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Physical, sexual and psychological intimate partner violence and non-partner sexual violence against women and girls: a systematic review protocol for producing global, regional and country estimates

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4 1 Physical, sexual and psychological intimate partner violence and
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6 2 non-partner sexual violence against women and girls: a systematic
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8 3 review protocol for producing global, regional and country estimates
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19 Abstract

20 **Introduction:** In 2013, the World Health Organisation (WHO) published the first global and regional
21 estimates on physical and sexual intimate partner violence (IPV) and non-partner sexual violence
22 (NPSV) based on a systematic review of population-based prevalence studies. In this protocol, we
23 describe a new systematic review for the production of updated estimates for IPV and NPSV for
24 global monitoring of violence against women, including providing the baseline for measuring
25 Sustainable Development Goal to eliminate all forms of violence against women and girls.

26 **Methods and analysis:** The systematic review will update and extend the previous search for
27 population-based surveys (either nationally or sub-nationally representative) conducted among
28 women aged 15+ years that measured the prevalence of physical, sexual, psychological and physical
29 and/or sexual IPV, NPSV or sexual violence by any perpetrator up to December 2019. Data will be
30 extracted separately for all age groups, setting (urban/rural), partnership status (currently
31 partnered/ever-partnered/all women), and recall period (lifetime prevalence/past 12 months; for
32 IPV). Studies will be identified from electronic searches of online databases of EMBASE, MEDLINE,
33 Global Health and PsycInfo. A search of national statistics office homepages will be conducted for
34 each country to identify reports on population-based, national or sub-national studies that include
35 data on IPV or NPSV published outside academic journals. Two reviewers will be involved in quality
36 assessment and data extraction of the review. The review is planned to be updated on a continuous
37 basis. All findings will undergo a country consultation process. It has been registered at Prospero:
38 CRD42017054100

39 **Ethics and dissemination:** Formal ethical approval is not required, as primary data will not be
40 collected. This systematic review will provide a basis and a follow-up tool for global monitoring of the
41 Sustainable Development Goal Target 5.2 on the elimination of all forms of violence against women
42 and girls.

44 Strength and limitations

- 45 • Gold-standard systematic review process followed by country consultation process to verify
46 global and country estimates on intimate partner violence and non-partner sexual violence
- 47 • Multiple international technical advisory meetings to discuss the search procedures, data
48 extraction and analysis plans of the estimates
- 49 • Consensus on definitions and comparable measurements of physical and intimate partner
50 violence
- 51 • Challenges in the comparability of data on non-partner sexual violence measurements due to
52 a lack of global definitions and measurement tools

54 **Keywords:** Violence against women, intimate partner violence, spousal violence, non-partner sexual
55 violence, sexual violence, psychological abuse, psychological partner violence, systematic review,
56 prevalence

Physical, sexual and psychological intimate partner violence and non-partner sexual violence against women and girls: a systematic review protocol for producing global, regional and country estimates

Background

Intimate partner violence and non-partner sexual violence are well recognized as human rights violations and public health problems [1]. In 2013, the World Health Organisation, the London School of Hygiene and Tropical Medicine, and the South African Medical Research Council conducted three systematic reviews to estimate the worldwide prevalence of intimate partner violence, non-partner sexual violence and intimate partner homicide. They estimated that one in three women experienced physical and/or sexual intimate partner violence or non-partner sexual violence in their lifetime; among all women murdered, 38.6 percent were murdered by their intimate partner [2-5]. The review further established associations between intimate partner violence and numerous adverse health outcomes, finding that women experiencing intimate partner violence were twice as likely to report depressive symptoms, nearly twice as likely to have alcohol use disorders, 16% more likely to have a low birthweight baby, and 1.5 times more likely to acquire HIV or another STI, compared to women who had not experienced intimate partner violence [3]. Similar associations were found for non-partner sexual violence and depression and alcohol use disorders [3, 5].

The growing recognition of the high prevalence and significant health and other impacts of intimate partner violence and non-partner sexual violence has contributed to the inclusion of 'the elimination of all forms of violence against women' in the 2030 Agenda for Sustainable Development. The Sustainable Development Goal (SDG) Target 5.2 on the elimination of all forms of violence against all women and girls in the public and private spheres, is monitored using the following indicators:

5.2.1: Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months, by form of violence and by age

5.2.2: Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner in the previous 12 months, by age and place of occurrence.

This article presents the protocol of the systematic review to generate the baseline data for producing estimates that will contribute to the global monitoring of violence against women, including for the SDG process.

Methods/Design

This review builds on and updates the methodology used for the previous systematic reviews on the global prevalence of intimate partner violence and non-partner sexual violence. It will be expanded to include evidence from studies directly received from national statistics offices, the Demographic and Health Surveys and those identified through additional internet searches. A data extraction form and quality assessment form used for the 2013 prevalence review data extraction to collate data from selected studies will also be adapted and expanded to include psychological intimate partner

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3 96 violence, non-partner sexual violence and sexual violence by any partner. The Preferred Reporting
4 97 Items for Systematic Review and Meta-Analysis (PRISMA) guidelines are used as the template for
5 98 reporting the present review. For the present protocol, the PRISMA statement for Protocols
6 99 (PRISMA-P) was used for its reporting (see online Appendix 1) [6]. This review was registered in the
7 100 PROSPERO International Prospective Register of systematic reviews, registration number
8 101 CRD42017054100 on the 2nd of January 2017.

102 **Aims of the review**

13
14 103 To collect all available data on the prevalence of physical and/or sexual intimate partner violence,
15 104 psychological violence by an intimate partner, non-partner sexual violence and sexual violence by
16 105 anyone, which can be used to measure advances in addressing violence against women and girls.

106 **Specific review questions are:**

- 21 107 1. What is the prevalence of physical and/or sexual intimate partner violence in women 15 years
22 108 and older, lifetime and in the last 12 months?
- 23 109 2. What is the prevalence of physical intimate partner violence only, lifetime and in the last 12
24 110 months?
- 25 111 3. What is the prevalence of sexual intimate partner violence only, lifetime and in the last 12
26 112 months?
- 27 113 4. What is the prevalence of psychological intimate partner violence, lifetime and in the last 12
28 114 months and how was it measured?
- 29 115 5. What is the prevalence of sexual violence by perpetrator(s) other than a partner only, lifetime
30 116 and in the last 12 months?
- 31 117 6. What is the prevalence of sexual violence by any perpetrator, lifetime and in the last 12 months?
- 32 118 7. How does the prevalence of intimate partner violence and non-partner sexual violence vary by
33 119 age group, rural and urban settings over time, lifetime and in the last 12 months?

120 **Criteria for considering studies for this review**

121 ***Inclusion***

- 122 • Type of studies: Nationally or sub-nationally representative population-based studies (cross-
123 sectional or cohort studies).
- 124 • Type of participants: Studies of women aged 15+.
- 125 • Type of outcome: Studies measuring the prevalence of psychological, physical, sexual and
126 physical and/or sexual intimate partner violence, non-partner sexual violence and/or sexual
127 violence by any perpetrator (or studies providing enough data to allow computing these
128 estimates if not directly calculated or reported).
- 129 • Only acts based measures of psychological, physical and/or sexual intimate partner violence,
130 non-partner violence and sexual violence by any partner will be included. The authors note that
131 there is convergence on the definitions and standardized measures of physical and sexual
132 intimate partner violence across the world. Psychological intimate partner violence and non-
133 partner sexual violence, however, are less well defined internationally and this systematic review
134 therefore uses the authors' definition when extracting these data and note the different
135 definitions used and the diversity of acts covered to define them.

136 **Exclusion**

- 137 • Type of studies: case reports, case series, letters, reviews, policy reports, commentaries,
138 editorials, and administrative data including police statistics on reported crimes
- 139 • Types of participants: studies in subgroups of participants that might not be generalizable to the
140 whole population, such as clinical, school or prison samples or studies among pregnant women,
141 same sex partners, or police statistics of reported crimes.
- 142 • Outcome type: Estimates that combine prevalence of physical and/or sexual intimate partner
143 violence with other forms of violence, e.g. psychological abuse or studies that did not use a
144 “gold-standard” measure of intimate partner violence defined here as measures asking about a
145 range of specific acts of experience of intimate partner violence because these avoid
146 participants’ subjective classification of experiences as “violence” or not.
- 147 • Minimum reporting criteria: Studies not giving sufficient detail for extrapolation or imputation,
148 e.g. concrete sample size, confidence intervals or standard error.
- 149 • Duplicate reports and/or publications of the same data: the less comprehensive/complete and
150 up-to-date version will be excluded if the same data is reported on. Studies of different years or
151 from different regions identified will all be captured.
- 152 • Results will only be extracted if they are representative for a single country, province or town or
153 a geographically restricted area within a country.

154 **Search strategy for identifying relevant studies**

155 A comprehensive and exhaustive search of the Ovid based databases Medline, Embase, Global
156 Health and PsychInfo will be conducted on a regular basis, capturing the years 1989 to 2018 and
157 thereafter to identify all relevant articles that contain data on the prevalence of psychological,
158 physical and/or sexual intimate partner violence and non-partner sexual violence and sexual violence
159 by any perpetrator regardless of the language of publication. The search strategy of relevant terms is
160 detailed in Table 1. Both text words and medical subject heading terms will be used. This is a global
161 study. Any study that is population-based and fits the inclusion criteria will be included and no
162 restrictions in terms of country names or languages will be applied.

