Country of residence, gender equality and victim blaming attitudes about partner violence: A multilevel analysis in EU.

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Abstract

Background: Intimate partner violence against women (IPVAW) is a global and preventable public health problem. Public attitudes, such as victim-blaming, are important for our understanding of differences in the occurrence of IPVAW, as they contribute to its justification. In this paper we focus on victim-blaming attitudes regarding IPVAW within the EU and we apply multilevel analyses to identify contextual determinants of victim-blaming attitudes. We investigate both the general contextual effect of the country, and the specific association between country level of gender equality and individual victim-blaming attitudes, as well as to what extend a possible general contextual effect was explained by county level gender equality. **Methods**: We analysed data from 26 800 respondents from 27 member states of the European Union who responded to a survey on public perceptions of domestic violence. We applied multilevel logistic regression analysis and measures of variance (intra-class correlation (ICC)) were calculated, as well as the discriminatory accuracy by calculating the area under the Receiver Operator Characteristic curve. **Results**: Over and above individual characteristics, about 15 percent of the individual variance in the propensity for having victim-blaming attitudes was found at the country level, and country level of gender equality did not affect the general contextual effect (i.e., ICC) of the country on individual victim-blaming attitudes. **Conclusion**: The present study shows that there are important between-country differences in victim-blaming attitudes that cannot be explained by differences in individual-level demographics or in gender equality at the country level. More research on attitudes towards IPVAW is needed.

Key words: Intimate partner violence against women (IPVAW); Victim-blaming attitudes; Country differences; Multilevel analysis; Discriminatory accuracy

Introduction

Intimate partner violence against women (hereafter IPVAW) is a global and preventable public health problem of unjustifiable size (1,2). A study by the European Union Agency for Fundamental Rights (FRA) in 2012 indicated that about 22% of the European women had experienced physical and/or sexual violence by a partner since age 15, with a range between 13% (e.g. Austria and Spain,) to 32% (Denmark and Latvia) (3).

IPVAW is a complex phenomenon and in addition to explanations and risk factors at the individual level (4,5), contextual factors at the community or country levels can also be important for our understanding of IPVAW. As far as we know, however, there are only a few studies trying to identify contextual effects on IPVAW (6,7) but only two (8,9) have applied appropriate multilevel analysis. From this multilevel perspective, over and above individual characteristics, differences at the country level in legislation or in cultural norms, attitudes and beliefs might explain differences in the individual probability of IPVAW (9–11). Improved knowledge on those contextual factors seems crucial to inform prevention strategies aiming at reducing IPVAW.

In this paper we focus on victim-blaming attitudes regarding IPVAW. It has been argued that public perceptions and attitudes, such as victim-blaming, are crucial for our understanding of differences in the occurrence of IPVAW, since such perceptions and attitudes are associated with the level of tolerance and justification of this kind of violence (12). A review of the literature shows that that victim-blaming attitudes are still widespread across the world (11) as well as within the EU (13). Hence, increased knowledge on the determinants of victim-blaming attitudes might be an important key in reducing IPVAW.

This study will investigate whether the country context as a whole condition individual victim-blaming attitudes over and above individual characteristics (i.e., general contextual effect). Besides, as country level of gender inequality has often been thought of as an important contextual risk factor for IPVAW, we also investigate if this specific country-level characteristic is associated with victim-blaming attitudes and explain a possible general contextual effect.

From this background, and using information on 26 800 individuals from 27 member states of the European Union we aimed to apply multilevel analyses to identify contextual determinants of victim-blaming attitudes related to IPVAW. We had four main research questions. (i) Does the country of residence exert a general contextual effect that conditions individual victim-blaming attitudes over and above individual characteristics? (ii) To what extend does knowledge on one's country of residence helps us to discriminate with accuracy the individuals who hold victim-blaming attitudes from those who do not? (iii) Is there an association between country level of gender equality and individual victim-blaming attitudes? (iv) To what extend a possible general contextual effect is explained by gender equality?

Methods

Population

Data used in the present study was drawn from a special Eurobarometer survey on how domestic violence against women is perceived by the European public opinion (14). This survey was carried out in all the 27 member states in 2010. A sample of EU citizens aged 15 years or older were interviewed in each country. On average there were about 1000 respondents per country, ranging from 500 (Malta) to 1573 (Germany), with a total sample of 26 800 respondents. The survey covered six main areas with questions about (i) awareness and (ii) perceptions of IPVAW, (iii) reasons for violence, (iv) knowledge of laws on IPVAW, (v) how to fight the problem and, finally, (vi) the role of EU in fighting IPVAW. The survey

also included a number of background questions including among others the respondents' age, educational level, employment, civil status, and type of residential area. More information on the survey can be read elsewhere (14).

