



Research paper

Intimate partner violence and mental disorders: Co-occurrence and gender differences in a large cross-sectional population based study in Spain



Isabel Ruiz-Pérez^{a,b,c,*}, Miguel Rodríguez-Barranco^{a,b}, Jorge A. Cervilla^{d,e}, Ignacio Ricci-Cabello^f

^a Andalusian School of Public Health, Cuesta del Observatorio, 4, 18011 Granada, Spain

^b Centro de Investigación Biomédica en Red de Epidemiología y Salud Pública (CIBERESP), Spain

^c Ibs, Instituto de Investigación Biosanitaria de Granada, Spain

^d UGC de Salud Mental, Complejo Hospitalario Universitario de Granada, Servicio Andaluz de Salud, Granada, Spain

^e Departamento de Psiquiatría, Facultad de Medicina, Universidad de Granada, Granada, Spain

^f Nuffield Department of Primary Care Health Sciences, University of Oxford, Radcliffe Observatory Quarter, Woodstock Road, OX2 6GG Oxford, UK

ARTICLE INFO

Keywords:

Mental health

Intimate partner violence

Cross-sectional study design

ABSTRACT

Background: Intimate partner violence (IPV) and mental disorders (MD) are important public health problems disproportionately affecting women. We aimed to study the epidemiology of IPV victimization, MD, and co-occurring IPV-MD in Spanish men and women in terms of i) prevalence, ii) association between IPV and MD, and iii) sociodemographic and clinical characteristics associated with IPV, MD, and co-occurring IPV-MD.

Methods: Community-based cross-sectional study with 4507 randomly selected participants. Measurement instruments (Mini International Neuropsychiatric Interview and set of validated questions about IPV during the last 12 months) were administered by trained interviewers in participants' households. Statistical analyses included multivariate logistic regression models.

Results: The prevalence of IPV was 9.4%, of MD 22.3%, and of co-occurring MD-IPV 4.4%. MD was associated with higher odds of experiencing IPV (OR = 3.6; $p < 0.05$). Lack of social support, neuroticism, impulsivity, and family history of MD were associated with higher odds of IPV, MD, and co-occurring IPV-MD in men and women. Poor health status was associated with MD and with co-occurring IPV-MD in men and women. In women, not being married was associated with MD and with co-occurring IPV-MD; having a non-Spanish nationality was associated with IPV and co-occurring IPV-MD; and older age with IPV. In men, younger age was associated with MD.

Limitations: The cross-sectional nature of this study limited our ability to examine causal inferences.

Conclusions: MD and IPV are strongly associated. Although less frequently than in women, IPV in men is also associated with depression, post-traumatic and mood disorders, which has relevant implications for healthcare delivery.

1. Introduction

Intimate Partner Violence (IPV) and Mental Disorders (MD) are important public health problems not only because of their high prevalence, but also because of their impact on health and quality of life, which poses a major challenge to health services and systems worldwide. Global estimations suggest that around one every three women (35%) in the world have suffered physical and/or sexual IPV (Devries et al., 2013b). MD affects more than 25% of the global population (World Health Organization, 2015), with women disproportionately more affected than men (AlbertAlbert, 2015; World Health Organization, 2000).

Cross-sectional and longitudinal studies have consistently reported a

positive association between IPV and MD (Castellvi et al., 2017; Chuang et al., 2012; Coker et al., 2002a; Desmarais et al., 2014; Devries et al., 2013a; GoldingGolding, 1999; Khalifeh et al., 2015; Lacey et al., 2015; Oram et al.; Ruiz-Perez and Plazaola-Castano, 2005). A recent systematic review concluded that IPV can have increasing adverse effects on the mental health of victims (most notably on depression, post-traumatic stress disorder, and anxiety) in comparison with those who have never experienced IPV or those experiencing other traumatic events (Lagdon et al., 2014). It has also been argued that people with serious mental illnesses may be more likely to be victims of violence themselves than the general population (Desmarais et al., 2014; Tsigebrhan et al., 2014), and a bidirectional association has been proposed (Devries et al., 2013a).

* Corresponding author at: Andalusian School of Public Health, Cuesta del Observatorio, 4, 18011 Granada, Spain.

E-mail address: isabel.ruiz.easp@juntadeandalucia.es (I. Ruiz-Pérez).

However, despite the existing literature about IPV and MD (Coker et al., 2002a; Sipsma et al., 2015), there is limited evidence about potential gender differences (Salom et al., 2015). In relation with IPV victimization, available evidence is limited by the small number of studies using representative and population-based samples to compare prevalence and correlates in women vs men. Moreover their results have limited comparability due to the use of a number of different conceptualizations of IPV, time periods examined, and geographic settings. Further, not all the studies considered emotional or psychological IPV, mainly due to difficulties in its measurement. In general, the frequency of IPV victimization is higher in women than in men. In Ukraine, 12.7% of women vs 5.8% of men suffered an aggression perpetrated by their spouse in the past year (O'Leary et al., 2008). In Rwanda, women were more exposed to physical (18.8%), sexual (17.4%) and psychological (21.4%) IPV in the past year than men (4.3%, 1.5%, and 7.3%, respectively) (Umubyeyi et al., 2014). In England, 27.8% of women experienced some form of IPV compared with 18.7% of men (Jonas et al., 2014).

In relation to mental health, there is a scarcity of epidemiological studies comparing the prevalence and correlates of MD (either overall or specific mental disorders) in men vs women. Previous studies reporting the frequency and determinants of different types of MDs studied sex as an additional determinant of MD, but did not examine sex-specific independent risk factors (Gabilondo et al., 2010; Hardt et al., 2015).

All these aspects hindered the examination of the prevalence and associated factors of co-occurring IPV and MD in men, which is even more challenging when aiming to examine specific subtypes of MD. Only recently, scientific studies examining gender differences in depression subtypes (Bogren et al., 2017) or schizophrenia (Lewine et al., 2017) are becoming available, suggesting higher rates in women than men.

Finally, although it is known that gender is a differential factor both for IPV and MD (as it is age, social support or nationality), it is less well known whether other clinical or demographic factors could be associated with IPV, MD, or both (Jonas et al., 2014).

In this study we examined the epidemiology of IPV victimization and MD in men and women living in Andalusia, a large southern region in Spain. The following three aims were proposed:

1. To estimate the prevalence of IPV (overall, and physical, sexual and emotional) and of MD (overall and diagnosis-specific) in men and women.
2. To examine the association between IPV and MD (overall and diagnosis-specific) in men and women.
3. To identify sociodemographic and clinical characteristics associated with MD, IPV, and co-occurring IPV-MD in men and women.

2. Methods

2.1. Design and setting

We conducted a community-based cross-sectional study in Andalusia, a southern and the largest region in Spain, with more than 8.4 million inhabitants in 2016 (18% of the Spanish population) (INE, 2017). This work is part of the PISMA-ep study, a study using regionally representative data to assess mental health in people living in Andalusia. Our study is based on the full sample of the study. The study protocol is available elsewhere (Cervilla et al., 2016).

Following a multistage sampling design, men and women aged between 18 and 75, living in randomly selected households (randomization at the level of streets, census sections, and districts) were approached and invited to participate in this study.

2.2. Sample size calculations

We calculated the sample size required to estimate a 2% prevalence with $\pm 0.5\%$ accuracy, with 95% confidence intervals and for an estimated effect size of 1.5. Such calculation rendered a target sample size of 4518 participants.

2.3. Interviewer training

All the interviews were conducted by interviewers with previous fieldwork experience in health-related studies. All interviewers attended a one week training program on the specific instruments used in this study. Teaching techniques included lectures, role playing, and scoring of videoed interviews held by experts.

