Intimate Partner Violence and Health-Related Quality of Life in European men and women: findings from the DOVE study

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Abstract

Purpose: Little is known on the specific relation between being a perpetrator or both a victim and perpetrator of intimate partner violence (IPV) and health-related quality of life (HRQoL). . We assessed the association between HRQoL and abuse considering men and women experiencing as victims, perpetrators or reciprocally.

Methods: Participants were adult men and women (n=3496), randomly selected from the general population of six European cities. The Revised-Conflict-Tactics-Scales and the Medical-Outcomes-Study 36-item Short-Form Health Survey (SF-36) were used to measure IPV and HRQoL. The age-, education- and city-adjusted mean scores[standard error] of the physical and of the mental SF-36 component summarieswere used to compare victims-only, perpetrators-only, and those involved in both (bidirectional or reciprocal cases) with those not involved in past-year and lifetime physical assault and/or sexual coercion.

Results: The physical component summary was significantly lower in women involved in in past year bidirectional physical assault compared to non-abused women. The mental component summary in women not involved in IPV was significantly higher than in those physically abused, regardless of type of involvement. Women victims-only of past year sexual coercion and victims or involved in bidirectional concomitant physical and sexual IPV also presented lower scores in the mental component summary than women not involved in IPV . In men, significantly lower scores in the mental component summary were found in the past year bidirectional physically assaulted group and among those involved bidirectionally in both physical and sexual IPV compared to men not involved in IPV.

Conclusion: Experiencing physical and sexual IPV is negatively associated with HRQoL. Lower scores in the mental component summary of the SF-36 are evident among female victims and among males and females involved in intimate partner violence as both victims and perpetrators when compared to females and males not involved in violence.

Introduction

Quality-of-life is an important outcome measure in routine clinical practice and in research [1].More specifically, health-related quality-of-life (HRQoL) involve perceptions of wellbeing and functioning in physical, mental, social and daily life activities that comprise a summary quantification of perceived health [2]. Health-related quality of life is a quantitative summary measure of the effect of a condition on individual's lives and it provides an estimate of the potential benefit of interventions. Health-related quality of lifeis useful in decision making on prioritization of resources across competing programs and interventions [3].

Intimate partner violence (IPV) is a human rights violation. It is a major public health problem [4],defined as any physical, sexual or psychological harm inflicted by a current or former partner. Worldwide, more than 30% of women are victims of IPV[5]. Less is known about male victimization but the published data, mainly from English speaking populations, pointed to a 25% prevalence [6].

Short and long-term adverse physical and mental health consequences of IPV [4; 7], including a decreased HRQoL [8; 9], have often been reported, but focused only in victims [9-11].

However, reciprocal or bidirectional violence, defined as involvement as both a victim and perpetrator, is thought to be the most commonly identified profile of IPV when dealing with general population samples [12], although previous studies looking at bidirectional IPV mainly dealt with university student samples or adolescent samples from the US [13; 14]. Studies performed with clinical samples suggested that bidirectional IPV is more strongly associated with adverse health outcomes than unidirectional violence [15; 16]. Exploring the experiences of victims and perpetrators, might also elucidate different sex-patterns of associations, as shown in a large Canadian cross-sectional telephone survey, where depressive symptoms were more often reported by female victims and male perpetrators [17].

The association between HRQoL and the type of involvement in IPV remains poorly described and to the best of our knowledge, it was never assessed using a multiple country sample. With the present investigation we explored in a general population sample of men and women living

in six European cities how experiencing abuse as victims, perpetrators or reciprocally is associated with HRQoL.

Methods

Participants

We used data collected as part of the DOVE project, (http://doveproject.eu), a European multinational research project designed to evaluate the frequency of IPV and health-related associated factors. In the present study, participants were non-institutionalized adult men and women (aged 18-65), national citizens or documented migrants, sampled from the general population of six cities (Athens – Greece, Budapest – Hungary, London – United Kingdom, Östersund – Sweden, Porto - Portugal and Stuttgart – Germany) although two other cities (Ghent, Granada) were initially thought but could not reach the targeted sample size [18]. Random sample lists were obtained through city's municipality registries in Stuttgart, through the electoral registry in Porto and London, and through the state person address registry in Östersund. Additional sampling strategies included random-digit dialling in Porto and a via-public approach in London. Random route was used in Athens and Budapest. We previously described and discussed the design, methods, procedures and characteristics of the samples in comparison to the resident population [18]. The final sample comprised 3496 participants, 1470 men and 2026 women..

