

# Assessing intimate partner violence in African countries through a model-based composite indicator

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## 1. Intimate partner violence

Violence against women has been recognized to affect all dimensions of women's lives and health, involving victims' both physical and mental conditions and their general well-being. In particular, intimate partner violence (IPV) is defined by the United Nations as a specific behavioural model of relationships, determined by either the current or former male partner perpetrating violence on women (UN, 2022). IPV is identified as either emotional, physical, and/or sexual abuse, each pertaining to one of the domains of the life of the victims.

Recent data show that 33% of ever-married women in Sub-Saharan Africa have survived this form of abuse, coming to the third-highest rate of lifetime IPV all over the world (WHO, 2021).

Many studies on this subject face IPV considering victims' and partners' characteristics, as well as the interplay between contextual and personal ones (Oyediran & Feyisetan, 2017). Gender theory has, indeed, highlighted the possible effects of contextual characteristics on abuse: for example, the ameliorative hypothesis tries to reason that as women's empowerment grows in a country, their victimization decreases, trying to connect gender equality to better living conditions overall for women (Heirigs & Moore, 2017). On the other hand, the backlash hypothesis ties equal standing for men and women to a rapid 'backlash' by men, since empowerment is seen as a threat to the existing patriarchal society (Heirigs & Moore, 2017). Moreover, maltreatment and parental-child relationships are associated with differential risks of the revictimization of children (Meinck *et al.*, 2015; Classen *et al.*, 2005).

Evidence of our previous study (Arcaio *et al.*, 2022) to investigate the determinants of physical, emotional, and sexual abuse, one independent from the other, shows that intergenerational transmission of violence – defined as witnessing parental violence – and revictimization processes – i.e., rape by a man other than her partner, and the number of past abusers in life – turned out to be crucial in predicting IPV itself. Moreover, the intensity of how justified physical violence is by women – the respondents – themselves and the number of control issues exerted by the respondents' current male partners also resulted in a significant risk factor. On the other hand, the partner's high education and higher wealth turned out to be protective factors.

However, to the best of our knowledge, the literature lacks an overall measure of violence suitable for surveys, while the Composite Abuse Scale (Revised) – Short Form (Gilboe *et al.*, 2022) captures IPV predominantly in a clinical setting. On these bases, the theoretical framework and construction of a Structural Equation Model (SEM) are proposed to create a composite indicator of IPV, also used to classify the African countries in the data to check for their levels of IPV.

## 2. Data

The Demographic and Health Survey (DHS) was used to conduct the analysis of intimate partner violence against women by their heterosexual partners. It is a nationally representative household survey, covering over 90 countries and 40 years. In particular, we focused on fifteen countries in Africa in which the module on domestic violence was administered: Angola, Burundi, Cameroon, Chad, Ethiopia, Gabon, Kenya, Liberia, Mali, Malawi, Rwanda, Senegal, Togo, Zambia, and Zimbabwe. Surveys range from 2008 to 2019.

In the survey, a sample of ever-partnered women was selected at random to collect information

on IPV in the households already involved. Respondents are asked about both current and past experiences of violence. The original sample pooled across the 15 countries accounts for over 80,000 women; however, our sample is restricted to almost 40,000 currently partnered women, due to the selection procedure for the domestic violence module in the survey. The respondents are aged 31 years on average ( $SD = 8.15$ ) – in the general survey, the women selected are aged 15-49.