2.4. Variables and measurement instruments

All the sociodemographic and clinical data below described was collected using questionnaires administered via face to face interview.

2.4.1. Sociodemographic characteristics

The following sociodemographic characteristics were considered: age, sex, rurality, nationality, educational attainment, marital status, and employment status.

2.4.2. Clinical characteristics

2.4.2.1. Mental disorders. measured with the MINI International Neuropsychiatric Interview, which generates Axis I DSM-IV and ICD-10 diagnoses for 16 mental disorders (Sheehan et al., 1998). This interview consists of one or two screening questions asked to all participants at the beginning of each of the diagnostic sections. Participants responding positively to the screening questions are then asked to complete a specific set of questions to confirm a specific diagnosis. The MINI has shown high inter-rater reliability, sensitivity, specificity, and construct validity (Sheehan et al., 1998). The MINI has been replicated in different cultures and has shown to have good psychometric properties in each language (Amorim, 2000; Kadri et al., 2005; Otsubo et al., 2005; Rossi et al., 2004). During its validation it has shown good or very good kappa values when compared to the SCID-P, as well as when compared to the CIDI, with most values being over 0.70.

2.4.2.2. Intimate partner violence. measured with a set of three items asking whether or not the participants were abused physically (hit, slapped, pushed, etc.), psychologically (threatened, insulted, humiliated, etc.), or sexually (forced them into sexual activities) during the last 12 months. Participants were considered to have been physically abused if answered "many times" or "sometimes" to either of the two questions about physical or sexual violence, and psychologically if affirmatively responded to the question about psychological IPV. These questions have been used in previous studies, showing high comprehensibility and acceptability (Raya Ortega et al., 2004; Ruiz-Pérez et al., 2017; 2017, 2015; Ruiz-Pérez et al., 2006; Ruiz-Pérez et al., 2015, 2006). They were adapted from a scale proposed by the World Health Organization Multi-Country Study on Women's Health and Life Events (Jewkes et al., 2017; World Health Organization, 2003).

2.4.2.3. Self-perceived health status. measured with the SF-12 questionnaire (Jenkinson et al., 1997). This 12-item instrument provides two summary scores: the Physical Component Summary Score and the Mental Health Component Summary Score during the last 4 weeks. Higher item value indicates better health for all SF-12 items and summary scales (four items are reverse scored because higher pre-coded items values indicate a poorer health state). Test-retest (2-week) correlations of 0.89 and 0.76 were observed for the 12-item

Physical Component Summary and the 12-item Mental Component Summary, respectively (Ware et al., 1996). In 14 validity tests involving physical criteria, relative validity estimates for the 12-item Physical Component Summary ranged from 0.43 to 0.93 (median = 0.67) in comparison with the best 36-item short-form scale. Relative validity estimates for the 12-item Mental Component Summary in 6 tests involving mental criteria ranged from 0.60 to 1.07 (median = 0.97) in relation to the best 36-item short-form scale (Ware et al., 1996). Average scores for the 2 summary measures, and those for most scales in the 8-scale profile based on the 12-item short-form, closely mirrored those for the 36-item short-form, although standard errors were nearly always larger for the 12-item short-form (Ware et al., 1996). The instrument has been cross-validated in a number of countries including Spain (Gandek et al., 1998).

2.4.2.4. Social support. measured using the Social Support Scale, a five-item instrument examining participants' perceptions about the support received from their family and friends (Blaxter, 2003). The instrument assesses responders' self-perceptions about their social relationships, with are grouped in three main 3 domains: relationships with family and friends; relationships with spouse or partner, and; relationships with people in general.

2.4.2.5. Neuroticism and impulsivity personality traits. assessed using 19 items from the appropriate sections of the Zuckerman-Kuhlman Personality Questionnaire (ZKPQ)(Zuckerman et al., 1993). Since the ZKPQ first appeared in 1993, it has proved to have a good internal validity, temporal stability and reliability as well as being replicable in different cultures, as has been proven by its translations to different languages (Goma-i-Freixanet et al., 2008; Zuckerman2008; Zuckerman, 2002). The Spanish version has shown strong evidence of f convergent and discriminant validity (Goma-i-Freixanet et al., 2005).

2.4.2.6. Family psychiatric history. collected using the Spanish versions of the General Screening Questions and of the Symptom Checklist of The Family Interview for Genetic Studies (FIGS). These instruments gather diagnostic information about all known relatives in the pedigree of each participant (NIMH Genetics Initiative, 1992). The FIGS (95 items) allowed us to detect psychiatric cases within the family and to identify potential diagnoses of depression, mania, alcohol/drug abuse, psychosis or paranoid/schizoid/schizotypal personality. The internal consistency of the FIGS as measured by Cronbach's alpha coefficient has been estimated to be 0.92 for depression, 0.99 for mania; 0.94 for psychosis, 0.94 for alcohol and drugs and 0.97 for personality disorders – suggesting high reliability. Pearson's correlation coefficients for the different symptoms above mentioned ranged from 0.41 to 0.99 (all statistically significant at $p < 0.0001$) (Diaz de Villalvilla et al., 2008).

2.4.2.7. Experience of childhood emotional, physical and sexual abuse. measured using the shortened version of the Childhood Trauma Questionnaire (Fink et al., 1995). The Childhood Trauma Interview (70 items) is a brief semi-structured interview focused on six areas of childhood interpersonal trauma: separations and losses, physical neglect, emotional abuse or assault, physical abuse or assault, witnessing violence, and sexual abuse or assault. Questions aim to elicit detailed information about the concrete behavioral aspects of events and not their emotional or moral dimensions. All perpetrators are inquired about, including parents, siblings, other relatives, nonrelative caregivers, friends, teachers, acquaintances, and strangers. Severity and frequency of the traumatic experiences are scored from 0 to 6; duration is calculated in years from age at onset to cessation for each type of trauma. Interrater reliability for the majority of trauma dimensions measured by the Childhood Trauma Interview is high (63% show intraclass correlations above 0.90) (Scher et al., 2001). Available evidence supports the reliability and validity of the Spanish version (Hernandez et al., 2012).

2.4.2.8. Assessment of personality. based on the Standardized Assessment of Personality Abbreviated Scale (SAPAS), an eight-item screening interview for personality disorder, which produces a dimensional score ranging from 0 to 8 that represents the likelihood of presenting a personality disorder (Hesse and Moran, 2010). A score of 3 on the screening interview correctly identifies the presence of DSM-IV personality disorder in 90% of participants (sensitivity and specificity were 0.94 and 0.85 respectively) (Moran et al., 2003). The instrument show high concurrent validity (Hesse and Moran, 2010).

2.5. Statistical analysis

First we used descriptive statistics to examine the sample characteristics, calculating frequency and percentages for categorical variables. We then used the Chi squared test to explore potential differences in the prevalence of IPV and of MD between men and women. Subsequently we estimated the association between MD (overall and specific types) and IPV using multivariate logistic regression models to compute adjusted Odds Ratio (OR) and 95% Confidence Intervals (CI). Finally we used a multivariate multinomial logistic regression analyses to examine the sociodemographic and clinical profile of participants with IPV, MD and co-existing IPV-MD (using no MD and no IPV as the reference group). To better understand the relative effect of both types of independent variables (sociodemographic and clinical), first we estimated a partially adjusted model (including only the socio-demographic variables), followed by a fully adjusted model (including both the sociodemographic and clinical variables).

All the analyses were conducted both for the overall sample and stratified by sex. We used Stata 12.1 (StataCorp) and a α of 5% throughout.