A questionnaire was developed, comprising information on socio-demographic characteristics, intimate relationships, physical and mental health. In all cities the IPV section was self-administered and, except for Östersund, face-to-face interviews were conducted for the remaining topics. In Östersund, the local ethics committee required all questionnaires to be mailed with a pre-paid envelope for return. In Porto, London and Stuttgart if participants were otherwise unreachable or explicitly asked for it, questionnaires were also mailed to their homes following the same procedure. The World Health Organization (WHO) ethical and safety guidelines for the conduct of research on violence against women were followed [19]. In the

case of posted questionnaires, a letter was sent detailing the study objective, the participant's selection procedures and explaining the anonymous character of responses. It also included the full names and contacts of the research team (telephone, e-mail), institution, funding agency and project website. The study protocol was approved by a Research Ethic Committee in each center. Data collection lasted approximately 9 months and ended in May 2011.

Outcome measure

The outcome measure was the physical and mental component summaries derived from the eight domains of the Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) [20]. The SF-36 as a measure of health-related quality of life refers to functional health and well-being in the previous 4-weeks and has been widely tested and used in several countries, namely in all the countries represented in this study [21-26].

The physical and mental component summaries of SF-36 were computed following recommendation for their use in multinational comparisons [27]: all eight domains of the SF-36 (physical functioning, physical role functioning, bodily pain, general health, vitality, social functioning, emotional role functioning, and mental health) were standardized using a linear z-score transformation obtained by subtracting domain means for the general US population from each domain score in our sample and dividing the difference by the standard deviation of the US population; these z-scores were then multiplied by the component factor score coefficient for physical and mental health summaries as obtained from the factorial analysis extracted for the US population and summed over the eight domains; the resulting physical and mental summary scales sums were then t-scored (multiplied by 10 and added 50). The higher the scores, the better expected HRQoL.

Exposure measure

The physical assault and sexual coercion subscales of the Revised Conflict Tactics Scales (CTS2) were used to define exposure to physical and/or sexual IPV [28]. The CTS2 was

originally developed in English and has been used in more than 100 studies, including in multinational comparisons. It was previously validated to Portuguese, German and Swedish populations [29; 30]. Translations to Greek and Hungarian followed a standard protocol: forward translation, expert panel revision, back-translation, new expert panel revision and piloting. The internal consistency of the CTS2 (Cronbach alpha) in our sample, was 0.903 for victimization (ranging from 0.825 in Budapest to 0.956 in London) and 0.896 for perpetration (ranging from 0.748 in Östersund to 0.953 in London), in line with previous reliability analysis [30].

The CTS2 physical assault and sexual coercion subscales comprise, respectively, 12 and 7 specific acts or behaviours.It include minor acts (examples: “I threw something at my partner that could hurt”, “I made my partner have sex without a condom”) and severe acts (examples: “I used a knife or a gun on my partner”, “I used force (like hitting, holding down, or using a weapon to make my partner have oral or anal sex”). For each act, participants are asked whether they have been victims or perpetrators and they are given an 8 options scale to mark if it happened: never, once in the past year, twice, 3–5 times, 6–10 times, 11–20 times, more than 20 times or ever but not in the past year. When all items describing each type of violence were answered as “never”, the participant was coded as a never victim or never perpetrator. To overcome the skewed time frequency response distribution, participants were recoded as victims-only, perpetrators-only or as involved in bidirectional violence.

Sociodemographic factors

Age was classified in 5 years groups: 18-24, 25-34, 35-44, 45-54, 55-64, and educational level in three: primary level, secondary level, university degree, according to completed stage of schooling.

Statistical analysis

T-test and ANOVAs were used to compare mean scores (standard deviation) of the physical and mental component summaries of SF-36 according to sex, age groups, educational level and city of residence. Chi-square test was used to compare the proportions.