**Table 1. Number of respondents per survey**

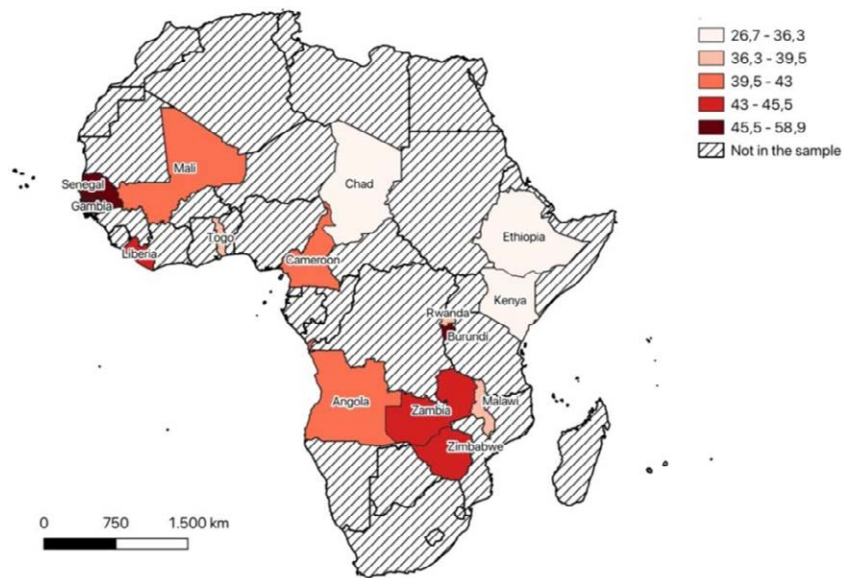
Survey	Years	Number of respondents
Angola	2015-2016	2,263
Burundi	2016-2017	2,189
Cameroon	2018	1,142
Chad	2014-2015	2,563
Ethiopia	2008	3,588
Gambia	2012	1,761
Kenya	2008-2009	1,374
Liberia	2006-2007	1,912
Mali	2012-2013	2,431
Malawi	2015-2016	3,954
Rwanda	2010-2011	1,519
Senegal	2019	2,832
Togo	2013-2014	2,255
Zambia	2018-2019	5,209
Zimbabwe	2015	4,069
Total		39,061

IPV is assessed via three indicators:

- “Physical Violence”, referring to acts of being pushed, shook, slapped, punched, or threatened at gunpoint by the partner;
- “Emotional Violence”, about humiliation, threat with physical harm or insults;
- “Sexual Violence”, indicating forced sexual acts by the respondent’s partner.

Figure 1 shows the percentage of women who have experienced any form of the three types of IPV by their partner in the country of residence. More than 40% of all respondents have experienced at least one form of abuse by their partner, and the country prevalence of IPV varies from 26.8% in Chad to 48.5% in Burundi.

Figure 1 IPV prevalence in the selected countries.



(Source: Authors' production)

### 3. Conceptual framework and methods

This work is the result of a preliminary step to build a composite indicator of intimate partner violence using a Structural Equation Model (Muthén, 1984), based on three latent variables – including IPV. This theoretical framework relies on the results of the previously estimated models that highlight the two dimensions that have an effect on IPV in all of its aspects, i.e., when it's either physical, emotional, or sexual abuse (Arcaio *et al.*, 2022).

As it is known, in SEMs, latent variables are specified as equations in the measurement model, in which a constraint is put on one of the exogenous variables to scale the latent variable. In this model, all the latent variables are built using the reflective approach.

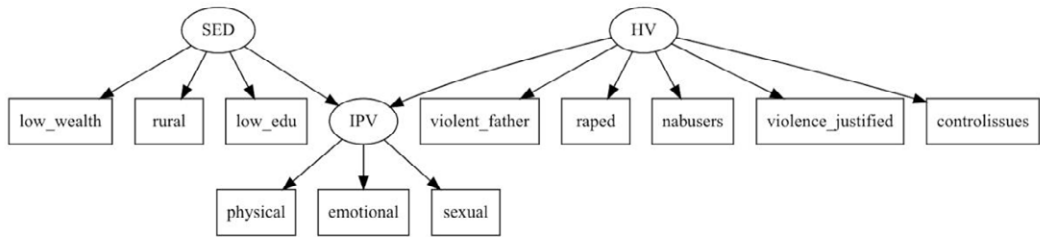
We hypothesize that the two latent dimensions that have an effect on IPV are:

- Socio-economic deprivation (SED), which considers both personal and contextual characteristics – low household wealth (set as constraint), respondent's partner's status as a low-educated individual, and living in a rural area;
- History of violence (HV), determined by the intergenerational transmission of IPV (set as constraint), sexual violence by a man other than the current partner, number of abusers in life, number of justifications women give for physical violence, number of control issues by the partner.