163 **Searching of other data sources**

164 Due to the increasing number of violence against women surveys conducted by local and national
165 governments and the regular waves of the Demographic and Health Surveys with a dedicated
166 module on ‘domestic violence’ which includes intimate partner violence and non-partner sexual
167 violence, manual searches will also be conducted in DHS and other survey reports in a consistent
168 manner in addition to signing up for the regular DHS updates. We will search the webpages of
169 governmental statistical and/or other offices of each individual country for reports that include data
170 on the prevalence of intimate partner violence or non-partner sexual violence. Each report will be
171 traced back to its source to ensure they meet the inclusion criteria, e.g. national representative
172 survey on violence against women. Data would be excluded if it is administrative data, including
173 police statistics on reported crimes, as these represent only the sub-set of few women who formally
174 report violence and therefore are known to greatly underestimate the ‘true’ population prevalence.

175 **Selection of studies for inclusion in the review**

176 Two independent reviewers will use Endnote X7 to independently identify articles and sequentially
177 screen their titles and abstracts for eligibility. Full-texts of articles deemed potentially eligible will be

178 retrieved. Further, two independent reviewers will independently assess the full-text of each study
 179 for eligibility, and consensually retain studies to be included. Dr García-Moreno will resolve
 180 disagreements. A screening guide clearly stating the inclusion and exclusion criteria will be used to
 181 ensure that the selection criteria are reliably applied by two review authors. Eligible studies in
 182 languages other than English or French will be translated using native speakers or, if unavailable,
 183 Google Translate and considered for inclusion.

184 **Data extraction and management**

185 Data will be extracted into an excel sheet independently by two individual researchers and
 186 divergences will be checked by a third extractor. In addition, 20% of the data entries will be checked
 187 by a third reviewer. Data extraction will furthermore be checked through cross-tabulation of similar
 188 fields before data analysis. Data extraction fields will include:

- 189 1. Study identifier: Study title, author and publication year
- 190 2. Geographical information: Region, country and iso3 codes.
- 191 3. Study characteristics: year of beginning of data collection and year of end of data collection,
 192 study design (cross-sectional, longitudinal), setting (urban, rural, sub-national, national).
- 193 4. Population characteristics: Denominator information (All women sampled, ever-partnered/ ever-
 194 married women or currently partnered/currently-married women), and age range of the sample.
- 195 5. Information on violence underlying indicator: type of violence (physical, sexual,
 196 emotional/psychological, physical and/or sexual), type of violence by perpetrator (physical
 197 intimate partner violence, sexual intimate partner violence, psychological intimate partner
 198 violence, physical and/or sexual intimate partner violence, sexual violence non-partner, any
 199 sexual violence),
- 200 6. Who was asked about violence (all women versus ever partnered vs currently partnered) , asked
 201 about intimate partner violence by current partner (current partner only or any partner), asked
 202 about violence by spouse (violence by spouse only versus violence by a spouse or partner),
 203 timing of violence (past year, past two years, ever), severe physical or sexual violence or not
 204 (definition by study).
- 205 7. Estimate: prevalence point estimate of specific form of violence, type of confidence interval,
 206 lower and upper confidence interval, standard error, denominator, numerator.
- 207 8. Key quality indicators: Study specified interviewer training on administering questions on
 208 violence against women, specialized violence against women survey or a module in a larger
 209 survey and whether study was national or subnational.

210 The quality of studies will be based on the following criteria, and these will be used as adjustment
 211 factors in the proposed analyses:

- 212 1. whether the study was national or sub-national, because prevalence may differ in areas within a
 213 country
- 214 2. the type and time of violence measured (whether intimate partner violence was operationalised
 215 as physical only, sexual only, past-year only, or severe only) because the prevalence of these
 216 forms of violence is lower than the combined lifetime experience of physical and/or sexual
 217 intimate partner violence.
- 218 3. Whether studies reported that interviewers were trained to ask about violence in a sensitive way
 219 as this increases participants willingness to disclose
- 220 4. whether studies were specifically designed to measure intimate partner violence or sexual
 221 violence prevalence

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3 222 5. if studies included only currently-partnered women versus ever-partnered women, as estimates
4 223 of intimate partner violence exposure in currently partnered women are likely to be lower than
5 224 in ever-partnered women, particularly for lifetime prevalence, as they would not include women
6 225 who have been in previously abusive relationships but not in a relationship at the time of the
7 226 survey
8 227 6. if questions pertained to violence from the current partner and/or most recent partner only or
9 228 from any partner.
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11 229 7. if questions pertained to violence from a spouse only or from any intimate partner.
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14 230 **Proposed data analysis**

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16 231 The data from this systematic review will be used to estimate the national, global and regional
17 232 prevalence of physical and/or sexual intimate partner violence, in the past 12 months and lifetime for
18 233 women aged 15 years and above. For non-partner sexual violence and any sexual violence only global
19 234 and regional estimates for lifetime prevalence will be produced.

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22 235 For the pre-processing stage, in what we assume will be rare instances, where study's authors do not
23 236 report information on the survey sample size, it will be estimated from the standard error or
24 237 confidence intervals. If both are missing we will conservatively impute sample sizes corresponding to
25 238 the lowest tercile of the overall distribution of survey samples sizes. If the overall survey sample size
26 239 of a specific study is available but not the age-specific denominators of the prevalence estimates, we
27 240 will impute them by distributing this overall sample size proportionally to the age-specific size of the
28 241 female population reported in the *United Nations World Population Prospect* [7].

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31 242 For the analysis stage we will use a Bayesian meta-regression framework. This multilevel modelling
32 243 approach will use survey-, country-, and region-specific random effects to pool observations from
33 244 different sources and improve accuracy of estimates by drawing on information from across units.
34 245 Regions will be defined based on the *Global Burden of Diseases* (GBD) classification. Both nationally
35 246 and sub-nationally representative studies will be included. We will assume for the latter that they
36 247 provide estimates that they could inherently be more variable than nationally representative studies.
37 248 Additionally, this Bayesian regression model will consider heterogeneous age groups (using an age-
38 249 standardizing approach), account for country-specific age and time trends (using splines), and adjust
39 250 for key survey differences (denominator, type of violence, etc. – depending on the outcomes)
40 251 through covariate modelling (with the adjustment calculated outside of the main model to avoid
41 252 compositional bias). A joint model will be estimated for lifetime and past-year intimate partner
42 253 violence, imposing the constraint that all age-specific past-year intimate partner violence estimates
43 254 (for a particular country, at a particular time) should be lower or equal to those estimated for lifetime
44 255 intimate partner violence.

45 256 **Patient and public involvement**

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48 257 No patient involved.
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50 258 **Discussion**

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53 259 This systematic review will provide critical data for the global monitoring of progress to eliminate
54 260 violence against women. It will help to track the effectiveness of efforts made by governments over
55 261 the coming decade in preventing and addressing intimate partner violence and non-partner sexual
56 262 violence. The findings will directly feed into the global monitoring, including of the SDG Target 5.2
57 263 indicators.
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3 264 Over the past years, governments have made commitments to increase the collection of data and
4 265 research on violence against women, for example in the WHO Global Plan of Action [8], to strengthen
5 266 the role of the health system in addressing violence, in particular against women and against
6 267 children. This includes conducting population-based studies to measure the prevalence and nature of
7 268 violence against women, in particular intimate partner violence and sexual violence by non-partners.
8 269 This is contributing to an expanding and robust evidence base that will allow, tracking of changes
9 270 over time. This systematic review will also contribute to the identification of challenges with the
10 271 instruments and measures being used, especially for the forms of violence for which there is less
11 272 international agreement on measurement - psychological intimate partner violence and non-partner
12 273 violence. It will also identify issues with how data is being reported.

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16 274 The goal of this review and its future iterations is to contribute key epidemiological information on
17 275 the magnitude and burden of violence faced by women around the world and how these prevalence
18 276 patterns may differ by country, region, age, and rural/urban contexts. These data should inform the
19 277 development and implementation of effective policies and programmes to prevent and respond to
20 278 violence against women.

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23 279 The estimates based on the findings of this study will be used by governments, published in WHO/UN
24 280 reports and as scientific papers in a peer-reviewed journals, and disseminated at relevant fora. The
25 281 review will be updated regularly and the estimates will be updated approximately every five years to
26 282 continue to monitor progress made in addressing violence against women.

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29 30 284 **List of abbreviations**

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32 285 PRISMA: Preferred Reporting Items for Systematic Review and Meta-Analysis

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287 **Review status**

288 Data extraction is ongoing as several key data points are still missing, especially on non-partner
289 sexual violence. Existing extracted data is also currently undergoing a country consultation process,
290 which is also adding new estimates. The methods for data analysis and for elaboration of the
291 estimates have been tested and discussed by a technical advisory group (TAG) established by WHO
292 and composed of independent experts. The TAG advises the UN Inter-agency Working Group on
293 VAW data and estimates convened by WHO.

294 **Declarations**

295 Consent for publication: We have mostly used data publicly available or received consent for
296 publication from national Statistical Offices for data missing in reports.