3. Results

3.1. Response rate and sample characteristics

A total of 4507 men and women were enrolled in the study (response rate = 74%) between 2013 and 2014. Details of the sample characteristics are available elsewhere (Cervilla et al., 2016). In short, 51% (N = 2293) were female, and mean age was 43 years old (standard deviation = 15). Around eight out of ten participants (79.7%) lived in urban areas (> 10,000 inhabitants), 43% were employed, 61% were married or under a stable relationship, and almost half of them (47%) reported high education or university studies.

3.2. Prevalence of intimate partner violence and mental disorders

Table 1 reports the prevalence of mental disorders and IPV overall and by sex and type of IPV. The overall prevalence of IPV was 9.4% (425/4507), significantly higher ($p < 0.05$) in women (11%) than in men (7.8%). Both in men and women, the most frequent type of IPV was emotional violence (6.2% and 9.4% for men and women, respectively; $p < 0.05$), followed by physical (5.7% and 5.9%; $p > 0.05$), and sexual violence (0.7% and 1.4%; $p < 0.05$).

The prevalence of overall MD was 22.3%, significantly higher ($p < 0.05$) in women (25.9%) than in men (18.4%). Most frequent MD diagnoses in males were personality disorders (11.3%) and substance abuse (11.0%); whereas in women were mood (13.7%) and personality disorders (11.5%).

The prevalence of IPV was higher in people with MD (19.8%) than in people with no MD diagnosis (6.5%), with a similar pattern observed in men (17.6% and 5.5%) and women (21.4% and 7.4%). Physical, emotional and sexual violence were significantly more frequent among participants with MD (10.7%, 17.7%, and 3.2%, respectively) than among those without MD (4.4%, 5.0%, and 0.5%). When examined by sex, the prevalence followed a similar pattern in men and women.

Table 1
Frequency of mental health problems by type of intimate partner violence in overall sample and by sex ^a.

	Total sample ^a			Male ^a			Female ^a		
	MD: yes (22.3%)	MD: no (77.7%)	Total	MD: yes (18.4%)	MD: no (81.6%)	Total	MD: yes (25.9%)	MD: no (74.1%)	Total
Any IPV (physical, emotional or sexual)									
Never (N (%))	805 (80.2%)	3277 (93.6%)	4082 (90.6%)	338 (82.4%)	1704 (94.5%)	2042 (92.2%)	467 (78.6%)	1573 (92.6%)	2040 (89%)
Once or more (N (%))	199 (19.8%)	226 (6.5%)	425 (9.4%)	72 (17.6%)	100 (5.5%)	172 (7.8%)	127 (21.4%)	126 (7.4%)	253 (11%)
Physical IPV									
Never (N (%))	897 (89.3%)	3350 (95.6%)	4247 (94.2%)	362 (88.3%)	1727 (95.7%)	2089 (94.4%)	535 (90.1%)	1623 (95.5%)	2158 (94.1%)
Once or more (N (%))	107 (10.7%)	153 (4.4%)	260 (5.8%)	48 (11.7%)	77 (4.3%)	125 (5.7%)	59 (9.9%)	76 (4.5%)	135 (5.9%)
Emotional IPV									
Never (N (%))	826 (82.3%)	3329 (95.0%)	4155 (92.2%)	344 (83.9%)	1733 (96.1%)	2077 (93.8%)	482 (81.1%)	1596 (93.9%)	2078 (90.6%)
Once or more (N (%))	178 (17.7%)	174 (5.0%)	352 (7.8%)	66 (16.1%)	71 (3.9%)	137 (6.2%)	112 (18.9%)	103 (6.1%)	215 (9.4%)
Sexual IPV									
Never (N (%))	972 (96.8%)	3487 (99.5%)	4459 (98.9%)	401 (97.8%)	1798 (99.7%)	2199 (99.3%)	571 (96.1%)	1689 (99.4%)	2260 (98.6%)
Once or more (N (%))	32 (3.2%)	16 (0.5%)	48 (1.1%)	9 (2.2%)	6 (0.3%)	15 (0.7%)	23 (3.9%)	10 (0.6%)	33 (1.4%)

N, number of participants; IPV, intimate partner violence; MD, mental disorder.

^a Chi squared test indicated statistically significant differences ($p < 0.001$) between the two groups (mental health yes vs mental health no) for the all types of intimate partner violence considered.

3.3. Associations between mental disorders and intimate partner violence

Table 2 reports the observed associations between MD and IPV, adjusted for potential confounders (sex, age and educational level). In the overall sample (including men and women), having received a MD diagnosis was associated with IPV (OR = 3.5 (95%CI 2.8–4.3)). All the specific MD diagnoses were significantly associated ($p < 0.05$) with IPV. Suicidal ideation (OR = 5.9 (4.5–7.8)), post-traumatic stress (OR = 4.5 (2.5–8.1)), and depression (OR = 4.1 (3.1–5.4)) were the mental health problems most strongly associated with IPV.

When comparing men and women, the association between IPV and MD (both overall and diagnosis-specific) was substantial in both. The strongest associations with IPV were found for suicidal ideation (OR = 5.5 (3.5–8.6) and 6.3 (4.5–8.9), in men and women respectively), posttraumatic stress (OR = 5.2 (1.8–15.3) and 4.3 (2.2–8.5)), and depressive disorders (OR = 4.3 (2.6–7.1) and 4.1 (2.9–5.8)); followed in men by personality disorders (OR = 3.9 (2.8–5.7)); and in women by mood disorders (OR = 3.8 (2.9–5.2)).

3.4. Sociodemographic and clinical correlates of mental disorders, intimate partner violence, and co-existing mental disorders-intimate partner violence

Table 3 shows the sociodemographic and clinical characteristics of the sample, stratified by sex and MD status. Almost three quarters of the participants (N = 3277; 72.1%) did not received a MD diagnosis and not suffered IPV. 226 participants (5.0%) experienced IPV but not MD; 805 (17.9%) experienced MD but not IPV; and 199 (4.4%) experienced co-occurring IPV and MD diagnosis.

Table 4 reports the results from the multivariate multinomial logistic model examining the association between the three profiles (MD, IPV, and co-occurring IPV-MD), and sociodemographic and clinical characteristics (fully adjusted model). Significant associations were observed both in men and women between the three profiles and lack of social support, neuroticism, impulsivity and family history of MD. Poorer self-reported health status was associated both in men and women with MD (OR = 2.7 (1.9–3.8) and 3.7 (2.8–4.9) for men and women) and with co-occurring IPV- MD (OR = 4.3 (2.3–8.0) and 4.4 (2.7–7.1)), but not with IPV in absence of MD.

In women, not being married was associated with MD (OR = 1.3 (1.0–1.6)), and with co-occurring IPV-MD (OR = 2.2 (1.5–3.3)); having a non-Spanish nationality was associated with IPV (OR = 3.0 (1.4–6.5))

and co-occurring IPV-MD (OR = 4.3 (2.0–9.0)); and older age was associated with IPV (OR = 1.02 (1.00–1.03)). In men, a significant association was observed between younger age and mental health (OR = 0.98 (0.98–0.99)).

In addition, in the partially adjusted model (Online Appendix 1) the following additional statistically were also identified: i) not working was associated with higher odds of MD and of co-occurring MD-IPV both in men and women; and ii) low educational level was associated with higher odds of MD and co-occurring MD-IPV in women.

4. Discussion

In this large, population-based study, we observed that MD and IPV are strongly associated, and that 4.4% of the participants experienced co-occurring MD-IPV. IPV was associated with a wide range of mental disorders - most notably suicidal ideation, mood disorders, and post-traumatic stress. By independently modelling in men and women clinical and sociodemographic characteristics associated with IPV, MD, and co-occurring IPV-MD, we identified gender and group specific profiles.