On the other hand, IPV itself as a latent variable is assessed by an equation considering the presence of physical, emotional, and sexual violence by the current partner. Physical violence is used as a constraint to account for the scale of the latent variable.

The structural component of this framework checks for the association between the latent variables as specified above. The latent variables were, indeed, used in a structural model made of one equation, which checks for the socio-economic deprivation of the victims and their history of violence on intimate partner violence. A graphical representation of this model can be found in Figure 2.

Figure 2 Model of the latent variables for the Intimate Partner Violence indicator



(Source: Authors' production)

Statistics were done using R 4.2.0 (R Core Team, 2022), the lavaan (version 0.6-11; Rosseel, Y et al, 2022) and the lavaanPlot (v0.6.2; Lishinski, 2021) packages.

#### 4. Results

What is presented here is the result of a preliminary analysis using a Structural Equation Model (SEM). Indeed, we think that the three components in the measurement model should be further refined. Still, the information given by the literature framework, evidence in the previously estimated models (both examined above), as well as the values of goodness-of-fit tests consent to examine these results, even if from an exploratory point of view. The Chi-Square test returned a  $p - value \approx 0$ , while the Comparative Fit Index (CIF, acceptance threshold  $> 0.9$ ) is equal to 0.926; the Root Mean Square Error of Approximation (RMSEA, acceptance threshold  $< 0.05$ ) and the Standardized Root Mean Square Residual (SRMR, acceptance threshold  $> 0.05$ ) are respectively equal to 0.046 and 0.039. All the tests point to a good fit of the model and all the coefficients in the model have  $p - value \approx 0$ . Thus, we identify an overall measure of violence to define a composite indicator of IPV.

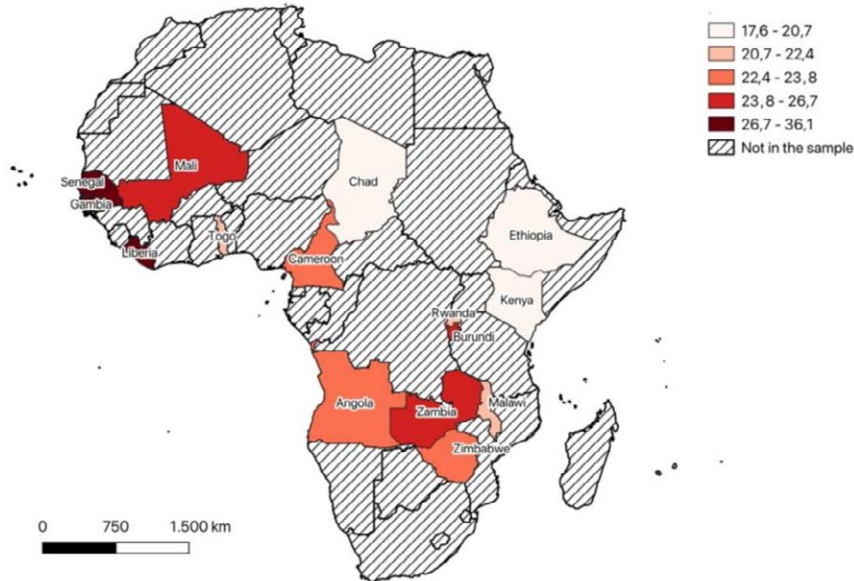
Living in a rural context has the highest standardized loading when it comes to “Socio-economic Deprivation”, while the number of control issues exercised by the partner has the highest loading for “History of Violence”. “Intimate Partner Violence” is most influenced by whether the respondent is a victim of emotional abuse or not.