Assessment of variables
Outcome

To measure *victim-blaming attitudes* the following question was used *"Please tell me whether you consider the provocative behaviour of women to be a cause of domestic violence against women?"* The answers were coded as No = 0 and Yes = 1.

Individual level predictors

Socio-demographic predictors included in the analysis were *gender* (0= male, 1= female), *Age* (divided into 8 groups with age 15-24 used as reference), *Marital status* (married = 0, single = 1, divorced= 2, widow = 3), *Educational level* (0=no fulltime education, 1= (less than) 15 years of education or still studying, 2= 16-19 years of education, 3= 20 years or more of education) and *Type of residential area* (rural area or village = 0, small or middle-size town = 1, large town = 2). Furthermore, a measure of *Perceived social status* was included, this item shows how the respondents placed themselves on a scale ranging from 1= "lowest level in society" to 10= "highest level in society". This scale was categorized into three groups as *low* (1 through 4), *medium* (5 through 7) and *high* (8 through 10) *perceived social status.*

Contextual level predictors

To examine the influence of gender equality at the country level the *Gender Equality Index* (GEI) from the European Institute for Gender Equality (EIGE) was added to the analysis as a contextual level predictor. The Gender Equality Index consists of six different core domains, work, money, knowledge, time, power and health. Index relies on gender gaps, i.e., the difference between women and men on a given gender indicator. No distinction is made as to

the direction of this gap. The index ranges from 1, total inequality, to 100, full equality, and provides a measure of how close/far each of the EU member states were from achieving full gender equality in 2012 (for a full description of the index see www.eige.europa.eu). We categorized the GEI by tertiles of the countries' distribution into three groups, low, medium and high.

Analytical strategy
Our aim was to identify contextual determinants of victim-blaming attitudes related to IPVAW and for doing so we apply an stepwise analytical strategy described in detail elsewhere (15).

To answer our two first questions (*Does the country of residence exert a general contextual effect that conditions individual victim-blaming attitudes over and above individual characteristics?* And *to what extend does knowledge on one's country of residence helps us to discriminate with accuracy the individuals who hold victim-blaming attitudes from those who do not?*), in a first step (*model 1*) we fitted a conventional single level logistic regression including the individual level predictors (i.e. gender, age, marital status, educational level, type of residential area, perceived social status). In this way we predicted victim-blaming attitudes regarding IPVAW as a function of the individual characteristics only without considering the country of origin of the participants.

Using the predictions from model 1 we obtained the ROC curve and the corresponding AU-ROC as a measure of the discriminatory accuracy (DA). The ROC curve is created by plotting the true positive fraction (TPF) against the False Positive Fraction (FPF) at various threshold settings of predicted risk obtained from the logistic model. The area under the ROC curve (AU-ROC) measures the ability of the model to correctly classify those with and without a certain outcome – in this case, having a victim-blaming attitude. The AU-ROC assumes a value between 1 and 0.5 where 1 is perfect discrimination and 0.5 would be equally as

informative as flipping an unbiased coin. That is, model 1 informs not only on the association between individual characteristics and the outcome (expressed as odds ratio (OR) and 95% confidence intervals (CI)), but also to what extend those individual characteristics help us to distinguish individual with from those without victim-blaming attitudes.

Model 1 accounted for the individual characteristics of the participants so, in the second step (*model 2*) of the analysis we expanded model 1 and performed a *multilevel logistic regression analysis* by incorporating country of residence as a random intercept. This model decomposed the total individual variance into a between and within country of origin components. In this way we were able to quantify the *general contextual effect of the country of origin* by computing the Intra class correlation (ICC). The ICC provides information on the proportion of the total individual variance in the propensity of having a victim-blaming attitude that can be found at the country level. The larger the ICC the more relevant is the country of residence for understanding individual victim-blaming attitudes. The ICC was calculated using the latent variable method (16,17):

$$\text{ICC}_{\text{country of birth}} = (\sigma^2 / (\sigma^2 + (\pi^2/3))) * 100.$$

Where σ^2 is the country variance and $\pi^2/3$ is the variance of the underlying individual level latent variable. In addition, 95% credible intervals were calculated for the variance and the ICC.