297 **Ethics approval and consent to participate**

298 Not applicable

299 **Availability of data and materials**

300 The datasets generated and/or analysed during the current study will be made available by the WHO
301 on reasonable request.

302

303 **Competing interests**

304 The authors declare that they have no competing interests

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309 Department for international Development, through the UNWomen-WHO Joint Programme on
310 Strengthening Data Collection. The funder had no role in the design of the review.

311 **Authors' contributions**

312 **Heidi Stöckl** adapted the original search strategy and study design to align it with the discussions on
313 global monitoring of VAW, including measurement of the indicators related to SDG Target 5.2. and
314 developed the inclusion of psychological abuse and any sexual violence into the search and analysis,
315 expanded the search strategy to capture data and reports outside the peer-reviewed literature,
316 participated in deciding on the analysis strategy, and drafted the current manuscript.

317 **LynnMarie Sardinha** inputted into the adapted search strategy, study design and data extraction
318 sheet, refined inclusion and exclusion criteria and quality indicators and has been involved in all
319 decisions regarding the current search protocol and this manuscript.

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3 320 **Mathieu Maheu-Giroux** contributed to the establishment the list of key covariates and study
4 321 characteristics to collect, methods to check the database for integrity and consistency, and conceived
5 322 the data analysis plan.

6
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8 323 **Sarah Rachel Meyer** inputted into the adapted search strategy, study design and data extraction
9 324 sheet, refined inclusion and exclusion criteria and quality indicators and has been involved in all
10 325 decisions regarding the current search protocol and this manuscript.

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13 326 **Claudia García-Moreno** co-conceived the original search strategy and study design, inputted into the
14 327 data extraction sheet, inclusion and exclusion criteria and quality indicators, has been involved in all
15 328 decisions regarding the current search protocol and this manuscript and provides technical oversight
16 329 to the whole project. She is the guarantor of the review.

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19 330 All authors read and approved the final manuscript.

20
21 331 **Acknowledgements**

22
23 332 This database updates and builds on an earlier similar effort for the WHO, 2013 estimates on the
24 333 prevalence of IPV and NPSV which was led by Charlotte Watts at the LSHTM and Claudia García-
25 334 Moreno of WHO. Karen Devries designed and oversaw the earlier systematic searches for intimate
26 335 partner violence and Naeema Abrahams of the South African Medical Research Council for non-
27 336 partner violence.

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30 337 Authors should obtain permission to acknowledge from all those mentioned in the
31 338 Acknowledgements section.

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ew only

340 Table 1: Search terms and strategy for the Ovid based databases Medline,
 341 PsychInfo, Embase and Global Health

1. meta.ab.
2. synthesis.ab.
3. literature.ab.
4. published.ab.
5. extraction.ab.
6. search.ab.
7. medline.ab.
8. selection.ab.
9. sources.ab.
10. trials.ab.
11. review.ab.
12. articles.ab.
13. reviewed.ab.
14. english.ab.
15. language.ab.
16. randomized.hw.
17. trials.hw.
18. controlled.hw.
19. meta-analysis.pt.
20. review.pt.
21. or/1–20
22. epidemiologic studies/
23. exp case control studies/
24. exp cohort studies/
25. case control.tw.
26. (cohort adj (study or studies)).tw.
27. cohort analy\$.tw.
28. (follow up adj (study or studies)).tw.
29. (observational adj (study or studies)).tw.
30. longitudinal.tw.
31. retrospective.tw.
32. cross sectional studies.tw.
33. cross sectional studies/
34. or/22–33
35. Animals/
36. Humans/
37. 35 not (35 and 36)
38. comment.pt.
39. letter.pt.
40. editorial.pt.
41. or/37–40
42. domestic violence/ or partner violence/ or spouse abuse/ or spouse violence/ or domestic abuse/ or partner abuse.mp. [mp = title, original title, abstract, name of substance word, subject heading word]
43. *battered women/
44. (intimate adj4 partner adj4 violence).tw.
45. (intimate adj4 partner adj4 abuse).tw.
46. (intimate adj4 partner adj4 victimi*).tw.
47. domestic abuse.tw.
48. spou\$ abuse.tw.
49. dating violence.tw.

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4 50. sexual abuse.tw.
5 51. [(partner or relationship or wom\$ or domestic or spous*) adj4 (abus* or violen* or
6 victimi* or batter*)].mp.
7 52. dating violence.tw.
8 53. sexual violence.tw.
9 54. rape.tw.
10 55. prevalence.tw.
11 56. cross-sectional stud\$.mp. [mp = title, original title, abstract, name of substance word,
12 subject heading word]
13 57. survey.mp. [mp = title, original title, abstract, name of substance word, subject heading
14 word]
15 58. health survey\$.mp. [mp = title, original title, abstract, name of substance word, subject
16 heading word]
17 59. or/42-54
18 60. or/55-58
19 61. 59 and 60
20 62. 61 not 41
21 63. 62 and (21 or 34)
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PRISMA-P 2015 Checklist

This checklist has been adapted for use with systematic review protocol submissions to BioMed Central journals from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 4:1

An Editorial from the Editors-in-Chief of *Systematic Reviews* details why this checklist was adapted – Moher D, Stewart L & Shekelle P: Implementing PRISMA-P: recommendations for prospective authors. *Systematic Reviews* 2016 5:15

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	72
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input checked="" type="checkbox"/>	<input type="checkbox"/>	93, 154
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input checked="" type="checkbox"/>	<input type="checkbox"/>	162
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	75
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	373
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	155
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	367
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	367
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	367
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	126

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	170
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	185
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	154
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	402
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	248
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	248
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	248
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	253
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	253
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	274
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Not applicable

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294s

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BMJ Open

Physical, sexual and psychological intimate partner violence and non-partner sexual violence against women and girls: a systematic review protocol for producing global, regional and country estimates

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6 2 non-partner sexual violence against women and girls: a systematic
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8 3 review protocol for producing global, regional and country estimates
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19 Abstract

20 **Introduction:** In 2013, the World Health Organisation (WHO) published the first global and regional
21 estimates on physical and sexual intimate partner violence (IPV) and non-partner sexual violence
22 (NPSV) based on a systematic review of population-based prevalence studies. In this protocol, we
23 describe a new systematic review for the production of updated estimates for IPV and NPSV for
24 global monitoring of violence against women, including providing the baseline for measuring
25 Sustainable Development Goal to eliminate all forms of violence against women and girls.

26 **Methods and analysis:** The systematic review will update and extend the previous search for
27 population-based surveys (either nationally or sub-nationally representative) conducted among
28 women aged 15+ years that measured the prevalence of physical, sexual, psychological and physical
29 and/or sexual IPV, NPSV or sexual violence by any perpetrator up to December 2019. Data will be
30 extracted separately for all age groups, setting (urban/rural), partnership status (currently
31 partnered/ever-partnered/all women), and recall period (lifetime prevalence/past 12 months; for
32 IPV). Studies will be identified from electronic searches of online databases of EMBASE, MEDLINE,
33 Global Health and PsycInfo. A search of national statistics office homepages will be conducted for
34 each country to identify reports on population-based, national or sub-national studies that include
35 data on IPV or NPSV published outside academic journals. Two reviewers will be involved in quality
36 assessment and data extraction of the review. The review is planned to be updated on a continuous
37 basis. All findings will undergo a country consultation process. It has been registered at Prospero:
38 CRD42017054100

39 **Ethics and dissemination:** Formal ethical approval is not required, as primary data will not be
40 collected. This systematic review will provide a basis and a follow-up tool for global monitoring of the
41 Sustainable Development Goal Target 5.2 on the elimination of all forms of violence against women
42 and girls.

44 Strength and limitations

- 45 • Gold-standard systematic review process followed by country consultation process to verify
46 global and country estimates on intimate partner violence and non-partner sexual violence
- 47 • Multiple international technical advisory meetings to discuss the search procedures, data
48 extraction and analysis plans of the estimates
- 49 • Consensus on definitions and comparable measurements of physical and intimate partner
50 violence
- 51 • Challenges in the comparability of data on non-partner sexual violence measurements due to
52 a lack of global definitions and measurement tools

54 **Keywords:** Violence against women, intimate partner violence, spousal violence, non-partner sexual
55 violence, sexual violence, psychological abuse, psychological partner violence, systematic review,
56 prevalence

Physical, sexual and psychological intimate partner violence and non-partner sexual violence against women and girls: a systematic review protocol for producing global, regional and country estimates

Background

Intimate partner violence and non-partner sexual violence are well recognized as human rights violations and public health problems [1]. In 2013, the World Health Organisation, the London School of Hygiene and Tropical Medicine, and the South African Medical Research Council conducted three systematic reviews to estimate the worldwide prevalence of intimate partner violence, non-partner sexual violence and intimate partner homicide. They estimated that one in three women experienced physical and/or sexual intimate partner violence or non-partner sexual violence in their lifetime; among all women murdered, 38.6 percent were murdered by their intimate partner [2-5]. The review further established associations between intimate partner violence and numerous adverse health outcomes, finding that women experiencing intimate partner violence were twice as likely to report depressive symptoms, nearly twice as likely to have alcohol use disorders, 16% more likely to have a low birthweight baby, and 1.5 times more likely to acquire HIV or another STI, compared to women who had not experienced intimate partner violence [3]. Similar associations were found for non-partner sexual violence and depression and alcohol use disorders [3, 5].