The mean (standard errors) of the physical and mental component summaries of the SF-36 by type of involvement in violence were computed by fitting linear regression models. Models were adjusted for age, education and city of residence and computed for physical assault, sexual coercion and for concomitant physical assault and sexual coercion. We considered separately the experiences of past year IPV and of having ever experienced IPV. We tested the interaction of sex and IPV by including the interaction term for each violence type. As there was a statistically significant interaction we stratified the analysis by sex.

We then performed a pairwise comparison of each estimated mean with the group declaring "no violence" using a Bonferroni correction.

From the 3496 participants, there was missing information for physical assault in 182 (5.2%), for sexual coercion in 183 (5.2%) and 2 (0.1%) did not provided the SF-36 evaluation. Only participants with complete information were used in the regression models no imputation being made for missing data.

An additional analysis was performed considering a measure of chronicity of abusive acts and is provided as supplementary material. Among participants who engaged in one or more acts of violence in the previous year, we added the midpoints for the frequency categories chosen and summed these acts for each type of violence. The midpoints considered were accordingly: one, two, four, eight, 15 and 25, as suggested by the original scale' author [31]. The mean number (standard deviation) of violent acts were computed according to violence involvement and severity subscales. T-test was used to compare the mean number of minor and severe acts by sex. Correlations between the number of acts and the physical and mental component summaries of the SF-36 were also estimated separately for minor and severe acts of violence among participants reporting victimization, perpetration and bidirectional involvement.. The analyses were conducted using SPSS v20.

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199 **Results**

200 In general, mean SF-36 physical and mental component summaries were higher in men than
201 women (Table 1) and increased with the educational level in both sexes. The physical
202 component summary mean score also significantly decreased with age in both sexes.
203 Statistically significant differences were found according to city of residence: the lowest mean
204 scores for the physical component summary were observed in Porto for women (48.20 [7.69])
205 and in London for men (50.86 [9.36]) while the highest were observed in Stuttgart for women
206 (51.93 [8.48]) and in Budapest for men (53.68 [7.51]); for the mental component summary, the
207 lowest mean was observed in Porto for women (46.27 [11.39]) and in Athens for men (49.17
208 [8.62]) while the highest were observed in Budapest for women (50.09 [10.37]) and in
209 Östersund for men (52.18 [8.99]).

210

211 Table 1 about here

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213 As shown in Table 2, the past year prevalence of victimization only, perpetration only and
214 bidirectional physical assault in women was 3.5%, 4.2% and 10.0% respectively, while the
215 corresponding figures for men were 4.1%, 3.8% and 11.9%, with no sex differences. For sexual
216 coercion, 7.7% of women and 3.0% of men declared to be only victims, 1.6% of women and
217 7.5% of men declared only perpetration and 9.7% of women and 12.5% of men declared
218 bidirectional involvement ($p<0.05$). The observed frequency of concomitant involvement in
219 physical assault and sexual coercion was 1.2% in women and 0.5% in men for victimization
220 only, 0.2% in women and 0.8% in men for perpetration only and 4.0% in women and 5.1% in
221 men for bidirectional involvement ($p<0.05$).

222

223 Table 2 about here

After adjustment for age, education and city of residence, women involved in bidirectional physical assault presented a significantly lower physical component summary mean score (48.00 [0.58]) than those declaring no physical assault (49.75 [0.26]). No other significant difference was observed regarding the physical component summary.

A statistically significant lower mean score in the mental component summary of the SF-36 was found in the group of women involved in physical assault as victims and also in the group involved in bidirectional physical assault and in the group reporting perpetration of physical assault, compared to women reporting no past year physical assault.. The scores were also significantly lower among women only victims of sexual coercion compared to those who did not report past year sexual coercion. Women who were victims only and who were involved in bidirectional physical and sexual IPV also presented lower mental component summary mean scores than those reporting no-violence. In men, significant lower mental component summary scores were observed among those involved in bidirectional physical assault, and in bidirectional concomitant physical assault and sexual coercion, compared to those not involved in IPV.

Table 3 shows the results for ever experiencing physical assault and sexual coercion. In women, 5.6% reported having ever been victims or perpetrators of physical assault and 15.9% reported ever being involved in bidirectional physical assault. In men these proportions were 5.4% victims, 5.4% perpetrators and 18.4% for bidirectional involvement. Lifetime victimization-only of sexual coercion was declared by 11.3% of women and 3.5% of men, bidirectional sexual coercion was 13.9% in women and 18.9% in men and the prevalence of having ever perpetrated sexual coercion was 1.7% in women and 8.9% in men ($p<0.05$). Victims-only of both physical assault and sexual coercion were 2.8% in women and 0.8% in men, perpetrators only were 0.2% in women and 1.7% in men and bidirectional involvement was 7.5% in women and 11.4% in men ($p<0.05$).