In model 2 the prediction was a function of both the individual level variables (as in model 1) and the country of origin intercepts (i.e., random effects). Thus, the AU-ROC of model 2 can be compared with that from model 1 and this difference quantify

$$\text{AU-ROC}_{\text{change}} = \text{AU-ROC}_{\text{model 2}} - \text{AU-ROC}_{\text{model 1}}$$

the value added of having information on country of residence for distinguish individual with from those without victim-blaming attitudes, over and above individual level predictors.

Finally, in the third step of the analysis (*model 3*), we aimed to answer our last two questions (*Is there an association between country level of gender equality and individual victim-blaming attitudes? And to what extend a possible general contextual effect is explained by gender equality?*). For this purpose, we included the country level variable *Gender Equality Index*. This model informs on the *specific contextual effect* of this contextual variable on individual victim blaming attitudes expressed as OR. In this model we also calculated the adjusted ICC and the country level variance explained by the Gender Equality Index, the Proportional change in Variance (PCV).

$$PCV = ((\sigma^2_{model2} - \sigma^2_{model3}) / \sigma^2_{model2}) *100$$

We also computed the AU-ROC for model 3 but it is not expected to change as model 2 represent the ceiling of the general contextual effects (see elsewhere for a longer explanation (15).

The analysis was estimated using RIGLS method to obtain the start values for the final Markov Chain Monte Carlo (MCMC) estimation (Brown 2004). We used the Bayesian Deviance Information Criterion (BDIC) as a measure of goodness of fit of our models (Spiegelhalter et al. 2002). The BDIC considers both the model deviance and complexity. Models with smaller BDIC should be preferred to models with larger BDIC. We carried out the analyses using MLwiN 3.01 (Centre for Multilevel Modelling, University of Bristol, Bristol, UK) and SPSS 23 (IBM SPSS Statistics for Windows. Armonk, NY: IBM Corp).

Results

In total, about 60 percent of the respondents considered the provocative behaviour of the woman being a cause of IPVAW, ranging from 88 percent in Estonia and Lithuania to 36 percent in Spain Table 1 shows the characteristics of the 26 800 participants by country-level gender equality (GEI). Our findings indicate that victim blaming attitudes are more frequent

in countries with lower levels of GEI. However, the differences are rather small. Countries with low level of equality have also the highest percentage of married individuals, the lowest percentage of individuals with 20 years or more of education, and the highest percentage of individuals with low perceived social status.

Table 2 and 3 presents the results from the multilevel logistic regression models. *The Individual observational effects* show that in Model 1, Table 2, females were less likely to hold victim blaming attitudes in comparison with men. This model also shows that, on average, older respondents were more likely to express victim blaming attitudes and respondents with higher levels of education, higher perceived social status and those living in large towns were less likely to express such attitudes. The AU-ROC of this first model was low (0.587), indicating that these individual level variables were not sufficient for predicting victim blaming attitudes (table 3). In model 2 we expanded model 1 by incorporating country of residence as a random intercept. In this model the effect of age is accentuated, but the rest of the associations are rather similar across the models (table 2). However, as can be seen in table 3 incorporating information on country of residence results in an increase of the AU-ROC to 0.669. From this model we can quantify the *general contextual effect of the country of origin* by computing the Intra class correlation (ICC). The ICC of model 2 is 15 percent. The ICC, together with the improved AU-ROC, indicates that country of residence appear to be a relevant context for understanding individual differences in victim blaming attitudes. The country residuals for model 2 are plotted in Figure 1 and represent countries ranked according to the probability (log OR) of holding victim-blaming attitudes compared with the overall mean of victim-blaming attitudes in the study population. We could not identify any clear North-South or East-West gradient, but on average Spain presented the lowest probability of holding victim-blaming attitudes, and Estonia and Lithuania presented the

highest probability, while countries such as Romania, Great Britain, Greece and Sweden presented values close to the European average.

In the third and final model we included the GEI as a country level variable. This model gives us information on the *specific contextual effect* of GEI, and also answers the question regarding if the observed general contextual effect is explained by gender equality. This final model shows that both the AU-ROC and the ICC remains unchanged when country level of GEI is included (table 3). This, together with the unchanged BDIC indicates that that country-level gender equality does not explain individual victim-blaming attitude.

All analyses were run separately for females and males with similar results (data not shown).