The growing recognition of the high prevalence and significant health and other impacts of intimate partner violence and non-partner sexual violence has contributed to the inclusion of 'the elimination of all forms of violence against women' in the 2030 Agenda for Sustainable Development. The Sustainable Development Goal (SDG) Target 5.2 on the elimination of all forms of violence against all women and girls in the public and private spheres, is monitored using the following indicators:

5.2.1: Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months, by form of violence and by age

5.2.2: Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner in the previous 12 months, by age and place of occurrence.

This article presents the protocol of the systematic review to generate the baseline data for producing estimates that will contribute to the global monitoring of violence against women, including for the SDG process.

Methods/Design

This review builds on and updates the methodology used for the previous systematic reviews on the global prevalence of intimate partner violence and non-partner sexual violence. It will be expanded to include evidence from studies directly received from national statistics offices, the Demographic and Health Surveys and those identified through additional internet searches. A data extraction form and quality assessment form used for the 2013 prevalence review data extraction to collate data from selected studies will also be adapted and expanded to include psychological intimate partner

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3 96 violence, non-partner sexual violence and sexual violence by any partner. The Preferred Reporting
4 97 Items for Systematic Review and Meta-Analysis (PRISMA) guidelines are used as the template for
5 98 reporting the present review. For the present protocol, the PRISMA statement for Protocols
6 99 (PRISMA-P) was used for its reporting (see online Appendix 1) [6]. This review was registered in the
7 100 PROSPERO International Prospective Register of systematic reviews, registration number
8 101 CRD42017054100 on the 2nd of January 2017.

102 **Aims of the review**

103 To collect all available data on the prevalence of physical and/or sexual intimate partner violence,
104 104 psychological violence by an intimate partner, non-partner sexual violence and sexual violence by
105 105 anyone, which can be used to measure advances in addressing violence against women and girls.

106 **Specific review questions are:**

- 107 1. What is the prevalence of physical and/or sexual intimate partner violence in women 15 years
108 and older, lifetime and in the last 12 months?
- 109 2. What is the prevalence of physical intimate partner violence only, lifetime and in the last 12
110 months?
- 111 3. What is the prevalence of sexual intimate partner violence only, lifetime and in the last 12
112 months?
- 113 4. What is the prevalence of psychological intimate partner violence, lifetime and in the last 12
114 months and how was it measured?
- 115 5. What is the prevalence of sexual violence by perpetrator(s) other than a partner only, lifetime
116 and in the last 12 months?
- 117 6. What is the prevalence of sexual violence by any perpetrator, lifetime and in the last 12 months?
- 118 7. How does the prevalence of intimate partner violence and non-partner sexual violence vary by
119 age group, rural and urban settings over time, lifetime and in the last 12 months?

120 **Criteria for considering studies for this review**

121 ***Inclusion***

- 122 • Type of studies: Nationally or sub-nationally representative population-based studies (cross-
123 sectional or cohort studies).
- 124 • Type of participants: Studies of women aged 15+.
- 125 • Type of outcome: Studies measuring the prevalence of psychological, physical, sexual and
126 physical and/or sexual intimate partner violence, non-partner sexual violence and/or sexual
127 violence by any perpetrator (or studies providing enough data to allow computing these
128 estimates if not directly calculated or reported).
- 129 • Only acts based measures of psychological, physical and/or sexual intimate partner violence,
130 non-partner violence and sexual violence by any partner will be included. The authors note that
131 there is convergence on the definitions and standardized measures of physical and sexual
132 intimate partner violence across the world. Psychological intimate partner violence and non-
133 partner sexual violence, however, are less well defined internationally and this systematic review
134 therefore uses the authors' definition when extracting these data and note the different
135 definitions used and the diversity of acts covered to define them.

136 **Exclusion**

- 137 • Type of studies: case reports, case series, letters, reviews, policy reports, commentaries,
138 editorials, and administrative data including police statistics on reported crimes
- 139 • Types of participants: studies in subgroups of participants that might not be generalizable to the
140 whole population, such as clinical, school or prison samples or studies among pregnant women,
141 same sex partners, or police statistics of reported crimes.
- 142 • Outcome type: Estimates that combine prevalence of physical and/or sexual intimate partner
143 violence with other forms of violence, e.g. psychological abuse or studies that did not use a
144 “gold-standard” measure of intimate partner violence defined here as measures asking about a
145 range of specific acts of experience of intimate partner violence because these avoid
146 participants’ subjective classification of experiences as “violence” or not.
- 147 • Minimum reporting criteria: Studies not giving sufficient detail for extrapolation or imputation,
148 e.g. concrete sample size, confidence intervals or standard error.
- 149 • Duplicate reports and/or publications of the same data: the less comprehensive/complete and
150 up-to-date version will be excluded if the same data is reported on. Studies of different years or
151 from different regions identified will all be captured.
- 152 • Results will only be extracted if they are representative for a single country, province or town or
153 a geographically restricted area within a country.

154 **Search strategy for identifying relevant studies**

155 A comprehensive and exhaustive search of the Ovid based databases Medline, Embase, Global
156 Health and PsychInfo will be conducted on a regular basis, capturing the years 1989 to 2018 and
157 thereafter to identify all relevant articles that contain data on the prevalence of psychological,
158 physical and/or sexual intimate partner violence and non-partner sexual violence and sexual violence
159 by any perpetrator regardless of the language of publication. The search strategy of relevant terms is
160 detailed in Table 1. Both text words and medical subject heading terms will be used. This is a global
161 study. Any study that is population-based and fits the inclusion criteria will be included and no
162 restrictions in terms of country names or languages will be applied.

163 **Searching of other data sources**

164 Due to the increasing number of violence against women surveys conducted by local and national
165 governments and the regular waves of the Demographic and Health Surveys with a dedicated
166 module on ‘domestic violence’ which includes intimate partner violence and non-partner sexual
167 violence, manual searches will also be conducted in DHS and other survey reports in a consistent
168 manner in addition to signing up for the regular DHS updates [7, 8]. We will search the webpages of
169 governmental statistical and/or other offices of each individual country for reports that include data
170 on the prevalence of intimate partner violence or non-partner sexual violence. Each report will be
171 traced back to its source to ensure they meet the inclusion criteria, e.g. national representative
172 survey on violence against women. Data would be excluded if it is administrative data, including
173 police statistics on reported crimes, as these represent only the sub-set of few women who formally
174 report violence and therefore are known to greatly underestimate the ‘true’ population prevalence.

175 **Selection of studies for inclusion in the review**

176 Two independent reviewers will use Endnote X7 to independently identify articles and sequentially
177 screen their titles and abstracts for eligibility. Full-texts of articles deemed potentially eligible will be

178 retrieved. Further, two independent reviewers will independently assess the full-text of each study
 179 for eligibility, and consensually retain studies to be included. Dr García-Moreno will resolve
 180 disagreements. A screening guide clearly stating the inclusion and exclusion criteria will be used to
 181 ensure that the selection criteria are reliably applied by two review authors. Eligible studies in
 182 languages other than English or French will be translated using native speakers or, if unavailable,
 183 Google Translate and considered for inclusion.

184 **Data extraction and management**

185 Data will be extracted into an excel sheet independently by two individual researchers and
 186 divergences will be checked by a third extractor. In addition, 20% of the data entries will be checked
 187 by a third reviewer. Data extraction will furthermore be checked through cross-tabulation of similar
 188 fields before data analysis. Data extraction fields will include:

- 189 1. Study identifier: Study title, author and publication year
- 190 2. Geographical information: Region, country and iso3 codes.
- 191 3. Study characteristics: year of beginning of data collection and year of end of data collection,
 192 study design (cross-sectional, longitudinal), setting (urban, rural, sub-national, national).
- 193 4. Population characteristics: Denominator information (All women sampled, ever-partnered/ ever-
 194 married women or currently partnered/currently-married women), and age range of the sample.
- 195 5. Information on violence underlying indicator: type of violence (physical, sexual,
 196 emotional/psychological, physical and/or sexual), type of violence by perpetrator (physical
 197 intimate partner violence, sexual intimate partner violence, psychological intimate partner
 198 violence, physical and/or sexual intimate partner violence, sexual violence non-partner, any
 199 sexual violence),
- 200 6. Who was asked about violence (all women versus ever partnered vs currently partnered) , asked
 201 about intimate partner violence by current partner (current partner only or any partner), asked
 202 about violence by spouse (violence by spouse only versus violence by a spouse or partner),
 203 timing of violence (past year, past two years, ever), severe physical or sexual violence or not
 204 (definition by study).
- 205 7. Estimate: prevalence point estimate of specific form of violence, type of confidence interval,
 206 lower and upper confidence interval, standard error, denominator, numerator.
- 207 8. Key quality indicators: Study specified interviewer training on administering questions on
 208 violence against women, specialized violence against women survey or a module in a larger
 209 survey and whether study was national or subnational.