Table 3 about here

In the models adjusted for age, education and city of residence, we observed a lower mean score in the physical component summary of the SF-36 among women involved in violence bidirectionally. The difference was statistically significant when compared to women who declared no lifetime experience of the two types of violence considered. For the mental component summary, mean scores were lower for those involved in violence compared to those who never experienced it. Statistically significant differences when compared to those never involved in IPV were observed for women involved in physical assault (victims, perpetrators and bidirectionally), women victims-only of sexual coercion, women victims and involved in bidirectional concomitant physical assault and sexual coercion, and for men involved in bidirectional physical assault, bidirectional sexual coercion and accumulating the latter two experiences.

Discussion

We found that HRQoL is associated with physical and sexual abuse and that it varied with sex and role in the victim/perpetrator process, being especially evident for the mental component summary of the SF-36. In models adjusted for age, education and residence, women victims-only of lifetime or past year physical assault and sexual coercion presented lower scores in the mental component summary of the SF-36 compared to women not experiencing violence, which was not observed among men victims-only. Declared past year and lifetime victimization and perpetration of physical assault and of physical assault and sexual coercion cumulatively, was associated with a decreased mental component summary in both men and women. Female perpetrators-only of physical assault presented a lower mental component summary, compared to those not involved in any type of violence for both lifetime and past year periods.

The results found in the present study and concerning victims are in line with the findings in a Norwegian sample of battered women, assessed in shelters, that showed a marked decrease in

the mental health domains of the SF-36 [11]. Similarly, results from two Danish nationally representative, cross-sectional health interview surveys, revealed that victims of physical violence scored lower in HRQoL, and the effect was more pronounced in women than in men [10]. In our study, the accumulation of physical assault and sexual coercion in women victims represented a decrease in the mental component summary, as in a previous Australian study of the general population of women, for whom cumulative types of gender-based violence represented impaired quality of life [8]. Women victims of IPV present increased levels of depressive symptoms [32] and somatic complaints [33], have lower social support [34], all of which directly affect their health perception. Furthermore, physical assaults may directly increase the risk of injuries or predispose and aggravate some chronic diseases [35]. Although the severity of abuse impacts directly the physical health perception of a victim, the psychological stress associated with less severe types of IPV may also affect other acute or chronic health conditions through more indirect paths [36]. Etiologic studies are only in their beginnings, but the emotional suffering derived from any type of abuse, is likely to affect the immune system as it responds to prolonged stress [37].

We also observed lower scores in the mental component summary of the SF-36 for men and women involved in bidirectional physical assault and in bidirectional concomitant physical assault and sexual coercion. This is in line with studies documenting that bidirectional violence might entail more severe acts [12; 38] and is associated with depressive symptoms [39], thus affecting the health perception of both men and women, particularly the domains linked to their mental health.

A significantly lower score in the physical component summary was only noted in women involved in bidirectional violence in the previous year and for the lifetime period compared to those not involved in IPV, which supports previous accounts of more deleterious health effects of IPV in women than in men [10] as a result of the physical conflict. It has been suggested that women suffer more violence victimization than men during their lifetime [40], and report more severe acts [41; 42]. An analysis of the chronicity of minor and severe acts of IPV in our sample (Supplementary Table 1) showed that women involved in past year IPV reported more minor

bidirectional physical assault acts and suffered more minor sexual coercion acts compared to men. No statistically significant sex-difference was observed for the mean number of severe abusive acts and the chronicity of IPV presents, essentially, negative correlations with the physical and mental component summaries of the SF-36.

In women, perpetration-only of physical assault was also represented by a lower score in the mental component summary. Although the debate over the motivations of women's perpetration is still unresolved [43], previous studies linking depression with IPV perpetration in women suggest that feelings of guilt, shame or regret might explain why women who perpetrate feel more depressed than non-perpetrators [17]. It has been suggested that depressive symptoms experienced by women who perpetrate are the result of a reaction to an event perceived as unusual to them, since their usual role is one of nurturing [44]. Thus, the same mechanism might explain the results found for the mental component summary of the SF-36, which includes domains linked to the individual's social functioning and emotional well-being, important characteristics of a depressive state.