4.1. Discussion of findings and comparison with previous literature

The prevalence of mental health problems for men and women observed in our study is similar to previous studies (Haro et al., 2006; Ricci-Cabello et al., 2010); as is the prevalence of IPV in women (Ruiz-Pérez et al., 2017; Zorrilla et al., 2010). The prevalence of IPV in men observed in our study (7,8%) is lower than the prevalence observed in England (18,7%) by Jonas et al. (2014). Given the scarcity of population based studies examining IPV in men, our findings needs to be confirmed in future studies.

4.4% of the participants in our study suffered co-occurring IPV-MD, with similar figures being observed in men and women. As above, as far as we know no previous estimations are available, and future studies are needed to confirm our findings. MD and IPV were strongly associated (with a similar magnitude in men and women), supporting findings from previous studies in a wide range of countries and ethnic groups (Beydoun et al., 2012; Chmielowska and FuhrFuhr, 2017; Ellsberg et al., 2008.; Golding2008; Golding, 1999; Lovestad et al., 2017; Mendonca and LudermirLudermir, 2017). Although IPV was less frequent in men than in women, IPV in men was associated with similar strength than in women with a number of MDs (such as depression or

Table 2
Associations between mental disorders and intimate partner violence in the overall sample and by sex.^a

	Total sample			Male			Female		
	IPV	No IPV	aOR (95%CI) ^a	IPV	No IPV	aOR (95%CI) ^a	IPV	No IPV	aOR (95%CI) ^b
	N (%)	N (%)		N (%)	N (%)		N (%)	N (%)	
Any mental disorder diagnosis									
No	226 (53.2%)	3277 (80.3%)	1	100 (58.14%)	1704 (83.45%)	1	126 (49.8%)	1573 (77.11%)	1
Yes	199 (46.8%)	805 (19.7%)	3.49 (2.83; 4.29)	72 (41.86%)	338 (16.55%)	3.73 (2.69; 5.18)	127 (50.2%)	467 (22.89%)	3.40 (2.60; 4.45)
Depression									
No	343 (80.7%)	3869 (94.8%)	1	149 (86.63%)	1972 (96.57%)	1	194 (76.68%)	1897 (92.99%)	1
Yes	82 (19.3%)	213 (5.2%)	4.07 (3.06; 5.40)	23 (13.37%)	70 (3.43%)	4.27 (2.59; 7.05)	59 (23.32%)	143 (7.01%)	4.09 (2.90; 5.77)
Posttraumatic stress									
No	407 (95.8%)	4046 (99.1%)	1	167 (97.09%)	2031 (99.46%)	1	240 (94.86%)	2015 (98.77%)	1
Yes	18 (4.2%)	36 (0.9%)	4.51 (2.53; 8.06)	5 (2.91%)	11 (0.54%)	5.20 (1.77; 15.25)	13 (5.14%)	25 (1.23%)	4.29 (2.16; 8.53)
Mood disorders									
No	314 (73.9%)	3729 (91.4%)	1	144 (83.72%)	1919 (93.98%)	1	170 (67.19%)	1810 (88.73%)	1
Yes	111 (26.1%)	353 (8.6%)	3.55 (2.77; 4.53)	28 (16.28%)	123 (6.02%)	3.06 (1.96; 4.77)	83 (32.81%)	230 (11.27%)	3.84 (2.85; 5.17)
Personality disorders									
No	306 (72.0%)	3687 (90.3%)	1	121 (70.35%)	1842 (90.21%)	1	185 (73.12%)	1845 (90.44%)	1
Yes	119 (28.0%)	395 (9.7%)	3.67 (2.90; 4.66)	51 (29.65%)	200 (9.79%)	3.94 (2.76; 5.67)	68 (26.88%)	195 (9.56%)	3.52 (2.56; 4.84)
Suicidal ideation									
No	327 (76.9%)	3891 (95.3%)	1	140 (81.4%)	1962 (96.08%)	1	187 (73.91%)	1929 (94.56%)	1
Yes	98 (23.1%)	191 (4.7%)	5.91 (4.50; 7.75)	32 (18.6%)	80 (3.92%)	5.52 (3.53; 8.61)	66 (26.09%)	111 (5.44%)	6.30 (4.45; 8.91)
Alcohol and substance abuse									
No	359 (84.47%)	3793 (92.92%)	1	136 (79.07%)	1835 (89.86%)	1	223 (88.14%)	1958 (95.98%)	1
Yes	66 (15.53%)	289 (7.08%)	2.82 (2.09; 3.80)	36 (20.93%)	207 (10.14%)	2.49 (1.67; 3.72)	30 (11.86%)	82 (4.02%)	3.38 (2.16; 5.29)

IPV, intimate partner violence; MD, mental disorder; aOR, adjusted odds ratio; CI, confidence interval.

^a All the associations were statistically significant ($p < 0.05$)

^b Adjusted by sex, age and educational status.

^c Adjusted by age and educational status.

Table 3
Participant sociodemographic and clinical characteristics by sex and IPV and MD status.