210 The quality of studies will be based on the following criteria, and these will be used as adjustment
 211 factors in the proposed analyses:

- 212 1. whether the study was national or sub-national, because prevalence may differ in areas within a
 213 country
- 214 2. the type and time of violence measured (whether intimate partner violence was operationalised
 215 as physical only, sexual only, past-year only, or severe only) because the prevalence of these
 216 forms of violence is lower than the combined lifetime experience of physical and/or sexual
 217 intimate partner violence.
- 218 3. Whether studies reported that interviewers were trained to ask about violence in a sensitive way
 219 as this increases participants willingness to disclose
- 220 4. whether studies were specifically designed to measure intimate partner violence or sexual
 221 violence prevalence

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3 222 5. if studies included only currently-partnered women versus ever-partnered women, as estimates
4 223 of intimate partner violence exposure in currently partnered women are likely to be lower than
5 224 in ever-partnered women, particularly for lifetime prevalence, as they would not include women
6 225 who have been in previously abusive relationships but not in a relationship at the time of the
7 226 survey
8 227 6. if questions pertained to violence from the current partner and/or most recent partner only or
9 228 from any partner.
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11 229 7. if questions pertained to violence from a spouse only or from any intimate partner.
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14 230 **Proposed data analysis**

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16 231 The data from this systematic review will be used to estimate the national, global and regional
17 232 prevalence of physical and/or sexual intimate partner violence, in the past 12 months and lifetime for
18 233 women aged 15 years and above. For non-partner sexual violence and any sexual violence only global
19 234 and regional estimates for lifetime prevalence will be produced.

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22 235 For the pre-processing stage, in what we assume will be rare instances, where study's authors do not
23 236 report information on the survey sample size, it will be estimated from the standard error or
24 237 confidence intervals. If both are missing we will conservatively impute sample sizes corresponding to
25 238 the lowest tercile of the overall distribution of survey samples sizes. If the overall survey sample size
26 239 of a specific study is available but not the age-specific denominators of the prevalence estimates, we
27 240 will impute them by distributing this overall sample size proportionally to the age-specific size of the
28 241 female population reported in the *United Nations World Population Prospect* [9].

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31 242 For the analysis stage we will use a Bayesian meta-regression framework. This multilevel modelling
32 243 approach will use survey-, country-, and region-specific random effects to pool observations from
33 244 different sources and improve accuracy of estimates by drawing on information from across units.
34 245 The chosen model structure is based on similar meta-regressions of health indicators [10-19].
35 246 Regions will be defined based on the *Global Burden of Diseases* (GBD) classification. Regions will
36 247 group countries in 21 mutually exclusive regions, which are situated in seven broad regions, based
37 248 on the similarities of their epidemiological profiles [3, 20]. Both nationally and sub-nationally
38 249 representative studies will be included. We will assume for the latter that they provide estimates
39 250 that could inherently be more variable than nationally representative studies. The advantage of the
40 251 proposed multilevel modelling approach is that it will allow us to pool observations together from
41 252 different sources and to "borrow strength" across units. In case of a country with only one sub-
42 253 national survey with a small sample size, for example, an empirical observation from a similar
43 254 country in the same region can improve its prevalence estimate's accuracy and precision. We will
44 255 also use pooling, the sharing of information between observations to improve the calculation of
45 256 global estimates. Through the use of multilevel models, this will be determined empirically by the
46 257 data and not arbitrarily by the user [21].

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51 258 Additionally, this Bayesian regression model will consider heterogeneous age groups (using an age-
52 259 standardizing approach), account for country-specific age and time trends (using splines), and adjust
53 260 for key survey differences (denominator, type of violence, etc. – depending on the outcomes)
54 261 through covariate modelling (with the adjustment calculated outside of the main model to avoid
55 262 compositional bias). A joint model will be estimated for lifetime and past-year intimate partner
56 263 violence, imposing the constraint that all age-specific past-year intimate partner violence estimates
57 264 (for a particular country, at a particular time) should be lower or equal to those estimated for lifetime
58 265 intimate partner violence.
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267 **Country consultation process**

268 Estimates generated in this review will undergo a country consultation process, as endorsed by the
269 WHO Executive Board in 2001 through resolution (EB.107.R8) “to ensure that each Member State is
270 consulted on the best data to be used” for international estimation and reporting purposes[22]. In
271 our particular case, the country consultation process was designed to enable countries to review
272 information gathered from secondary data sources (i.e. surveys/studies) that met the inclusion
273 criteria; ensure the inclusion of any additional surveys/studies that meet these inclusion criteria, but
274 which may not have been previously identified; and familiarize Member States with the statistical
275 modelling approach used to derive the country, regional and global estimates. Focal points
276 nominated by the countries received a summary of statistical methods, translated into all six United
277 Nation official languages and their country profile for their critical review and feedback. The country
278 profile outlined available data sources for the estimates, population-based surveys/studies that were
279 excluded due to not meeting the inclusion criteria, covariates for adjustment, model fits and
280 modelled national estimates. The country consultation process also allowed countries to suggest
281 additional surveys/studies for review, provide previously missed data and reports from unpublished
282 surveys/studies to be reviewed and to express their interest in conducting dedicated violence against
283 women surveys in their countries.

284 **Patient and public involvement**

285 No patient involved.

286 **Discussion**

287 This systematic review will provide critical data for the global monitoring of progress to eliminate
288 violence against women. It will help to track the effectiveness of efforts made by governments over
289 the coming decade in preventing and addressing intimate partner violence and non-partner sexual
290 violence. The findings will directly feed into the global monitoring, including of the SDG Target 5.2
291 indicators.

292 Over the past years, governments have made commitments to increase the collection of data and
293 research on violence against women, for example in the WHO Global Plan of Action [23], to
294 strengthen the role of the health system in addressing violence, in particular against women and
295 against children. This includes conducting population-based studies to measure the prevalence and
296 nature of violence against women, in particular intimate partner violence and sexual violence by non-
297 partners. This is contributing to an expanding and robust evidence base that will allow, tracking of
298 changes over time. This systematic review will also contribute to the identification of challenges with
299 the instruments and measures being used, especially for the forms of violence for which is there is
300 less international agreement on measurement - psychological intimate partner violence and non-
301 partner violence. It will also identify issues with how data is being reported.

302 The goal of this review and its future iterations is to contribute key epidemiological information on
303 the magnitude and burden of violence faced by women around the world and how these prevalence
304 patterns may differ by country, region, age, and rural/urban contexts. These data should inform the
305 development and implementation of effective policies and programmes to prevent and respond to
306 violence against women.

307 The estimates based on the findings of this study will be used by governments, published in WHO/UN
308 reports and as scientific papers in a peer-reviewed journals, and disseminated at relevant fora. The
309 review will be updated regularly and the estimates will be updated approximately every five years to
310 continue to monitor progress made in addressing violence against women.

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312 **List of abbreviations**

313 PRISMA: Preferred Reporting Items for Systematic Review and Meta-Analysis

314 TAG: Technical Advisory Group

For peer review only

315 **Review status**

316 Data extraction is ongoing as several key data points are still missing, especially on non-partner
317 sexual violence. Existing extracted data is also currently undergoing a country consultation process,
318 which is also adding new estimates. The methods for data analysis and for elaboration of the
319 estimates have been tested and discussed by a technical advisory group (TAG) established by WHO
320 and composed of independent experts. The TAG advises the UN Inter-agency Working Group on
321 VAW data and estimates convened by WHO.

322 **Declarations**

323 Consent for publication: We have mostly used data publicly available or received consent for
324 publication from national Statistical Offices for data missing in reports.

325 **Ethics approval and consent to participate**

326 Not applicable

327 **Availability of data and materials**

328 This is a study protocol. The data used for the systematic review will also be made publicly available
329 once the systematic review will be published.

330 **Competing interests**

331 The authors declare that they have no competing interests

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338 applicable.

339 **Authors' contributions**

340 **Heidi Stöckl** adapted the original search strategy and study design to align it with the discussions on
341 global monitoring of VAW, including measurement of the indicators related to SDG Target 5.2. and
342 developed the inclusion of psychological abuse and any sexual violence into the search and analysis,
343 expanded the search strategy to capture data and reports outside the peer-reviewed literature,
344 participated in deciding on the analysis strategy, and drafted the current manuscript.

345 **LynnMarie Sardinha** inputted into the adapted search strategy, study design and data extraction
346 sheet, refined inclusion and exclusion criteria and quality indicators and has been involved in all
347 decisions regarding the current search protocol and this manuscript.

348 **Mathieu Maheu-Giroux** contributed to the establishment the list of key covariates and study
349 characteristics to collect, methods to check the database for integrity and consistency, and conceived
350 the data analysis plan.