Less is known of the impact of sexual coercion acts in HRQoL. It must be acknowledged that various types of violence generally coexist in the same violent intimate relationship [4; 45; 46], which increases the difficulty of disentangling the particular impact of each type of violence in HRQoL domains, should they prove to affect these domains differently. In women victims of past year sexual coercion we found a significantly lower score in the mental component summary, which is in line with a previous Italian study documenting the impact of sexual IPV victimization to be greater for female student victims (compared to male), with higher odds for panic attacks, alcohol use, eating problems and suicide ideation [47]. It has been suggested that sexual coercion against men is qualitatively different, less severe, and that men are more likely to accept force in their sexual relationships, while women find it unacceptable more often [48]. The fact that no significant difference in the physical and mental component summaries of men was found for past year IPV may also be due to a social desirability bias, with men tending to demonstrate a tougher posture [47]. A 1988 study performed in college students already reported that among 22 men victims of sexual coercion, 25% felt "good" about being forced to

have sex, 50% felt “neutral” and 25% felt “bad”, whereas none of the 32 women victims assessed felt “good” and 88% felt “bad or very bad” after a sex incident [49]. Men victims of sexual coercion may perceive their situation as positive, thus not feeling harmed or violated, but rather see it as an opportunity for sexual intimacy, which would result in better health perceptions. Nevertheless, the effects of male sexual coercion victimization should be the focus of further explorations [50].

The main strengths of this study include the large sample size, the geographical diversity and the measurement of both the exposure and outcome with two reliable and commonly used instruments: the CTS2 [28] and the SF-36 [2; 20]. However, the cross-sectional nature of our study does not allow inferences on causality. As in all studies assessing sensitive topics, the potential bias imposed by social desirability is a limitation [51]. Our samples were drawn from the general population of adults living in urban centres, but we used different sampling procedures which might have led to selection bias. However, the age distribution of the study samples was close to the resident population in Athens, London and Stuttgart, but in Budapest, Östersund and Porto, participants were older, and the educational level in all cities was generally higher than the resident population which might translate into underestimation of violence [18]. It was not possible to collect information on non-responses in all cities. However, registry-based sampling (municipal or electoral) and random route, are expected to provide acceptable coverage of the target population, and to represent it. The past experience of the research consortium determined the choice for the particular cities assessed based on the region where institutions were established. Nevertheless, the involved diversity was since the beginning considered an advantage to implicitly guarantee the representation of multiple cultural and social experiences even if not specifically addressed.

Despite the differences observed in these European urban centers regarding IPV campaigns, gender equality initiatives, laws, action plans and support mechanisms, all expected to influence prevalence rates and attitudes towards disclosure, our results suggest that the relation between IPV and HRQoL may be independent from several of these societal-level factors. Nevertheless,

364 the need remains for contextualized assessments (and of further cross-regional comparisons) to
365 inform city-specific preventive strategies.
366 Although IPV experience was disclosed using self-administered questionnaires, it is plausible to
367 think that victims of severe violence might reject participation or answer in a more socially
368 acceptable way, especially regarding males from more "patriarchal" societies [52]. Also, using
369 individual data (compared to couple) to assess IPV may lead to underreporting, both in men and
370 women, but even more in men for physical assault [53], although support for underreporting was
371 not found in posterior results obtained in representative sample of USA adolescents [12].
372 However, the assessment of couples may increase the risk of violence, thus relying in individual
373 data is a safer option.
374 For clarity and because they are the most commonly measured types of violence, we only
375 analyzed physical assault and sexual coercion reports. Further analysis should also consider the
376 other violence types (e.g. psychological, injury).
377 In summary, the results of this study provide empirical evidence for an association between IPV
378 and the HRQoL and that the influence of violence in HRQoL depends on the type of
379 involvement in violence. Lower scores were consistently observed in the mental component
380 summary of the SF-36 in female victims of physical assault or sexual coercion. However,
381 women and men reporting bidirectional violence also presented lower scores in the mental
382 component summary of the SF-36 which calls for a particular focus on the bidirectional nature
383 of IPV when intervention strategies are designed.
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Conflicts of interest

None declared.