The relationship between the latent variables, checked by a regression model in the SEM framework, shows that the latent variable “History of violence” (Standardised path coefficient = 0.876) has a greater positive effect on IPV than “Socio-economic Context” (Standardised path coefficient = 0.057).

Finally, a classification of the countries in the sample is built according to the value of the composite indicator of IPV, as to identify which countries are characterized by a higher level of IPV. The estimated factor scores were normalized; thus, the values are presented on a scale going from 0 (minimum levels of IPV) to 100 (maximum levels of IPV), and then the country average is computed. Senegal is the country with the highest average value of IPV, while Ethiopia is the country with the lowest average value of IPV.

All the results are shown in the map in Figure 3.

Figure 3 Map showing the IPV index.



(Source: Authors' production)

The results of this analysis show a strong association between IPV and the history of violence of victims. As stated in the literature, victims of abuse during their childhood or adolescence are more likely to fall into processes of revictimization (Meinck *et al.*, 2015; Classen *et al.*, 2005), making them more vulnerable to intimate partner violence.

When it comes to the latent variables, the standardized loadings of the indicators are examined to check for their correlation with their corresponding latent variable.

- *SED*. The highest standardised loading for SED belongs to the indicator concerning the type of residence, i.e., whether the respondent lives in a rural household: this correlation is equal to 0.774. The correlation between low wealth and SED is 0.588, while the correlation between the respondents' partner's lack of education is equal to 0.473.
- *HV*. The highest correlation for the HV latent variable can be found with number of control issues the partner exercises over the respondent (loading = 0.574). The other indicators don't check for the acceptability threshold of 0.4, with very low correlations.
- *IPV*. Here the highest correlation can be found between IPV and emotional violence, with a high correlation of 0.714. Physical violence is also well-correlated to IPV (St. loading = 0.680), while sexual violence is a bit less-so, whose standard loading is equal to 0.411.

Contextual and personal characteristics, here synthesized with the SED latent variable, although still relevant, matter less than past experiences of violence when it comes to current abuse, with 0.877 standard deviation change in IPV for a standard deviation change in HV. The data does not really support a strong effect of socio-economic deprivation on violence, with a standard deviation change of SED determining a change 0.057 change on IPV.

As for the countries considered in this analysis, it seems like Senegal, Gambia and Liberia require major interventions to fight this phenomenon with respect to the others. However, usual practices of education of women are next to futile in this particular context, where men need to be addressed for a more proactive fight against IPV.

## Conclusions

In summary, we believe that this work introduces some new elements in the study of intimate

partner violence despite the limitations related, among others, to the explorative stage of this research.

First and foremost is the idea of a composite indicator of IPV that considers the full set of relationships between the dimensions involved. The possibility of identifying the countries at greatest risk may be useful in making decisions related to choosing “where” to invest the most, to reduce its intensity.

The knowledge of explanatory variables of the phenomenon of IPV (as a whole) – such as the respondents’ partners’ educational attainment, wealth status, and the history of violence of the victims – allows the identification of those specific dimensions that need action for greater control of the phenomenon.

Both aspects are of considerable importance not only for the territorial context examined in this study but also, more generally, for developed countries, in which, as it is known, the phenomenon is equally relevant.

From a methodological point of view, further development of this study will involve refining the measurement model and the adoption of a multilevel SEM model, with the inclusion of second-level predictors to account for the nature of the data – given that they are drawn from surveys conducted in different countries and years.

However, the nature of the data themselves gives rise to several limitations. Social desirability maims the total reliability of all collected data on intimate partner violence, and these data are not exempt from this issue. Moreover, victims tend to either deny or hide their experience of violence, thus causing an underestimation of the phenomenon of intimate partner violence itself.

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