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3 351 **Sarah Rachel Meyer** inputted into the adapted search strategy, study design and data extraction
4 352 sheet, refined inclusion and exclusion criteria and quality indicators and has been involved in all
5 353 decisions regarding the current search protocol and this manuscript.
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8 354 **Claudia García-Moreno** co-conceived the original search strategy and study design, inputted into the
9 355 data extraction sheet, inclusion and exclusion criteria and quality indicators, has been involved in all
10 356 decisions regarding the current search protocol and this manuscript and provides technical oversight
11 357 to the whole project. She is the guarantor of the review.
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14 358 All authors read and approved the final manuscript.
15

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17
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21 363 partner violence and Naeema Abrahams of the South African Medical Research Council for non-
22 364 partner violence.
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26 365 Authors should obtain permission to acknowledge from all those mentioned in the
27 366 Acknowledgements section.
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Review only

368 Table 1: Search terms and strategy for the Ovid based databases Medline,
 369 PsychInfo, Embase and Global Health

1.	meta.ab.
2.	synthesis.ab.
3.	literature.ab.
4.	published.ab.
5.	extraction.ab.
6.	search.ab.
7.	medline.ab.
8.	selection.ab.
9.	sources.ab.
10.	trials.ab.
11.	review.ab.
12.	articles.ab.
13.	reviewed.ab.
14.	english.ab.
15.	language.ab.
16.	randomized.hw.
17.	trials.hw.
18.	controlled.hw.
19.	meta-analysis.pt.
20.	review.pt.
21.	or/1–20
22.	epidemiologic studies/
23.	exp case control studies/
24.	exp cohort studies/
25.	case control.tw.
26.	(cohort adj (study or studies)).tw.
27.	cohort analy\$.tw.
28.	(follow up adj (study or studies)).tw.
29.	(observational adj (study or studies)).tw.
30.	longitudinal.tw.
31.	retrospective.tw.
32.	cross sectional studies.tw.
33.	cross sectional studies/
34.	or/22–33
35.	Animals/
36.	Humans/
37.	35 not (35 and 36)
38.	comment.pt.
39.	letter.pt.
40.	editorial.pt.
41.	or/37–40
42.	domestic violence/ or partner violence/ or spouse abuse/ or spouse violence/ or domestic abuse/ or partner abuse.mp. [mp = title, original title, abstract, name of substance word, subject heading word]
43.	*battered women/
44.	(intimate adj4 partner adj4 violence).tw.
45.	(intimate adj4 partner adj4 abuse).tw.
46.	(intimate adj4 partner adj4 victimi*).tw.
47.	domestic abuse.tw.
48.	spou\$ abuse.tw.
49.	dating violence.tw.

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4 50. sexual abuse.tw.
5 51. [(partner or relationship or wom\$ or domestic or spous*) adj4 (abus* or violen* or
6 victimi* or batter*)].mp.
7 52. dating violence.tw.
8 53. sexual violence.tw.
9 54. rape.tw.
10 55. prevalence.tw.
11 56. cross-sectional stud\$.mp. [mp = title, original title, abstract, name of substance word,
12 subject heading word]
13 57. survey.mp. [mp = title, original title, abstract, name of substance word, subject heading
14 word]
15 58. health survey\$.mp. [mp = title, original title, abstract, name of substance word, subject
16 heading word]
17 59. or/42-54
18 60. or/55-58
19 61. 59 and 60
20 62. 61 not 41
21 63. 62 and (21 or 34)
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PRISMA-P 2015 Checklist

This checklist has been adapted for use with systematic review protocol submissions to BioMed Central journals from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 4:1

An Editorial from the Editors-in-Chief of *Systematic Reviews* details why this checklist was adapted - Moher D, Stewart L & Shekelle P: Implementing PRISMA-P: recommendations for prospective authors. *Systematic Reviews* 2016 5:15

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	72
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input checked="" type="checkbox"/>	<input type="checkbox"/>	93, 154
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input checked="" type="checkbox"/>	<input type="checkbox"/>	162
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	75
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	373
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	155
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	367
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	367
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	367
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	126

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	170
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	185
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	154
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	402
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	248
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	248
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	248
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	253
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	253
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	274
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294

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Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Not applicable
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294s

For peer review only

BMJ Open

Physical, sexual and psychological intimate partner violence and non-partner sexual violence against women and girls: a systematic review protocol for producing global, regional and country estimates

Journal:	<i>BMJ Open</i>
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Date Submitted by the Author:	17-Mar-2021
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Primary Subject Heading:	Global health
Secondary Subject Heading:	Public health, Epidemiology
Keywords:	PUBLIC HEALTH, EPIDEMIOLOGY, STATISTICS & RESEARCH METHODS

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19 Abstract

20 **Introduction:** In 2013, the World Health Organisation (WHO) published the first global and regional
21 estimates on physical and sexual intimate partner violence (IPV) and non-partner sexual violence
22 (NPSV) based on a systematic review of population-based prevalence studies. In this protocol, we
23 describe a new systematic review for the production of updated estimates for IPV and NPSV for
24 global monitoring of violence against women, including providing the baseline for measuring
25 Sustainable Development Goal to eliminate all forms of violence against women and girls.

26 **Methods and analysis:** The systematic review will update and extend the previous search for
27 population-based surveys (either nationally or sub-nationally representative) conducted among
28 women aged 15+ years that measured the prevalence of physical, sexual, psychological and physical
29 and/or sexual IPV, NPSV or sexual violence by any perpetrator up to December 2019. Data will be
30 extracted separately for all age groups, setting (urban/rural), partnership status (currently
31 partnered/ever-partnered/all women), and recall period (lifetime prevalence/past 12 months; for
32 IPV). Studies will be identified from electronic searches of online databases of EMBASE, MEDLINE,
33 Global Health and PsycInfo. A search of national statistics office homepages will be conducted for
34 each country to identify reports on population-based, national or sub-national studies that include
35 data on IPV or NPSV published outside academic journals. Two reviewers will be involved in quality
36 assessment and data extraction of the review. The review is planned to be updated on a continuous
37 basis. All findings will undergo a country consultation process. It has been registered at Prospero:
38 CRD42017054100

39 **Ethics and dissemination:** Formal ethical approval is not required, as primary data will not be
40 collected. This systematic review will provide a basis and a follow-up tool for global monitoring of the
41 Sustainable Development Goal Target 5.2 on the elimination of all forms of violence against women
42 and girls.

44 Strength and limitations

- 45 • Gold-standard systematic review process followed by country consultation process to verify
46 global and country estimates on intimate partner violence and non-partner sexual violence
- 47 • Multiple international technical advisory meetings to discuss the search procedures, data
48 extraction and analysis plans of the estimates
- 49 • Consensus on definitions and comparable measurements of physical and intimate partner
50 violence
- 51 • Challenges in the comparability of data on non-partner sexual violence measurements due to
52 a lack of global definitions and measurement tools

54 **Keywords:** Violence against women, intimate partner violence, spousal violence, non-partner sexual
55 violence, sexual violence, psychological abuse, psychological partner violence, systematic review,
56 prevalence

Physical, sexual and psychological intimate partner violence and non-partner sexual violence against women and girls: a systematic review protocol for producing global, regional and country estimates

Background

Intimate partner violence and non-partner sexual violence are well recognized as human rights violations and public health problems [1]. In 2013, the World Health Organisation, the London School of Hygiene and Tropical Medicine, and the South African Medical Research Council conducted three systematic reviews to estimate the worldwide prevalence of intimate partner violence, non-partner sexual violence and intimate partner homicide. They estimated that one in three women experienced physical and/or sexual intimate partner violence or non-partner sexual violence in their lifetime; among all women murdered, 38.6 percent were murdered by their intimate partner [2-5]. The review further established associations between intimate partner violence and numerous adverse health outcomes, finding that women experiencing intimate partner violence were twice as likely to report depressive symptoms, nearly twice as likely to have alcohol use disorders, 16% more likely to have a low birthweight baby, and 1.5 times more likely to acquire HIV or another STI, compared to women who had not experienced intimate partner violence [3]. Similar associations were found for non-partner sexual violence and depression and alcohol use disorders [3, 5].

The growing recognition of the high prevalence and significant health and other impacts of intimate partner violence and non-partner sexual violence has contributed to the inclusion of 'the elimination of all forms of violence against women' in the 2030 Agenda for Sustainable Development. The Sustainable Development Goal (SDG) Target 5.2 on the elimination of all forms of violence against all women and girls in the public and private spheres, is monitored using the following indicators:

5.2.1: Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months, by form of violence and by age

5.2.2: Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner in the previous 12 months, by age and place of occurrence.

This article presents the protocol of the systematic review to generate the baseline data for producing estimates that will contribute to the global monitoring of violence against women, including for the SDG process.

Methods/Design

This review builds on and updates the methodology used for the previous systematic reviews on the global prevalence of intimate partner violence and non-partner sexual violence. It will be expanded to include evidence from studies directly received from national statistics offices, the Demographic and Health Surveys and those identified through additional internet searches. A data extraction form and quality assessment form used for the 2013 prevalence review data extraction to collate data from selected studies will also be adapted and expanded to include psychological intimate partner

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3 96 violence, non-partner sexual violence and sexual violence by any partner. The Preferred Reporting
4 97 Items for Systematic Review and Meta-Analysis (PRISMA) guidelines are used as the template for
5 98 reporting the present review. For the present protocol, the PRISMA statement for Protocols
6 99 (PRISMA-P) was used for its reporting (see online Appendix 1) [6]. This review was registered in the
7 100 PROSPERO International Prospective Register of systematic reviews, registration number
8 101 CRD42017054100 on the 2nd of January 2017.

102 **Aims of the review**

103 To collect all available data on the prevalence of physical and/or sexual intimate partner violence,
104 psychological violence by an intimate partner, non-partner sexual violence and sexual violence by
105 anyone, which can be used to measure advances in addressing violence against women and girls.