Ethical standards

The manuscript does not contain clinical studies or patient data.

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Tables

Table 1. Sample characteristics and mean scores for the SF-36 physical and mental component summaries according to socio-demographics.

				Physical Health		Mental Health	
		Women n (%)	Men n (%)	Women mean (SD)	Men mean (SD)	Women mean (SD)	Men mean (SD)
Age	**18-24**	253 (12.5)	181 (12.3)	54.15 (5.61)	56.14 (5.39)	48.07 (10.71)	51.93 (8.15)
	25-34	396 (19.5)	315 (21.4)	53.43 (6.60)	54.33 (6.65)	47.66 (9.77)	50.22 (9.53)
	35-44	436 (21.5)	341 (23.2)	51.66 (7.77)	54.11 (5.65)	49.10 (9.35)	49.88 (8.63)
	45-54	433 (21.4)	314 (21.4)	49.82 (8.07)	50.78 (8.21)	47.48 (10.63)	49.29 (10.20)
	55-64	508 (25.1)	319 (21.7)	46.55 (9.99)	48.51 (7.63)	49.37 (10.61)	51.52 (8.95)
	p*			<0.001	<0.001	0.014	0.004
Education	**Primary**	171 (8.7)	86 (6.0)	44.24 (10.15)	48.53 (9.61)	46.44 (12.20)	48.66 (11.50)
	Secondary	933 (47.3)	749 (52.5)	50.39 (8.64)	52.03 (8.12)	47.90 (10.73)	49.89 (9.51)
	University	869 (44.0)	593 (41.5)	52.22 (7.17)	53.68 (6.26)	49.33 (9.17)	51.39 (8.36)
	p*			<0.001	<0.001	<0.001	0.002
City	**Athens**	276 (13.6)	272 (18.5)	51.05 (7.54)	53.48 (7.26)	48.99 (9.71)	49.17 (8.62)
	Budapest	356 (17.6)	248 (16.9)	50.72 (9.75)	53.68 (7.51)	50.09 (10.37)	51.97 (8.94)
	London	298 (14.7)	273 (18.6)	51.72 (8.19)	50.86 (9.36)	46.72 (10.14)	49.27 (9.50)
	Östersund	370 (18.3)	222 (15.1)	50.97 (9.20)	52.45 (7.29)	49.32 (9.88)	52.18 (8.99)
	Porto	408 (20.1)	227 (15.4)	48.20 (7.69)	51.35 (6.12)	46.27 (11.39)	49.59 (10.32)
	Stuttgart	318 (15.7)	228 (15.5)	51.93 (8.48)	53.08 (7.16)	49.31 (8.72)	50.81 (8.54)
	p*			<0.001	<0.001	<0.001	<0.001
Total				50.64 (8.48)	52.48 (7.63)	48.41 (10.23)	50.44 (9.23)
	p†			<0.001		<0.001	

*p-value ANOVA comparing mean scores of the SF-36 component summaries;
†p-value for T-test comparing mean scores of the SF-36 component summaries in women vs. men;
SD=standard deviation.

Table 2. Adjusted mean scores for the SF-36 physical and mental component summaries, in women and men according to directionality of involvement in past year physical assault and sexual coercion as types of intimate partner violence.

