is significant only for Egypt. Education was not significant for sexual abuse, owing perhaps to small sample size.

Overall, longer marital duration (i.e., 5–19 years of marriage) was associated with IPV. This association, after controlling for other factors, was significant only for emotional violence in Egypt. Women married for 5–19 years were twice more

Table 5.4 Prevalence of sexual violence during past year by selected background variables, Jordan (2007) and Egypt (2005)

	Jordan		Egypt	
Variable	*N* (%)	*P*-values*	*N* (%)	*P*-values*
Consanguinity				
Relative	71 (5.4)	0.603	65 (3.5)	0.321
Nonrelative	122 (5.8)		151 (4.0)	
Age				
15–29	76 (6.7)	0.008	86 (4.1)	0.010
30–39	83 (6.1)		88 (4.7)	
40–49	35 (3.7)		44 (2.7)	
Education				
Less than secondary	27 (8.0)	0.023	122 (4.3)	0.003
Secondary	121 (5.9)		86 (4.0)	
Higher than secondary	44 (4.2)		9 (1.4)	
Employment				
Not working	173 (5.8)	0.412	184 (4.2)	0.016
Working	20 (4.8)		34 (2.7)	
Age at first marriage				
<16	15 (6.1)	0.758	43 (4.8)	0.056
16–19	75 (5.9)		90 (4.2)	
20–22	47 (5.0)		54 (3.8)	
23+	56 (5.9)		31 (2.7)	
Marital duration				
<5	45 (6.2)	0.018	39 (3.3)	0.001
5–19	118 (6.2)		136 (4.8)	
20+	29 (3.6)		42 (2.6)	
Place of residence				
Urban	156 (5.3)	0.067	66 (2.8)	0.001
Rural	37 (7.4)		151 (4.6)	
Wealth index				
Poorest	45 (7.0)	0.000	46 (4.4)	0.000
Poorer	43 (5.7)		51 (5.0)	
Middle	54 (7.7)		55 (4.9)	
Richer	33 (4.7)		48 (3.9)	
Richest	16 (2.6)		18 (1.5)	
Total	193 (100.0)		218 (100.0)	

**P*-values of chi-square statistics

likely to report having experienced emotional violence in Egypt. On the other hand, 20 years of marriage or more was associated with a decrease in physical and sexual violence, although these associations were not statistically significant. Exception was observed for women who had been married for 20 years or more in Jordan, they were three times more at risk of being emotionally abused than women married for

Table 5.5 Adjusted odds ratios from logistic regression of physical, emotional, and sexual violence, Jordan (2007) and Egypt (2005)

	Physical violence		Emotional violence		Sexual violence	
Variable	Jordan	Egypt	Jordan	Egypt	Jordan	Egypt
Consanguinity						
Relative (ref.)	1.000	1.000	1.000	1.000	1.000	1.000
Nonrelative	1.309	1.107	1.591**	1.371*	1.094	1.403
Age						
15–29	1.089	1.481	1.576	1.172	1.665	0.656
30–39	0.932	1.213	1.371	1.057	1.479	0.883
40–49 (ref.)	1.000	1.000	1.000	1.000	1.000	1.000
Education						
<Secondary	2.130*	3.909***	2.107*	4.197***	2.047	1.435
Secondary	1.497	2.468***	1.433	2.699**	1.357	1.433
Higher (ref.)	1.000	1.000	1.000	1.000	1.000	1.000
Employment						
Not working	0.810	0.977	1.900	0.792	1.028	1.505
Working (ref.)	1.000	1.000	1.000	1.000	1.000	1.000
Age first marriage						
<16	1.192	0.864	0.726	1.225	0.878	1.793
16–19	0.901	1.037	1.117	1.073	0.845	1.431
20–22	0.724	0.870	1.110	0.767	0.777	1.353
23+ (ref.)	1.000	1.000	1.000	1.000	1.000	1.000
Marital duration						
<5 years (ref.)	1.000	1.000	1.000	1.000	1.000	1.000
5–19	1.098	1.337*	1.831	1.705**	1.131	1.242
20+	0.683	0.863	3.289*	1.038	0.855	0.463
Place of residence						
Urban (ref.)	1.000	1.000	1.000	1.000	1.000	1.000
Rural	0.887	0.974	0.840	0.820	1.236	1.227
Wealth index						
Poorest	1.349	1.424	1.373	2.055**	1.978	2.332*
Poorer	1.323	1.487*	1.254	1.828*	1.752	2.574*
Middle	0.899	1.396	0.740	1.724*	2.601	2.642*
Richer	1.332	1.176	0.988	1.180	1.776	2.167*
Richest (ref.)	1.000	1.000	1.000	1.000	1.000	1.000