106 **Specific review questions are:**

- 107 1. What is the prevalence of physical and/or sexual intimate partner violence in women 15 years
108 and older, lifetime and in the last 12 months?
- 109 2. What is the prevalence of physical intimate partner violence only, lifetime and in the last 12
110 months?
- 111 3. What is the prevalence of sexual intimate partner violence only, lifetime and in the last 12
112 months?
- 113 4. What is the prevalence of psychological intimate partner violence, lifetime and in the last 12
114 months and how was it measured?
- 115 5. What is the prevalence of sexual violence by perpetrator(s) other than a partner only, lifetime
116 and in the last 12 months?
- 117 6. What is the prevalence of sexual violence by any perpetrator, lifetime and in the last 12 months?
- 118 7. How does the prevalence of intimate partner violence and non-partner sexual violence vary by
119 age group, rural and urban settings over time, lifetime and in the last 12 months?

120 **Criteria for considering studies for this review**

121 ***Inclusion***

- 122 • Type of studies: Nationally or sub-nationally representative population-based studies (cross-
123 sectional or cohort studies).
- 124 • Type of participants: Studies of women aged 15+.
- 125 • Type of outcome: Studies measuring the prevalence of psychological, physical, sexual and
126 physical and/or sexual intimate partner violence, non-partner sexual violence and/or sexual
127 violence by any perpetrator (or studies providing enough data to allow computing these
128 estimates if not directly calculated or reported).
- 129 • Only acts based measures of psychological, physical and/or sexual intimate partner violence,
130 non-partner violence and sexual violence by any partner will be included. The authors note that
131 there is convergence on the definitions and standardized measures of physical and sexual
132 intimate partner violence across the world. Psychological intimate partner violence and non-
133 partner sexual violence, however, are less well defined internationally and this systematic review
134 therefore uses the authors' definition when extracting these data and note the different
135 definitions used and the diversity of acts covered to define them.

136 **Exclusion**

- 137 • Type of studies: case reports, case series, letters, reviews, policy reports, commentaries,
138 editorials, and administrative data including police statistics on reported crimes
- 139 • Types of participants: studies in subgroups of participants that might not be generalizable to the
140 whole population, such as clinical, school or prison samples or studies among pregnant women,
141 same sex partners, or police statistics of reported crimes.
- 142 • Outcome type: Estimates that combine prevalence of physical and/or sexual intimate partner
143 violence with other forms of violence, e.g. psychological abuse or studies that did not use a
144 “gold-standard” measure of intimate partner violence defined here as measures asking about a
145 range of specific acts of experience of intimate partner violence because these avoid
146 participants’ subjective classification of experiences as “violence” or not.
- 147 • Minimum reporting criteria: Studies not giving sufficient detail for extrapolation or imputation,
148 e.g. concrete sample size, confidence intervals or standard error.
- 149 • Duplicate reports and/or publications of the same data: the less comprehensive/complete and
150 up-to-date version will be excluded if the same data is reported on. Studies of different years or
151 from different regions identified will all be captured.
- 152 • Results will only be extracted if they are representative for a single country, province or town or
153 a geographically restricted area within a country.

154 **Search strategy for identifying relevant studies**

155 A comprehensive and exhaustive search of the Ovid based databases Medline, Embase, Global
156 Health and PsychInfo will be conducted on a regular basis, capturing the years 1989 to 2018 and
157 thereafter to identify all relevant articles that contain data on the prevalence of psychological,
158 physical and/or sexual intimate partner violence and non-partner sexual violence and sexual violence
159 by any perpetrator regardless of the language of publication. The search strategy of relevant terms is
160 detailed in Table 1. Both text words and medical subject heading terms will be used. This is a global
161 study. Any study that is population-based and fits the inclusion criteria will be included and no
162 restrictions in terms of country names or languages will be applied.

163 **Searching of other data sources**

164 Due to the increasing number of violence against women surveys conducted by local and national
165 governments and the regular waves of the Demographic and Health Surveys with a dedicated
166 module on ‘domestic violence’ which includes intimate partner violence and non-partner sexual
167 violence, manual searches will also be conducted in DHS and other survey reports in a consistent
168 manner in addition to signing up for the regular DHS updates [7, 8]. We will search the webpages of
169 governmental statistical and/or other offices of each individual country for reports that include data
170 on the prevalence of intimate partner violence or non-partner sexual violence. Each report will be
171 traced back to its source to ensure they meet the inclusion criteria, e.g. national representative
172 survey on violence against women. Data would be excluded if it is administrative data, including
173 police statistics on reported crimes, as these represent only the sub-set of few women who formally
174 report violence and therefore are known to greatly underestimate the ‘true’ population prevalence.

175 **Selection of studies for inclusion in the review**

176 Two independent reviewers will use Endnote X7 to independently identify articles and sequentially
177 screen their titles and abstracts for eligibility. Full-texts of articles deemed potentially eligible will be

178 retrieved. Further, two independent reviewers will independently assess the full-text of each study
 179 for eligibility, and consensually retain studies to be included. Dr García-Moreno will resolve
 180 disagreements. A screening guide clearly stating the inclusion and exclusion criteria will be used to
 181 ensure that the selection criteria are reliably applied by two review authors. Eligible studies in
 182 languages other than English or French will be translated using native speakers or, if unavailable,
 183 Google Translate and considered for inclusion.

184 **Data extraction and management**

185 Data will be extracted into an excel sheet independently by two individual researchers and
 186 divergences will be checked by a third extractor. In addition, 20% of the data entries will be checked
 187 by a third reviewer. Data extraction will furthermore be checked through cross-tabulation of similar
 188 fields before data analysis. Data extraction fields will include:

- 189 1. Study identifier: Study title, author and publication year
- 190 2. Geographical information: Region, country and iso3 codes.
- 191 3. Study characteristics: year of beginning of data collection and year of end of data collection,
 192 study design (cross-sectional, longitudinal), setting (urban, rural, sub-national, national).
- 193 4. Population characteristics: Denominator information (All women sampled, ever-partnered/ ever-
 194 married women or currently partnered/currently-married women), and age range of the sample.
- 195 5. Information on violence underlying indicator: type of violence (physical, sexual,
 196 emotional/psychological, physical and/or sexual), type of violence by perpetrator (physical
 197 intimate partner violence, sexual intimate partner violence, psychological intimate partner
 198 violence, physical and/or sexual intimate partner violence, sexual violence non-partner, any
 199 sexual violence),
- 200 6. Who was asked about violence (all women versus ever partnered vs currently partnered) , asked
 201 about intimate partner violence by current partner (current partner only or any partner), asked
 202 about violence by spouse (violence by spouse only versus violence by a spouse or partner),
 203 timing of violence (past year, past two years, ever), severe physical or sexual violence or not
 204 (definition by study).
- 205 7. Estimate: prevalence point estimate of specific form of violence, type of confidence interval,
 206 lower and upper confidence interval, standard error, denominator, numerator.
- 207 8. Key quality indicators: Study specified interviewer training on administering questions on
 208 violence against women, specialized violence against women survey or a module in a larger
 209 survey and whether study was national or subnational.

210 The quality of studies will be based on the following criteria, and these will be used as adjustment
 211 factors in the proposed analyses:

- 212 1. whether the study was national or sub-national, because prevalence may differ in areas within a
 213 country
- 214 2. the type and time of violence measured (whether intimate partner violence was operationalised
 215 as physical only, sexual only, past-year only, or severe only) because the prevalence of these
 216 forms of violence is lower than the combined lifetime experience of physical and/or sexual
 217 intimate partner violence.
- 218 3. Whether studies reported that interviewers were trained to ask about violence in a sensitive way
 219 as this increases participants willingness to disclose
- 220 4. whether studies were specifically designed to measure intimate partner violence or sexual
 221 violence prevalence

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3 222 5. if studies included only currently-partnered women versus ever-partnered women, as estimates
4 223 of intimate partner violence exposure in currently partnered women are likely to be lower than
5 224 in ever-partnered women, particularly for lifetime prevalence, as they would not include women
6 225 who have been in previously abusive relationships but not in a relationship at the time of the
7 226 survey
8 227 6. if questions pertained to violence from the current partner and/or most recent partner only or
9 228 from any partner.
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11 229 7. if questions pertained to violence from a spouse only or from any intimate partner.
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14 230 **Proposed data analysis**

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16 231 The data from this systematic review will be used to estimate the national, global and regional
17 232 prevalence of physical and/or sexual intimate partner violence, in the past 12 months and lifetime for
18 233 women aged 15 years and above. For non-partner sexual violence and any sexual violence only global
19 234 and regional estimates for lifetime prevalence will be produced.

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22 235 For the pre-processing stage, in what we assume will be rare instances, where study's authors do not
23 236 report information on the survey sample size, it will be estimated from the standard error or
24 237 confidence intervals. If both are missing we will conservatively impute sample sizes corresponding to
25 238 the lowest tercile of the overall distribution of survey samples sizes. If the overall survey sample size
26 239 of a specific study is available but not the age-specific denominators of the prevalence estimates, we
27 240 will impute them by distributing this overall sample size proportionally to the age-specific size of the
28 241 female population reported in the *United Nations World Population Prospect* [9].