Discussion

The aim of the present study was to examine whether the country of residence exerts a general contextual effect that conditions individual victim-blaming attitudes over and above individual characteristics. In other words, does knowledge on one´s country of residence help us discriminate with accuracy the individuals who hold victim-blaming attitudes from those who don't? Also we aimed to analyse to what extend a possible general contextual effect on victim-blaming attitudes was explained by country level of gender equality. Our findings showed that, over and above individual characteristics, there was a relevant general contextual effect –about 15 percent of the individual variance in the propensity for having victim-blaming attitudes was found at the country level. That country of residence influences individual victim-blaming attitudes was confirmed by the increase in the discriminatory accuracy of the model (i.e., AU-ROC) that increases from 0,587 to 0,699 when including the country level in the multilevel analysis.

Since gender inequality has often been thought of as a highly important factor explaining rates of IPVAW as well as attitudes and justification of this violence, the final step of our analysis,

included country-level GEI to examine if gender equality explained the observed general contextual effects. Our findings showed that GEI does not affect the between country variance in individual victim-blaming attitudes. This indicates, in opposite to what is often argued, that country-level gender equality does not explain individual attitudes to IPVAW, at least not victim-blaming attitudes.

Findings from the present study confirm the associations between individual characteristics, such as gender, age and educational level, found in previous studies (4,13). However, the low AU-ROC value (0.587) indicate that despite the association these characteristics are not sufficient for predicting victim-blaming attitudes with accuracy.

As discussed in the introduction, victim-blaming attitudes might be key in understanding the occurrence of IPVAW since this is a complex social problem that needs to be addressed within the wider social context. However, studies addressing different aspects of attitudes, norms, beliefs and its impact on IPVAW are still limited (13). A recent review of the literature (11) concludes that more research is needed to increase our understanding of IPVAW justifications both within (e.g. differences between social groups) and between countries, and how this justification is associated with IPVAW prevalence (see also (13)). In addition to individual characteristics, can contextual characteristics at the community or country level be essential for our understanding of IPVAW? From this multilevel perspective, the social context in which IPVAW occurs might differ between countries because the existence of differences in legislation or in cultural norms, perceptions attitudes and beliefs regarding IPVAW (e.g.(9–12).

Strength and weaknesses
Previous comparative studies on IPVAW have mainly used single level analyses that quantify differences between national averages. By using a multilevel approach we stress the relevance of quantifying not only differences between country averages, but also of improving the

understanding of individual heterogeneity around the averages. It has been argued that what most matters in Public Health is not to quantify differences between averages only, but also to understand the individual variance around the averages by performing appropriate multilevel analyses (17,18). In addition, the multilevel approach helps us to disentangle what associations that are only true at an aggregated level (i.e. to avoid the ecological fallacy), and what holds also at the individual level. One methodological consideration important to acknowledge when conducting comparative research is the possibility that questions are interpreted differently within different contexts. Even if the questions were standardized we cannot ignore the possibility that the interpretation differs between contexts and this might explain some of the observed between country differences. This is an issue that needs to be addressed in forthcoming studies.

Conclusions
In their recent article Garcia-Moreno and colleagues (19) argue that addressing attitudes, norms and beliefs that justify violence against women are crucial in prevention strategies aiming at reducing IPVAW (see also (13)). However, to develop better-targeted prevention strategies that are more effective, increased knowledge on the determinant of victim-blaming attitudes are needed. Findings from the present study show that there are important between country differences in victim-blaming attitudes that cannot be explained by differences in demographics nor differences in gender equality at the country level. Therefore more research on attitudes to IPVAW, as well as on violence against women in general, is needed.

Conflicts of interest:
None declared

Key-points

- We applied multilevel analysis and measures of discriminatory accuracy to identify contextual determinants of victim-blaming attitudes.

- Country of residence exerts a general contextual effect that conditions individual victim-blaming attitudes in a higher degree than individual characteristics.

- Country level of gender equality cannot explain the general contextual effect of country of residence.

- Future studies should target the contextual determinants of victim-blaming attitudes in order to develop better-targeted prevention strategies.

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Tables

Table 1. Characteristics of the 26 800 participants in the Eurobarometer survey carried out in all the 27 member states of the European Union in 2010 by country-level gender equality. Values are percentages.