				Physical Health		Mental Health	
		Women	Men	Women	Men	Women	Men
		n (%)	n (%)	Adjusted Mean (SE)†	Adjusted Mean (SE)†	Adjusted Mean (SE)†	Adjusted Mean (SE)†
Physical Assault	**No**	1592 (82.4)	1108 (80.2)	49.75 (0.26)	51.96 (0.30)	49.09 (0.34)	50.25 (0.40)
	Victim	67 (3.5)	56 (4.1)	49.09 (0.99)	52.15 (0.96)	42.05 (1.26)*	49.31 (1.27)
	Bidirectional	193 (10.0)	165 (11.9)	48.00 (0.58)*	50.48 (0.59)	42.86 (0.73)*	46.34 (0.78)*
	Perpetrator	81 (4.2)	52 (3.8)	48.76 (0.88)	51.96 (0.98)	45.46 (1.11)*	50.07 (1.30)
Sexual Coercion‡	**No**	1566 (81.0)	1063 (77.0)	49.64 (0.26)	51.71 (0.30)	48.26 (0.34)	50.04 (0.40)
	Victim	149 (7.7)	41 (3.0)	49.27 (0.67)	53.81 (1.10)	44.74 (0.86)*	48.94 (1.47)
	Bidirectional	187 (9.7)	173 (12.5)	48.01 (0.61)	51.70 (0.58)	46.85 (0.79)	48.14 (0.77)
	Perpetrator	31 (1.6)	103 (7.5)	49.92 (1.44)	52.03 (0.71)	48.30 (1.87)	49.09 (0.95)
Physical Assault and Sexual Coercion‡	**No**	1371 (94.6)	916 (93.6)	49.46 (0.29)	51.41 (0.34)	49.11 (0.36)	50.62 (0.43)
	Victim	18 (1.2)	5 (0.5)	49.86 (1.90)	53.89 (3.12)	41.43 (2.36)*	45.97 (3.95)
	Bidirectional	58 (4.0)	50 (5.1)	47.21 (1.04)	49.31 (1.03)	43.34 (1.30)*	46.17 (1.30)*
	Perpetrator	3 (0.2)	8 (0.8)	39.57 (4.49)	54.29 (2.47)	48.42 (5.59)	51.98 (3.12)

*****p<0.05 for comparison with the "no-violence" group (Bonferroni correction was used in pairwise comparison);
‡p<0.05 for chi-square test comparing the prevalence of violence by sex;
† adjusted for age, education and city of residence; SE=standard error.

Table 3. Adjusted mean scores for the SF-36 physical and mental component summaries, in women and men according to directionality of involvement in lifetime physical assault and sexual coercion as types of intimate partner violence.

				Physical Health		Mental Health	
		Women	Men	Women	Men	Women	Men
		n (%)	n (%)	Adjusted Mean (SE)†	Adjusted Mean (SE)†	Adjusted Mean (SE)†	Adjusted Mean (SE)†
Lifetime Physical Assault	**No**	1407 (72.8)	978 (70.8)	49.83 (0.28)	51.99 (0.31)	49.54 (0.35)	50.62 (0.41)
	Victim	109 (5.6)	75 (5.4)	49.79 (0.77)	52.47 (0.84)	44.82 (0.98)*	49.85 (1.11)
	Bidirectional	308 (15.9)	254 (18.4)	48.03 (0.47)*	51.14 (0.49)	43.05 (0.59)*	46.56 (0.65)*
	Perpetrator	109 (5.6)	74 (5.4)	49.30 (0.76)	50.91 (0.83)	46.92 (0.96)*	48.65 (1.09)
Lifetime Sexual Coercion‡	**No**	1415 (73.2)	948 (68.7)	49.74 (0.27)	51.83 (0.31)	48.49 (0.35)	50.40 (0.42)
	Victim	218 (11.3)	48 (3.5)	49.54 (0.56)	53.59 (1.03)	45.03 (0.73)*	48.71 (1.37)
	Bidirectional	268 (13.9)	261 (18.9)	48.01 (0.51)*	51.20 (0.50)	46.65 (0.66)	47.84 (0.66)*
	Perpetrator	32 (1.7)	123 (8.9)	49.45 (1.41)	51.92 (0.65)	48.26 (1.83)	48.77 (0.86)
Lifetime Physical Assault and Sexual Coercion‡	**No**	1137 (89.5)	752 (86.0)	49.70 (0.32)	51.60 (0.37)	49.73 (0.40)	50.90 (0.46)
	Victim	36 (2.8)	7 (0.8)	50.51 (1.32)	53.18 (2.80)	44.69 (1.66)*	46.12 (3.51)
	Bidirectional	95 (7.5)	100 (11.4)	46.71 (0.82)*	50.05 (0.76)	43.06 (1.03)*	46.35 (0.96)*
	Perpetrator	3 (0.2)	15 (1.7)	39.71 (4.46)	50.53 (1.78)	48.20 (5.59)	48.79 (2.24)

*****p<0.05 for comparison with the "no-violence" group (Bonferroni correction was used in pairwise comparison);
‡p<0.05 for chi-square test comparing the prevalence of violence by sex;
† adjusted for age, education and city of residence; SE=standard error.