ref. reference category
***$P \leq 0.001$; **$P \leq 0.01$; * $P \leq 0.05$

less than 5 years. After adjusting for other variables, residing in rural areas in Egypt was no more associated with IPV.

Finally, lower wealth was significantly associated with emotional, sexual, and physical violence in Egypt, but not in Jordan. In fact, poorer women were about 2–3 times at higher risk for emotional and sexual abuse, and 1.5 times higher for physical violence, in Egypt.

Discussion and Conclusion

The data from the Jordan and Egypt DHS survey indicate that more than one-third of Egyptian and Jordanian women have been exposed to any form of emotional, physical, and/or sexual violence during their lifetime. It should be noted that the current research analyzes past year experiences with IPV, which are generally lower than the lifetime experiences with IPV. Nonetheless, past year assessment might be a more accurate measure of IPV because it reduces recall bias (Xu et al. 2005) and provides a better insight into the problem.

Our results show that the prevalence of physical, sexual, and emotional intimate partner violence during the past year in Jordan and Egypt is relatively high, with higher rates reported from Egypt. IPV prevalence varies tremendously from one country to another as shown in the multi-country population-based household surveys carried out by the World Health Organization (WHO), where the prevalence of physical or sexual partner violence or both during past year fluctuates between as low as 4 % in Japan to 54 % in Ethiopia (Garcia-Moreno et al. 2006). The rates are also comparable to the ones observed in large population-based studies conducted in primary care settings with a prevalence of past year IPV of 6–21 % (Laanpere et al. 2012; Xu et al. 2005).

Our findings reveal that physical violence was the most common type of violence reported in Jordan and Egypt followed by emotional and sexual to a much lesser extent. This is not in line with a cross-sectional study conducted in Alexandria in 2009 among 3,271 ever-married women, which showed that emotional abuse was the most common form of IPV (Mamdouh et al. 2012). Similar findings were reported in the USA, where 28 % of women in health care setting were found to be emotionally abused, 12 % were physically abused, and 4 % were sexually abused during the past year (Kramer et al. 2004). In another general practice-based prevalence study carried out in Melbourne, Australia, more than 25 % of women were exposed to physical or emotional abuse from their partner in the previous year and 13 % experienced rape or attempted rape (Mazza et al. 1996). These findings show that the prevalence and patterns of IPV are not strictly comparable in various and quite different cultures.

Several contributing factors to IPV emerged in bivariate analyses of these two demographic and health surveys; however, in the multivariate models only few remained significant. Many of these factors were studied in the literature and are discussed below.

Education was found to correlate strongly but negatively with physical and emotional intimate partner violence in both countries. Women with less than secondary education were significantly twice more at risk for physical and emotional violence in Jordan and four times for physical and emotional violence in Egypt after controlling for other variables. Furthermore, in Egypt, women with secondary education were also found more vulnerable to physical and emotional abuse than women with higher than secondary education. This contradicts the finding from another Arab country (Saudi Arabia) where illiterate women had decreased risk for physical abuse and husbands with higher education had more risk of having an abusive behavior toward their wives (Tashkandi and Rasheed 2010).