	Gender Equality Index (GEI)		
	Low (35-42) Number= 9245	Medium (43-55) Number=9111	High (56-74) Number= 8444
Victim-blaming attitude	60.9	62.0	58.1
Female	54	55.4	53.1
Age			
15 – 24 years	13.1	12.5	10.2
25 - 34 years	16.4	15.9	13.3
35 - 44 years	18.7	16.2	16.1
45 - 54 years	16.5	17.7	16.5
55 - 64 years	16	16.1	18.6
65 - 74 years	12.7	14.2	15.5
75 - 84 years	6	6.5	8.3
85 years or older	0.7	0.8	1.6
Marital status			
Married	57.7	47.7	51.8
Single	24.9	29.2	32.6
Divorced	6.7	7.1	9.0
Widowed	9.2	9.5	8.8
Missing	0.2	0.1	0.1
Educational level			
No-fulltime education	0.4	0.6	0.4
< 15 years of education or still studying	29.3	29.7	22.1
16-19 years of education	47.3	45.2	34.7
20 years or more of education	19.6	23.1	41.4
Missing	3.3	1.3	1.5
Perceived social status			
Low	30.5	20.6	11.8
Middle	57.9	67.2	67.6
High	8.2	9.5	17.5
Missing	3.4	2.8	3.1
Type of residential area			
Rural area or village	33.1	40.0	33.7
Small or middle-size town	36	31.7	39.4
Large town	30.8	28.1	26.7
Missing	0.2	0.2	0.2

Table 2. Single (model 1) and multilevel (models 2 and 3) logistic regression analyses modelling victim-blaming attitudes. The table informs on specific individual observational effects and specific observational contextual effects.

| | Single level model | | Multilevel models | | | |
| | Model 1 | | Model 2 | | Model 3 | |
	OR	95% CI	OR	95% CI	OR	95% CI
Individual observational effects						
Gender						
Male	reference		reference		reference	
Female	0,94	0.89-1.00	0.92	0.87-0.98	0.92	0.89-0.95
Age						
15-24 years	reference		reference		reference	
25-34 years	0.93	0.83-1.04	1.15	1.03-1.29	1.13	1.07-1.20
35-44 years	0.95	0.85-1.07	1.25	1.23-1.28	1.24	1.17-1.31
45-54 years	1.06	0.94-1.19	1.35	1.20-1.52	1.33	1.26-1.41
55-64 years	1.39	1.24-1.56	1.75	1.55-1.97	1.73	1.63-1.84
65-74 years	1.67	1.48-1.90	2.15	1.90-2.44	2.13	2.00-2.27
75-84 years	1.97	2.31-1.68	2.65	2.25-3.11	2.61	2.41-2.83
85 years or older	1.51	1.09-2.10	2.1	1.50-2.95	2.09	1.77-2.48
Marital status						
Married	reference		reference		reference	
Single	0.97	0.91-1.04	1.03	0.96-1.111	1.03	0.99-1.07
Divorced	1.12	1.00-1.25	1.07	0.96-1.19	1.07	1.01-1.13
Widow	1.12	1.00-1.26	0.99	0.88-1.12	1.00	0.94-1.06
Educational level						
No fulltime education	reference		reference		reference	
<15 years of education or still studying	0.68	0.56-0.83	0.84	0.53-1.31	0.85	0.70-1.03
16-19 years of education	0.74	0.61-0.89	0.77	0.49-1.22	0.79	0.65-0.96
20 years or more of education	0.62	0.51-0.76	0.59	0.38-0.94	0.61	0.50-0.74
Perceived social status						
Low	reference		reference		reference	
Middle	0.81	0.76-0.87	0.87	0.81-0.94	0.87	0.84-0.91

	OR	95% CI	OR	95% CI	OR	95% CI
High	0.86	0.78-0.95	0.91	0.82-1.02	0.91	0.86-0.96
Type of residential area						
Rural area or or village	reference		reference		reference	
Small or middle-size town	0.95	0.89-1.01	0.91	0.85-0.97	0.91	0.88-0.94
Large town	0.85	0.79-0.90	0.79	0.74-0.85	0.79	0.77-0.82
Specific contextual observational effects						
Gender Equality Index (GEI)						
Low					reference	
Middle					1.18	0.9-1.51
High					0.78	0.62-0.98

Table 3. Single (model 1) and multilevel (models 2 and 3) logistic regression analyses modelling victim-blaming attitudes. The table informs on general contextual effects.

	Single level model	Multilevel models	
	Model 1	Model 2	Model 3
$\sigma2$		0.578 (0.329-0.998)	0.581 (0.401-0.761)
ICC (%)		15 (9-23)	15 (11-19)
PCV (%)	-	-	≈ 0
Area under ROC			
AU-ROC	0.587	0.699	0.699
Change in AU-ROC	-	0.112	0.000
Model fit			
Bayesian Deviance Information Criterion (BDIC)	30698.93	28474.5	28474.5
Change in BDIC compared with previous model	-	-2224,43	0.07

Variance (σ2); Intra-Class Correlation (ICC); Proportional Change in Variance (PCV); Bayesian Deviance Information Criterion (BDIC)