	IPV-MD- (N = 3277)			IPV+MD- (N = 226)			IPV+MD+ (N = 805)			IPV+MD+ (N = 199)			TOTAL		
	Male N (%)	Female N (%)	Total N (%)	Male N (%)	Female N (%)	Total N (%)	Male N (%)	Female N (%)	Total N (%)	Male N (%)	Female N (%)	Total N (%)	Male N (%)	Female N (%)	Total N (%)
	Age														
18–30	435 (25.53%)	374 (23.78%)	809 (24.69%)	18 (3%)	25 (19.84%)	43 (19.03%)	102 (30.18%)	108 (23.13%)	210 (26.09%)	13 (18.06%)	31 (24.41%)	44 (22.11%)	568 (25.65%)	538 (23.46%)	1106 (24.54%)
31–45	546 (32.04%)	559 (35.54%)	1105 (33.72%)	32 (32%)	47 (37.3%)	79 (34.96%)	120 (35.5%)	145 (31.05%)	265 (32.92%)	32 (44.44%)	41 (32.28%)	73 (36.68%)	730 (32.97%)	792 (34.54%)	1522 (33.77%)
46–60	428 (25.12%)	389 (24.73%)	817 (24.93%)	26 (26%)	36 (28.57%)	62 (27.43%)	72 (21.3%)	129 (27.62%)	201 (24.97%)	20 (27.78%)	36 (28.35%)	56 (28.14%)	546 (24.66%)	590 (25.73%)	1136 (25.21%)
60–75	295 (17.31%)	251 (15.96%)	546 (16.66%)	24 (24%)	18 (14.29%)	42 (18.58%)	44 (13.02%)	85 (18.2%)	129 (16.02%)	7 (9.72%)	19 (14.96%)	26 (13.07%)	370 (16.71%)	373 (16.27%)	743 (16.49%)
Rurality															
Rural	56 (3.29%)	53 (3.37%)	109 (3.33%)	3 (3%)	5 (3.97%)	8 (3.54%)	16 (4.73%)	17 (3.64%)	33 (4.1%)	3 (4.17%)	3 (2.36%)	6 (3.02%)	78 (3.52%)	78 (3.4%)	156 (3.46%)
Not Rural	1648 (96.71%)	1520 (96.63%)	3168 (96.67%)	97 (97%)	121 (96.03%)	218 (96.46%)	322 (95.27%)	450 (96.36%)	772 (95.9%)	69 (95.83%)	124 (97.64%)	193 (96.98%)	2136 (96.48%)	2215 (96.6%)	4351 (96.5%)
Nationality															
Spanish	1668 (97.89%)	1526 (97.01%)	3194 (97.47%)	97 (97%)	117 (92.86%)	214 (94.69%)	331 (97.93%)	460 (98.5%)	791 (98.26%)	69 (95.83%)	115 (90.55%)	184 (92.46%)	2165 (97.79%)	2218 (96.73%)	4383 (97.25%)
Non-Spanish	36 (2.11%)	47 (2.99%)	83 (2.53%)	3 (3%)	9 (7.14%)	12 (5.31%)	7 (2.07%)	7 (1.5%)	14 (1.74%)	3 (4.17%)	12 (9.45%)	15 (7.54%)	49 (2.21%)	75 (3.27%)	124 (2.75%)
Educational attainment															
No studies	196 (11.5%)	211 (13.41%)	407 (12.42%)	20 (20%)	14 (11.11%)	34 (15.04%)	42 (12.43%)	96 (20.56%)	138 (17.14%)	7 (9.72%)	28 (22.05%)	35 (17.59%)	265 (11.97%)	349 (15.22%)	614 (13.62%)
Intermediate studies	1224 (71.83%)	1034 (65.73%)	2258 (68.9%)	68 (68%)	88 (69.84%)	156 (69.03%)	249 (73.67%)	290 (62.1%)	539 (66.96%)	52 (72.22%)	77 (60.63%)	12 (64.82%)	1593 (71.95%)	1489 (64.94%)	3082 (68.38%)
High studies	284 (16.67%)	328 (20.85%)	612 (18.68%)	12 (12%)	24 (19.05%)	36 (15.93%)	47 (13.91%)	81 (17.34%)	128 (15.9%)	13 (18.06%)	22 (17.32%)	35 (17.59%)	356 (16.08%)	455 (19.84%)	811 (17.99%)
Marital status															
Married	1073 (62.97%)	996 (63.32%)	2069 (63.14%)	63 (63%)	70 (55.56%)	133 (58.85%)	183 (54.14%)	268 (57.39%)	451 (56.02%)	39 (54.17%)	55 (43.31%)	94 (47.24%)	1358 (61.34%)	1389 (60.58%)	2747 (60.95%)
Other	631 (37.03%)	577 (36.68%)	1208 (36.86%)	37 (37%)	56 (44.44%)	93 (41.15%)	155 (45.86%)	199 (42.61%)	354 (43.98%)	33 (45.83%)	72 (56.69%)	105 (52.76%)	856 (38.66%)	904 (39.42%)	1760 (39.05%)
Employment status															
Other	877 (51.47%)	904 (57.47%)	1781 (54.35%)	56 (56%)	74 (58.73%)	130 (57.52%)	208 (61.54%)	308 (65.95%)	516 (64.1%)	50 (69.44%)	89 (70.08%)	139 (69.85%)	1191 (53.79%)	1375 (59.97%)	2566 (56.93%)
Working	827 (48.53%)	669 (42.53%)	1496 (45.65%)	44 (44%)	52 (41.27%)	96 (42.48%)	130 (38.46%)	159 (34.05%)	289 (35.9%)	22 (30.56%)	38 (29.92%)	60 (30.15%)	1023 (46.21%)	918 (40.03%)	1941 (43.07%)
Self-perceived health															
Good	1545 (90.67%)	1382 (87.86%)	2927 (89.32%)	84 (84%)	109 (86.51%)	193 (85.4%)	265 (78.4%)	304 (65.1%)	569 (70.68%)	49 (68.06%)	72 (56.69%)	121 (60.8%)	1943 (87.76%)	1867 (81.42%)	3810 (84.54%)
Fair/Bad	159 (9.33%)	191 (12.14%)	350 (10.68%)	16 (16%)	17 (13.49%)	33 (14.6%)	73 (21.6%)	163 (34.9%)	236 (29.32%)	23 (31.94%)	55 (43.31%)	78 (39.2%)	271 (12.24%)	426 (18.58%)	697 (15.46%)
Social support															
Social support: Yes	1546 (90.73%)	1429 (90.85%)	2975 (90.78%)	23 (23%)	102 (80.95%)	179 (79.2%)	258 (76.33%)	391 (83.73%)	649 (80.62%)	40 (55.56%)	85 (66.93%)	125 (62.81%)	1921 (86.77%)	2007 (87.53%)	3928 (87.15%)
Social support: No	158 (9.27%)	144 (9.15%)	302 (9.22%)	23 (23%)	24 (19.05%)	47 (20.8%)	80 (23.67%)	76 (16.27%)	156 (19.38%)	32 (44.44%)	42 (33.07%)	74 (37.19%)	293 (13.23%)	286 (12.47%)	579 (12.85%)

(continued on next page)

Table 3 (continued)

	IPV-MD- (N = 3277)			IPV + MD- (N = 226)			IPV- MD + (N = 805)			IPV + MD + (N = 199)			TOTAL		
	Male N (%)	Female N (%)	Total N (%)	Male N (%)	Female N (%)	Total N (%)	Male N (%)	Female N (%)	Total N (%)	Male N (%)	Female N (%)	Total N (%)	Male N (%)	Female N (%)	Total N (%)
Neuroticism															
No	407 (23.88%)	211 (13.41%)	618 (18.86%)	14 (1.4%)	6 (4.76%)	20 (8.85%)	44 (13.02%)	22 (4.71%)	66 (8.2%)	2 (2.78%)	6 (4.72%)	8 (4.02%)	467 (21.09%)	245 (10.68%)	712 (15.8%)
Yes	1297 (76.12%)	1362 (86.59%)	2659 (81.14%)	86 (86%)	120 (95.24%)	206 (91.15%)	294 (86.98%)	445 (95.29%)	739 (91.8%)	70 (97.22%)	121 (95.28%)	191 (95.98%)	1747 (78.91%)	2048 (89.32%)	3795 (84.2%)
Impulsivity															
No	829 (48.65%)	777 (49.40%)	1606 (49.01%)	34 (3.4%)	39 (30.95%)	73 (32.3%)	102 (30.18%)	174 (37.26%)	276 (34.29%)	18 (25%)	34 (26.77%)	52 (26.13%)	983 (44.4%)	1024 (44.66%)	2007 (44.53%)
Yes	875 (51.35%)	796 (50.6%)	1671 (50.99%)	66 (66%)	87 (69.05%)	153 67.7	236 (69.82%)	293 (62.74%)	529 (65.71%)	54 (75%)	93 (73.23%)	147 (73.87%)	1231 (55.6%)	1269 (55.34%)	2500 (55.47%)
MD family history															
No	1536 (90.19%)	1340 (85.24%)	2876 (87.82%)	71 (71%)	86 (68.25%)	157 (69.47%)	264 (78.11%)	347 (74.3%)	611 (75.9%)	48 (66.67%)	62 (48.82%)	110 (55.28%)	1919 (86.71)	1835 (80.06%)	3754 (83.33%)
Yes	167 (9.81%)	232 (14.76%)	399 (12.18%)	29 (29%)	40 (31.75%)	69 (30.53%)	74 (21.89%)	120 (25.7%)	194 (24.1%)	24 (33.33%)	65 (51.18%)	89 (44.72%)	294 (13.29)	457 (19.94%)	751 (16.67%)

IPV, intimate partner violence; MD, mental disorder; N, number of participants.

mood disorders) which usually are more prevalent among women - which suggests that men with these MDs should be screened for IPV.