However, the above-mentioned relation of education to IPV is consistent with research from other parts of the world where the women's and the husband's higher educational levels correlated with lower IPV (Mamdouh et al. 2012; Abramsky et al. 2011). Moreover, population-based surveys conducted by the WHO between 2000 and 2003 in several countries revealed that the lowest level of IPV occurred when husbands and wives had completed the same level of education (Abramsky et al. 2011). It is possible to speculate that husbands who have undergone similar years of schooling would share similar norms of gender equality. Yet, our research could not look at differences in education between husbands and wives as it included ever-married women and hence information on husbands would be missing for some.

It is interesting that education was associated with sexual violence in bivariate analysis for both countries, but lost its significance in logistic regression models. Although education is considered a strong predictor of women's empowerment, autonomy, and gender equality and hence expected to decrease the risk of violence among couples, it didn't seem to affect the sexual violence within IPV in the Arab world. As it is secondary data analysis, some factors that could have played a role in counter affecting the role of education were not measured. For example, alcohol and drug use has shown in many studies to be strongly associated with domestic violence (Hamzeh et al. 2008; Worden and Carlson 2005; Abramsky et al. 2011). Moreover, the general concept prevailing in the Arab world, even among women, that sexual intercourse is considered the husband's right, so a man can engage sexually with his wife when he pleases, could also explain this relation. Marital rape is not considered a crime in all Arab states.

Five to 19 years of marital years tend to increase the odds of physical, emotional, and sexual violence in Jordan and Egypt. However, after 20 years of marriage and over, there is a fall in physical and sexual violence in both countries and in emotional violence in Egypt. Similar to the findings of the study conducted among Saudi women, a significant decline of physical abuse has been observed after 20 years of marriage. Several explanations could be provided for this finding: after lengthy years of marriage, factors such as the presence of grown-up children or husbands' maturity toward their own abusive conduct might influence a decrease in IPV (Tashkandi and Rasheed 2010); or women could also become more tolerant to their husbands' acts of violence. In fact, one study showed that women who have 15 years of marriage or more were more likely to justify their husbands beating them (Yount 2005). In our study, the surprising finding of positive association between emotional violence in Jordan (but not in Egypt) and marital duration of 20 years and more, which increased the odds three times, needs to be explained. This may be attributed to place of residence, as the Jordan sample included more women residing in urban areas and could be more exposed to awareness campaigns on violence and women's rights. After several years of marriage, wives may be less tolerant to their husband's abusive behavior and more prone to disclose the emotional abuse to which they are subjected.

Residence in rural areas is significantly associated with physical abuse, emotional violence, and sexual violence in Egypt. This finding is similar to two studies conducted in Iran (Vakili et al. 2010; Faramarzi et al. 2005) and China (Xu et al. 2005),

where women from rural areas were more exposed to IPV. However, the association lost its significance when we controlled for education in the multivariate analysis, showing that education, and not residence, is actually a more important determinant of abuse.

Wealth index, measure of household income and poverty, was associated with IPV in Jordan and Egypt. However, poverty seems to be a stronger predictor for violence in Egypt since this association remained significant in the multivariate model only for Egypt. Women from poorer households were twice more at risk for emotional and sexual violence than richer women in Egypt. This confirms the findings of a household survey carried out in Minya, Egypt, where household wealth was found to protect women from wife beating (Yount 2005). Poverty and its resultant stress were shown in many studies to impact the risk for IPV and wealth in the contrary to buffer this risk (Koenig et al. 2003; Abramsky et al. 2011). The absence of this correlation in Jordan warrants further investigation.

Our findings did not show correlation between employment and physical IPV in the multivariate model for all types of IPV in both countries, although there were some indications that nonworking women could be at risk for emotional abuse in Jordan and sexual abuse in Egypt. The relation of employment to IPV has been controversial in the literature. In Iran, for example, housewives were at greater risk for any type of IPV (Vakili et al. 2010). In the Minya study, the socioeconomic dependence of wives has been found to impact positively physical abuse regardless of household wealth (Yount 2005). However, in Lebanon, more working women reported exposure to violence (Usta et al. 2007) and in Saudi Arabia, women having a personal income were more at risk for physical abuse (Tashkandi and Rasheed 2010). Moreover, in the same study, women married to an unemployed husband were more exposed to physical abuse. This was attributed to the effect of poverty. It seems that more autonomous and income-earning women living in traditional settings are more exposed to risk of violence. Yet, autonomy did not seem to have an effect on violence in less conservative areas (Koenig et al. 2003).