In this cross-sectional study the direction of this association could not be determined. Evidence from a previous meta-analysis examining the causal relation between IPV and MDs suggested that IPV increases risk for mental health problems (Golding, 1999). The three groups studied (IPV, MD, and co-occurring IPV-MD) presented a similar clinical profile, characterized by higher odds of experiencing neuroticism, family psychiatric history, and impulsivity. This could partially explain why IPV and MD frequently co-occur, and may suggest that one is not necessarily the cause or the consequence of the other, but rather both of them may be the result of a shared background.

Also noteworthy is that, although the same clinical characteristics were associated with IPV and with MD, the magnitude of the associations was consistently higher when IPV and mental health co-occurred. This suggests that co-occurring IPV and MD may confer a double burden, which supports findings from previous research (Mason and O'RinnO'Rinn, 2014; Mitchell et al., 2016). This has particularly relevant implications the treatment and follow-up of patients attending to mental health consultations: whereas in the primary care setting substantial work has already been done in training health care professionals to promote the early detection of IPV in women as part of routine clinical practice, more work is definitely needed for raising the awareness and training mental health care professionals to routinely screen and record previous experiences of IPV. Suicide prevention is one of the most challenging areas that face mental health care providers nowadays: if IPV is strongly associated with suicide, then strategies to prevent suicide should inevitably include the identification of IPV.

In terms of the sociodemographic profile, the lack of social support clearly emerged as a risk factor in men and women in the three groups examined. While previous studies reported the protective role of social support to prevent MD in men and women (Lakey and Orehek, 2011), and IPV in women (Coker et al., 2002b; Plazaola-Castano, Ruiz-Perez, and Montero-Pinar Plazaola-Castano et al., 2008), the role of social support to prevent IPV in men had not previously been reported. Non-Spanish women (both with and without MD) presented higher odds of experiencing IPV, which supports findings from previous studies in Spain (Sanz-Barbero et al., 2014; Vives-Cases et al., 2009, 2010). Not married women (both with and without IPV) presented higher odds of MD problems, which has also been documented previously (Gabilondo et al., 2010).

4.2. Strengths and limitations

This study included a large sample of participants, allowing us to obtain accurate estimations. Participants were recruited using robust sampling methods, ensuring representativeness and reducing the risk of selection (participation) bias. Data was collected using well-established and validated instruments, which were administered face to face by trained interviewers. In terms of limitations, the cross-sectional nature of this study limited our ability to make causal inferences. A longitudinal cohort study would be needed to infer causal relationships. However this was out of the scope of this work, whose main aims (determine the prevalence and identify correlates of IPV and MD) were efficiently addressed by the cross-sectional design proposed here.

4.3. Implications for clinical practice

The strong association between IPV and MD, and the fact that they share social and clinical factors, has relevant implications for health-care delivery and organization. Also relevant is the fact that, although IPV in men is less frequent than in women, IPV in men is also associated with depression, posttraumatic stress and mood disorders. In Spain IPV is not routinely assessed as part of MD consultations - a missed opportunity to adequately identify and tackle IPV in that setting. Current medical guidelines are beginning to include recommendations for IPV

Table 4
Summary of the multivariate multinomial logistic model examining sociodemographic and clinical characteristics associated to mental health and intimate partner violence by sex.^a

	IPV + MD-		IPV- MD +		IPV + MD +	
	Male OR (95%CI)	Female OR (95%CI)	Male OR (95%CI)	Female OR (95%CI)	Male OR (95%CI)	Female OR (95%CI)
Age	1.015 (0.999; 1.031)	1.016 (1.002; 1.031) [†]	0.984 (0.975; 0.994) ^{†*}	0.992 (0.984; 1.001)	0.982 (0.963; 1.001)	0.990 (0.975; 1.005)
Rurality						
Rural	1	1	1	1	1	1
Not Rural	1.179 (0.352; 3.955)	0.732 (0.283; 1.897)	0.653 (0.360; 1.187)	0.881 (0.490; 1.584)	0.643 (0.184; 2.244)	1.136 (0.327; 3.945)
Nationality						
Spanish	1	1	1	1	1	1
Non-Spanish	1.434 (0.418; 4.919)	3.037 (1.414; 6.526) ^{†*}	0.818 (0.348; 1.922)	0.520 (0.229; 1.180)	1.558 (0.429; 5.658)	4.251 (1.999; 9.040) ^{†*}
Educational attainment						
No studies	1	1	1	1	1	1
Intermediate studies	0.727 (0.408; 1.297)	1.712 (0.905; 3.238)	1.118 (0.747; 1.672)	0.831 (0.600; 1.151) [†]	1.873 (0.769; 4.565)	0.778 (0.451; 1.344) [†]
High studies	0.494 (0.220; 1.107)	1.454 (0.671; 3.147)	0.935 (0.562; 1.555)	0.867 (0.572; 1.315) [†]	2.003 (0.701; 5.724)	0.677 (0.329; 1.394) [†]
Marital status						
Married	1	1	1	1	1	1
Not married	1.058 (0.663; 1.689)	1.400 (0.960; 2.042)	1.048 (0.799; 1.375)	1.265 (1.012; 1.582) ^{†*}	0.863 (0.505; 1.475)	2.186 (1.468; 3.255) ^{†*}
Employment status						
Other	1	1	1	1	1	1
Working	1.109 (0.715; 1.719)	0.933 (0.629; 1.383)	0.799 (0.616; 1.036) [†]	0.868 (0.685; 1.101) [†]	0.601 (0.346; 1.042) [†]	0.707 (0.455; 1.098) [†]
Self-perceived health						
Good	1	1	1	1	1	1
Fair/Bad	1.115 (0.600; 2.073)	0.830 (0.465; 1.483)	2.701 (1.899; 3.843) [†]	3.693 (2.783; 4.901) [†]	4.308 (2.320; 7.998) [†]	4.441 (2.770; 7.121) [†]
Social support						
Social support: Yes	1	1	1	1	1	1
Social support: No	2.707 (1.618; 4.529) [†]	2.348 (1.435; 3.842) [†]	2.715 (1.976; 3.731) [†]	1.691 (1.231; 2.323) [†]	6.132 (3.634; 10.349) [†]	3.886 (2.478; 6.095) [†]
Neuroticism						
No	1	1	1	1	1	1
Yes	1.394 (0.770; 2.522)	2.765 (1.185; 6.451) [†]	1.587 (1.118; 2.252) [†]	2.604 (1.636; 4.144) [†]	7.225 (1.733; 30.112) [†]	2.597 (1.062; 6.354) [†]
Impulsivity						
No	1	1	1	1	1	1
Yes	1.913 (1.229; 2.978) [†]	2.183 (1.460; 3.262) [†]	1.937 (1.485; 2.526) [†]	1.445 (1.153; 1.810) [†]	2.292 (1.295; 4.055) [†]	2.341 (1.511; 3.627) [†]
Mental health family history						
No	1	1	1	1	1	1
Yes	3.659 (2.275; 5.885) [†]	2.719 (1.804; 4.099) [†]	2.363 (1.715; 3.256) [†]	1.782 (1.368; 2.320) [†]	3.764 (2.164; 6.545) [†]	5.640 (3.767; 8.445) [†]

IPV, intimate partner violence; MD, mental disorder; OR, odds ratio; CI, confidence interval.

Pseudo-R2 was 0.0969 in the model for men and 0.1031 in the model for women.

^a Reference category in the dependent variable was MD-IPV-. Reported OR are adjusted by all the independent variables included in the table.

* Statistically significant associations (p < 0.05) in the fully adjusted model.