Age and age at first marriage did not correlate with exposure to different types of IPV in our study, similar to the findings by Tashkandi and Rasheed (2010). The lack of age effect on physical abuse was attributed to inherent personality characteristics that would precipitate physical violence rather than the age of wives or husbands (Tashkandi and Rasheed 2010). A better measure of the influence of age could be the age difference between husbands and wives, which had a strong effect on physical abuse in the study conducted in Syria (Maziak and Asfar 2003).

Consanguinity emerges as a protective factor for intimate partner violence in Jordan and Egypt as well. After controlling for other factors, the association remained significant for emotional violence only. Being married to a nonrelative increased the odds for emotional violence in Jordan and Egypt. Similar to the study among Saudi women, physical abuse has been significantly lower among consanguineous marriages (16.8 %) than marriages with nonrelatives (25.1 %) (Tashkandi and Rasheed 2010). However, this association lost its significance in the multivariate model. It seems that social factors have a major influence on the risk of IPV exposure.

Actually, one of the suggested hypotheses for preference of consanguinity in the Middle East is the assumption of better adaptability and acceptability of the female in her new environment and more stability within the family (Bittles 2008). In the study by Tashkandi and Rasheed, when women and husbands originated from the same region in Saudi Arabia, the risk for physical abuse decreased (Tashkandi and Rasheed 2010). Being married to a relative in the context of traditional and patriarchal Middle Eastern and Arabic family structure appears to buffer marital conflicts and protect against domestic violence. It is possible that with the influence of Western modernization and the change in social structure, having a spouse who shares similar family and cultural background and therefore gender role perceptions would decrease the potential for conflicts. Indeed, unmet role expectations of the spouse were highlighted in a study conducted among low-income Lebanese families as a reason for family conflict (Keenan et al. 1998).

Moreover, as identified by Keenan and colleagues, consanguineous wives may use better suited coping strategies such as negotiation and taking initiative (Keenan et al. 1998). Additionally, they may benefit from the support of their extended family members, as the probability is higher for her to be living closer to her family, being married to a relative. In the Minya household survey, women experienced more physical abuse when they were deprived from the presence and support of biological family living next to their homes (Yount 2005). In fact, the perceived quality of social support in Iran played a major role in affecting IPV than the number of people providing the support (Mozdeh et al. 2012). In India, having the support from the wife's family was associated with lower rates of IPV (Rao 1997). Finally, women in consanguineous marriages might be more tolerant to abuse and find IPV socially acceptable and may not report these acts. In the study conducted in Minya, Egypt, women involved in endogamous marriages were more likely to accept and justify their husbands' beating attitudes (Yount 2005).

The study recognizes the effect of consanguinity on IPV. In the context of the countries under study, where women's autonomy is generally low, poverty high, and women are frequently unemployed, consanguinity seems to protect even after controlling for the other factors. Further qualitative research is needed to fully understand the reasons behind the protective role of consanguinity in a patriarchal family structure. The contribution of family and social resources, the power dynamics between husbands and wives, conflict management strategies, and family support need to be further investigated.

Limitations

The study adds to the exiting body of literature on IPV in general, and in the Arab world in particular where consanguineous marriages are quite frequent. It is a large-scale study using DHS and FHS data. However, the cross-sectional design of the study may be a limitation in gaining understanding of the causal associations of the identified factors with IPV. A possible second limitation is that the surveys

relied on self-reports of violence which may be associated with underreporting. IPV is a sensitive issue and some women may be reluctant to reveal abuse from their husbands. Finally, because it is a secondary data analysis, other potential risk factors that could affect IPV were not accounted for in this study such as women's autonomy index, number of wives (monogamy vs. polygamy), family status (nuclear vs. extended), and husband's substance abuse.

Disclaimer The views expressed herein are those of the authors and do not necessarily reflect the views of the United Nations.

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