[†] Statistically significant associations (p < 0.05) in the partially adjusted model (adjusted only by the following sociodemographic variables: age, rurality, nationality, educational attainment, marital status, and employment status).

management in specific populations (immigrants, people living in rural areas, among others), but do not offer specific recommendations for co-occurring MD and IPV, even though their inclusion in diagnostic manuals have been strongly supported (Heyman et al., 2015). Mental health professionals should receive training about IPV to identify patients at a higher risk, know how to assist disclosure of IPV, and how to safely respond (Stewart and Vigod, 2017).

The association between IPV and suicidal ideation has been previously described (Castellvi et al., 2017), and it is of utmost relevance nowadays when so much efforts are being made to design strategies for suicidal prevention (Meerwijk et al., 2016), most of them however failing to include structured screening for IPV identification (Castellvi et al., 2017).

4.4. Conclusion

MD and IPV are frequent and strongly associated health problems in men and women living in Andalusia. A number of characteristics (social support, neuroticism, impulsivity, and family history of mental health problems) are consistently associated with MD and with IPV in both

men and women. These associations are substantially stronger when IPV and MD co-occur.

Acknowledgements

We thank all the participants in this study for kindly completing a large number of questionnaires and forms.

Funding

This work was supported by the “Consejería de Economía, Innovación y Ciencia de la Junta de Andalucía” (10-CTS-6682).

Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at <http://dx.doi.org/10.1016/j.jad.2017.12.032>.

References

- Albert, P.R., 2015. Why is depression more prevalent in women? *J. Psychiatry Neurosci.* 40, 219–221.
- Amorim, P., 2000. Mini International Neuropsychiatric Interview (MINI): validation of a short structured diagnostic psychiatric interview. *Rev. Bras. Psiquiatr.* 22, 106–115.
- Beydoun, H.A., Beydoun, M.A., Kaufman, J.S., Lo, B., Zonderman, A.B., 2012. Intimate partner violence against adult women and its association with major depressive disorder, depressive symptoms and postpartum depression: a systematic review and meta-analysis. *Soc. Sci. Med.* 75, 959–975.
- Blaxter, M., 2003. *Health and Lifestyles*. Routledge, New York.
- Bogren, M., Bradvik, L., Holmstrand, C., Nobbelin, L., Mattisson, C., 2017. Gender differences in subtypes of depression by first incidence and age of onset: a follow-up of the Lundby population. *Eur. Arch. Psychiatry Clin. Neurosci.* <http://dx.doi.org/10.1007/s00406-017-0778-x>. (Epub ahead of print).
- Castellvi, P., et al., 2017. Exposure to violence, a risk for suicide in youths and young adults. A meta-analysis of longitudinal studies. *Acta Psychiatr. Scand.* 135, 195–211.
- Cervilla, J.A., et al., 2016. Protocol and methodology of Study epidemiological mental health in Andalusia: pisma-ep. *Rev. Psiquiatr. Salud Ment.* 9, 185–194.
- Chmielowska, M., Fuhr, D.C., 2017. Intimate partner violence and mental ill health among global populations of Indigenous women: a systematic review. *Soc. Psychiatry Psychiatr. Epidemiol.* 52, 689–704.
- Chuang, C.H., et al., 2012. Longitudinal association of intimate partner violence and depressive symptoms. *Ment. Health Fam. Med.* 9, 107–114.
- Coker, A.L., et al., 2002a. Physical and mental health effects of intimate partner violence for men and women. *Am. J. Prev. Med.* 23, 260–268.
- Coker, A.L., et al., 2002b. Social support protects against the negative effects of partner violence on mental health. *J. Women's Health Gend. Based Med.* 11, 465–476.
- Desmarais, S.L., et al., 2014. Community violence perpetration and victimization among adults with mental illnesses. *Am. J. Public Health* 104, 2342–2349.
- Devries, K.M., et al., 2013a. Intimate partner violence and incident depressive symptoms and suicide attempts: a systematic review of longitudinal studies. *PLoS Med.* 10, e1001439.
- Devries, K.M., et al., 2013b. Global health. The global prevalence of intimate partner violence against women. *Science* 340, 1527–1528.
- Diaz de Villalvilla, T., R., et al., 2008. Spanish version of the Family Interview for Genetic Studies (FIGS). *Actas Esp. Psiquiatr.* 36, 20–24.
- Ellsberg, M., et al., 2008. Intimate partner violence and women's physical and mental health in the WHO multi-country study on women's health and domestic violence: an observational study. *Lancet* 371, 1165–1172.
- Fink, L.A., et al., 1995. Initial reliability and validity of the childhood trauma interview: a new multidimensional measure of childhood interpersonal trauma. *Am. J. Psychiatry* 152, 1329–1335.
- Gabilondo, A., S., et al., 2010. Epidemiology of major depressive episode in a southern European country: results from the ESEMeD-Spain project. *J. Affect. Disord.* 120, 76–85.
- Gandek, B., et al., 1998. Cross-validation of item selection and scoring for the SF-12 health survey in nine countries: results from the IQOLA project. *J. Clin. Epidemiol.* 51, 1171–1178.
- Golding, J.M., 1999. Intimate partner violence as a risk factor for mental disorders: a meta-analysis. *J. Fam. Violence* 14, 99–132.
- Goma-i-Freixanet, M., Valero, S., Muro, A., Albiol, S., 2008. Zuckerman-Kuhlman personality questionnaire: psychometric properties in a sample of the general population. *Psychol. Rep.* 103, 845–856.
- Goma-i-Freixanet, M., Wismeijer, A.A., Valero, S., 2005. Consensual validity parameters of the Zuckerman-Kuhlman personality questionnaire: evidence from self-reports and spouse reports. *J. Personal. Assess.* 84, 279–286.
- Hardt, J., et al., 2015. Suicidality and its relationship with depression, alcohol disorders and childhood experiences of violence: results from the ESEMeD study. *J. Affect. Disord.* 175, 168–174.
- Haro, J.M., et al., 2006. [Prevalence of mental disorders and associated factors: results from the ESEMeD-Spain study]. *Med. Clin.* 126, 445–451.
- Hernandez, A., et al., 2012. Initial validation of the Spanish childhood trauma questionnaire-short form: factor structure, reliability and association with parenting. *J. Interpers. Violence* 28, 1498–1518.
- Hesse, M., Moran, P., 2010. Screening for personality disorder with the Standardised Assessment of Personality: Abbreviated Scale (SAPAS): further evidence of concurrent validity. *BMC Psychiatry* 10, 10.
- Heyman, R.E., Slep, A.M., Foran, H.M., 2015. Enhanced definitions of intimate partner violence for DSM-5 and ICD-11 may promote improved screening and treatment. *Fam. Process* 54, 64–81.
- Instituto Nacional de Estadística, 2017. Cifras oficiales de población resultantes de la revisión del Padrón municipal a 1 de enero 2016. Available at: (<http://www.ine.es/jaxiti3/Datos.htm?T=2915>) (Accessed on 12 December 2017).
- Jenkinson, C., R., et al., 1997. A shorter form health survey: can the SF-12 replicate results from the SF-36 in longitudinal studies? *J. Public Health Med.* 19, 179–186.
- Jewkes, R., et al., 2017. Women's and men's reports of past-year prevalence of intimate partner violence and rape and women's risk factors for intimate partner violence: a multicountry cross-sectional study in Asia and the Pacific. *PLoS Med.* 14, e1002381.
- Jonas, S., 2014. Gender differences in intimate partner violence and psychiatric disorders in England: results from the 2007 adult psychiatric morbidity survey. *Epidemiol. Psychiatr. Sci.* 23, 189–199.
- Kadri, N., et al., 2005. Moroccan colloquial Arabic version of the Mini International Neuropsychiatric Interview (MINI): qualitative and quantitative validation. *Eur. Psychiatry* 20, 193–195.
- Khalifeh, H., et al., 2015. Recent intimate partner violence among people with chronic mental illness: findings from a national cross-sectional survey. *Br. J. Psychiatry* 207, 207–212.
- Lacey, K.K., et al., 2015. The mental health of US black women: the roles of social context and severe intimate partner violence. *BMJ Open* 5, 10.
- Lagdon, S., Armour, C., Stringer, M., 2014. Adult experience of mental health outcomes as a result of intimate partner violence victimisation: a systematic review. *Eur. J. Psychotraumatol.* 5.
- Lakey, B., Orehek, E., 2011. Relational regulation theory: a new approach to explain the link between perceived social support and mental health. *Psychol. Rev.* 118, 482–495.
- Lewine, R., Martin, M., Hart, M., 2017. Sex versus gender differences in schizophrenia: the case for normal personality differences. *Schizophr. Res.* 189, 57–60.
- Lovestad, S., Love, J., Vaez, M., Krantz, G., 2017. Prevalence of intimate partner violence and its association with symptoms of depression; a cross-sectional study based on a female population sample in Sweden. *BMC Public Health* 17, 335.
- Mason, R., O'Rinn, S.E., 2014. Co-occurring intimate partner violence, mental health, and substance use problems: a scoping review. *Glob. Health Action* 7, 24815.
- Meerwijk, E.L., et al., 2016. Direct versus indirect psychosocial and behavioural interventions to prevent suicide and suicide attempts: a systematic review and meta-analysis. *Lancet Psychiatry* 3, 544–554.
- Mendonca, M.F.S., Ludermitz, A.B., 2017. Intimate partner violence and incidence of common mental disorder. *Rev. Saude Publica* 51, 32.
- Mitchell, J., Wight, M., Van Heerden, A., Rochat, T.J., 2016. Intimate partner violence, HIV, and mental health: a triple epidemic of global proportions. *Int. Rev. Psychiatry* 28, 452–463.
- Moran, P., Leese, M., Lee, T., Walters, P., Thornicroft, G., Mann, A., 2003. Standardised Assessment of Personality - Abbreviated Scale (SAPAS): preliminary validation of a brief screen for personality disorder. *Br. J. Psychiatry* 183, 228–232.
- NIMH Genetics Initiative, 1992. Family Interview for Genetic Studies (FIGS). National Institute of Mental Health, Rockville, MD.
- O'Leary, K.D., Tintle, N., Bromet, E.J., Gluzman, S.F., 2008. Descriptive epidemiology of intimate partner aggression in Ukraine. *Soc. Psychiatry Psychiatr. Epidemiol.* 43, 619–626.
- Oram, S., Khalifeh H., Howard L.M., Violence against women and mental health. *Lancet Psychiatry*, vol. 4, pp. 159–170.
- Otsubo, T., et al., 2005. Reliability and validity of Japanese version of the Mini-International Neuropsychiatric Interview. *Psychiatr. Clin. Neurosci.* 59, 517–526.
- Plazaola-Castano, J., Ruiz-Perez, I., Montero-Pinar, M.I., 2008. The protective role of social support and intimate partner violence. *Gac. Sanit.* 22, 527–533.
- Raya Ortega, L., et al., 2004. Intimate partner violence as a factor associated to health problems. *Aten. Prima.* 34, 117–124.
- Ricci-Cabello, I., Ruiz-Perez, I., Plazaola-Castano, J., Montero-Pinar, I., 2010. Mental disease, existence of diagnostic, use of psychotropic medication: differences by autonomous communities under the national health survey 2006. *Rev. Esp. Salud Publica* 84, 29–41.
- Rossi, A., et al., 2004. The reliability of the Mini-International Neuropsychiatric Interview-Italian version. *J. Clin. Psychopharmacol.* 24, 561–563.
- Ruiz-Pérez, I., et al., 2017. Prevalence of intimate partner violence in Spain: a national cross-sectional survey in primary care. *Aten. Prima.* 49, 93–101.
- Ruiz-Perez, I., Plazaola-Castano, J., 2005. Intimate partner violence and mental health consequences in women attending family practice in Spain. *Psychosom. Med.* 67, 791–797.
- Ruiz-Perez, I., et al., 2006. Sociodemographic associations of physical, emotional, and sexual intimate partner violence in Spanish women. *Ann. Epidemiol.* 16, 357–363.
- Ruiz-Pérez, I., et al., 2015. How does intimate partner violence differ depending on level of rurality of residential area in Spain? *Health Social. Work* 40, 108–119.
- Salom, C.L., Williams, G.M., Najman, J.M., Alati, R., 2015. Substance use and mental health disorders are linked to different forms of intimate partner violence victimisation. *Drug Alcohol Depend.* 151, 121–127.
- Sanz-Barbero, B., Rey, L., Otero-García, L., 2014. Health status and intimate partner violence. *Gac. Sanit.* 28, 102–108.
- Scher, C.D., et al., 2001. The childhood trauma questionnaire in a community sample: psychometric properties and normative data. *J. Trauma Stress* 14, 843–857.
- Sheehan, D.V., et al., 1998. The Mini-International neuropsychiatric interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J. Clin. Psychiatry* 59 (Suppl 20), S22–S33.
- Sipsma, H.L., et al., 2015. Violence against Congolese refugee women in Rwanda and mental health: a cross-sectional study using latent class analysis. *BMJ Open* 5, 4.
- Stewart, D.E., Vigod, S.N., 2017. Mental health aspects of intimate partner violence. *Psychiatr. Clin. N. Am.* 40, 321–334.
- Tsighebrhan, R., Shibre, T., Medhin, G., Fekadu, A., Hanlon, C., 2014. Violence and violent victimization in people with severe mental illness in a rural low-income country setting: a comparative cross-sectional community study. *Schizophr. Res.* 152, 275–282.
- Umubyeyi, A., Mogren, I., Ntaganira, J., Krantz, G., 2014. Women are considerably more exposed to intimate partner violence than men in Rwanda: results from a population-based, cross-sectional study. *BMC Women's Health* 14, 99.
- Vives-Cases, C.C., et al., 2009. Sociodemographic profile of women affected by intimate partner violence in Spain. *Gac. Sanit.* 23, 410–414.
- Vives-Cases, C., et al., 2010. Identifying sociodemographic differences in Intimate Partner Violence among immigrant and native women in Spain: a cross-sectional study. *Prev. Med.* 51, 85–87.
- Ware, J., Kosinski Jr., M., Keller, S.D., 1996. A 12-item short-form health survey: construction of scales and preliminary tests of reliability and validity. *Med. Care* 34, 220–233.

- World Health Organization, 2000. Women's mental health: An evidence based review. Available at <http://www.who.int/mental_health/publications/women_mh_evidence_review/en/> (Accessed on 12 December 2017).
- World Health Organization, 2003. WHO Multi-country Study on wOmen's Health and Life events. Questionnaire v9 9.
- World Health Organization, 2015. The European Mental Health Action Plan 2013–2020. World Health Organization, World Health Organization.
- Zorrilla, B., et al., 2010. Intimate partner violence: last year prevalence and association with socio-economic factors among women in Madrid, Spain. *Eur. J. Public Health* 20, 169–175.
- Zuckerman, M., 2002. Zuckerman-Kuhlman Personality Questionnaire (ZKPQ): an alternative five-factorial model. In: de Raad, B., Perugini, M. (Eds.), *Big Five Assessment*. Hogrefe & Huber, Ashland, OH, pp. 376–392.
- Zuckerman, M., et al., 1993. A comparison of three structural models for personality: the big three, the big five, and the alternative five. *J. Personal. Soc. Psychol.* 65, 757.