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31 242 For the analysis stage we will use a Bayesian meta-regression framework. This multilevel modelling
32 243 approach will use survey-, country-, and region-specific random effects to pool observations from
33 244 different sources and improve accuracy of estimates by drawing on information from across units.
34 245 The chosen model structure is based on similar meta-regressions of health indicators [10-19].
35 246 Regions will be defined based on the *Global Burden of Diseases* (GBD) classification. Regions will
36 247 group countries in 21 mutually exclusive regions, which are situated in seven broad regions, based
37 248 on the similarities of their epidemiological profiles [3, 20]. Both nationally and sub-nationally
38 249 representative studies will be included. We will assume for the latter that they provide estimates
39 250 that could inherently be more variable than nationally representative studies. The advantage of the
40 251 proposed multilevel modelling approach is that it will allow us to pool observations together from
41 252 different sources and to "borrow strength" across units. In case of a country with only one sub-
42 253 national survey with a small sample size, for example, an empirical observation from a similar
43 254 country in the same region can improve its prevalence estimate's accuracy and precision. We will
44 255 also use pooling, the sharing of information between observations to improve the calculation of
45 256 global estimates. Through the use of multilevel models, this will be determined empirically by the
46 257 data and not arbitrarily by the user [21].

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51 258 Additionally, this Bayesian regression model will consider heterogeneous age groups (using an age-
52 259 standardizing approach), account for country-specific age and time trends (using splines), and adjust
53 260 for key survey differences (denominator, type of violence, etc. – depending on the outcomes)
54 261 through covariate modelling (with the adjustment calculated outside of the main model to avoid
55 262 compositional bias). A joint model will be estimated for lifetime and past-year intimate partner
56 263 violence, imposing the constraint that all age-specific past-year intimate partner violence estimates
57 264 (for a particular country, at a particular time) should be lower or equal to those estimated for lifetime
58 265 intimate partner violence.
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268 **Country consultation process**

269 Estimates generated in this review will undergo a country consultation process, as endorsed by the
270 WHO Executive Board in 2001 through resolution (EB.107.R8) “to ensure that each Member State is
271 consulted on the best data to be used” for international estimation and reporting purposes[22]. In
272 our particular case, the country consultation process was designed to enable countries to review
273 information gathered from secondary data sources (i.e. surveys/studies) that met the inclusion
274 criteria; ensure the inclusion of any additional surveys/studies that meet these inclusion criteria, but
275 which may not have been previously identified; and familiarize Member States with the statistical
276 modelling approach used to derive the country, regional and global estimates. Focal points
277 nominated by the countries received a summary of statistical methods, translated into all six United
278 Nation official languages and their country profile for their critical review and feedback. The country
279 profile outlined available data sources for the estimates, population-based surveys/studies that were
280 excluded due to not meeting the inclusion criteria, covariates for adjustment, model fits and
281 modelled national estimates. The country consultation process also allowed countries to suggest
282 additional surveys/studies for review, provide previously missed data and reports from unpublished
283 surveys/studies to be reviewed and to express their interest in conducting dedicated violence against
284 women surveys in their countries.

285 **Patient and public involvement**

286 No patient involved.

287 **Ethics and dissemination**

288 Formal ethical approval is not required, as primary data will not be collected. This systematic review
289 will provide a basis and a follow-up tool for global monitoring of the Sustainable Development Goal
290 Target 5.2 on the elimination of all forms of violence against women and girls.

291

292 **Discussion**

293 This systematic review will provide critical data for the global monitoring of progress to eliminate
294 violence against women. It will help to track the effectiveness of efforts made by governments over
295 the coming decade in preventing and addressing intimate partner violence and non-partner sexual
296 violence. The findings will directly feed into the global monitoring, including of the SDG Target 5.2
297 indicators.

298 Over the past years, governments have made commitments to increase the collection of data and
299 research on violence against women, for example in the WHO Global Plan of Action [23], to
300 strengthen the role of the health system in addressing violence, in particular against women and
301 against children. This includes conducting population-based studies to measure the prevalence and
302 nature of violence against women, in particular intimate partner violence and sexual violence by non-
303 partners. This is contributing to an expanding and robust evidence base that will allow, tracking of
304 changes over time. This systematic review will also contribute to the identification of challenges with
305 the instruments and measures being used, especially for the forms of violence for which is there is
306 less international agreement on measurement - psychological intimate partner violence and non-
307 partner violence. It will also identify issues with how data is being reported.

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3 308 The goal of this review and its future iterations is to contribute key epidemiological information on
4 309 the magnitude and burden of violence faced by women around the world and how these prevalence
5 310 patterns may differ by country, region, age, and rural/urban contexts. These data should inform the
6 311 development and implementation of effective policies and programmes to prevent and respond to
7 312 violence against women.
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10 313 The estimates based on the findings of this study will be used by governments, published in WHO/UN
11 314 reports and as scientific papers in a peer-reviewed journals, and disseminated at relevant fora. The
12 315 review will be updated regularly and the estimates will be updated approximately every five years to
13 316 continue to monitor progress made in addressing violence against women.
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17 318 **List of abbreviations**

19 319 PRISMA: Preferred Reporting Items for Systematic Review and Meta-Analysis

20 320 TAG: Technical Advisory Group
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321 **Review status**

322 Data extraction is ongoing as several key data points are still missing, especially on non-partner
323 sexual violence. Existing extracted data is also currently undergoing a country consultation process,
324 which is also adding new estimates. The methods for data analysis and for elaboration of the
325 estimates have been tested and discussed by a technical advisory group (TAG) established by WHO
326 and composed of independent experts. The TAG advises the UN Inter-agency Working Group on
327 VAW data and estimates convened by WHO.

328 **Declarations**

329 Consent for publication: We have mostly used data publicly available or received consent for
330 publication from national Statistical Offices for data missing in reports.

331 **Availability of data and materials**

332 This is a study protocol. The data used for the systematic review will also be made publicly available
333 once the systematic review will be published.

334 **Competing interests**

335 There are no competing interests for any author.

336 **Funding**

337 This work received funding from the Department for international Development, through the UN
338 Women-WHO Joint Programme on Strengthening Data Collection and the UNDP-UNFPA-UNICEF-
339 WHO-World Bank Special Programme of Research, Development and Research Training in Human
340 Reproduction (HRP), a cosponsored programme executed by the World Health Organization (WHO).
341 The funders had no role in the design of the review. Grand number: Not applicable.

342 **Authors' contributions**

343 **Heidi Stöckl** adapted the original search strategy and study design to align it with the discussions on
344 global monitoring of VAW, including measurement of the indicators related to SDG Target 5.2. and
345 developed the inclusion of psychological abuse and any sexual violence into the search and analysis,
346 expanded the search strategy to capture data and reports outside the peer-reviewed literature,
347 participated in deciding on the analysis strategy, and drafted the current manuscript.

348 **LynnMarie Sardinha** inputted into the adapted search strategy, study design and data extraction
349 sheet, refined inclusion and exclusion criteria and quality indicators and has been involved in all
350 decisions regarding the current search protocol and this manuscript.

351 **Mathieu Maheu-Giroux** contributed to the establishment the list of key covariates and study
352 characteristics to collect, methods to check the database for integrity and consistency, and conceived
353 the data analysis plan.

354 **Sarah Rachel Meyer** inputted into the adapted search strategy, study design and data extraction
355 sheet, refined inclusion and exclusion criteria and quality indicators and has been involved in all
356 decisions regarding the current search protocol and this manuscript.

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3 357 **Claudia García-Moreno** co-conceived the original search strategy and study design, inputted into the
4 358 data extraction sheet, inclusion and exclusion criteria and quality indicators, has been involved in all
5 359 decisions regarding the current search protocol and this manuscript and provides technical oversight
6 360 to the whole project. She is the guarantor of the review.
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9 361 All authors read and approved the final manuscript.
10

11 362 **Acknowledgements**

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14 363 This database updates and builds on an earlier similar effort for the WHO, 2013 estimates on the
15 364 prevalence of IPV and NPSV which was led by Charlotte Watts at the LSHTM and Claudia García-
16 365 Moreno of WHO. Karen Devries designed and oversaw the earlier systematic searches for intimate
17 366 partner violence and Naeema Abrahams of the South African Medical Research Council for non-
18 367 partner violence.
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21 368 Authors should obtain permission to acknowledge from all those mentioned in the
22 369 Acknowledgements section.
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For peer review only

371 Table 1: Search terms and strategy for the Ovid based databases Medline,
 372 PsychInfo, Embase and Global Health

1. meta.ab.
2. synthesis.ab.
3. literature.ab.
4. published.ab.
5. extraction.ab.
6. search.ab.
7. medline.ab.
8. selection.ab.
9. sources.ab.
10. trials.ab.
11. review.ab.
12. articles.ab.
13. reviewed.ab.
14. english.ab.
15. language.ab.
16. randomized.hw.
17. trials.hw.
18. controlled.hw.
19. meta-analysis.pt.
20. review.pt.
21. or/1–20
22. epidemiologic studies/
23. exp case control studies/
24. exp cohort studies/
25. case control.tw.
26. (cohort adj (study or studies)).tw.
27. cohort analy\$.tw.
28. (follow up adj (study or studies)).tw.
29. (observational adj (study or studies)).tw.
30. longitudinal.tw.
31. retrospective.tw.
32. cross sectional studies.tw.
33. cross sectional studies/
34. or/22–33
35. Animals/
36. Humans/
37. 35 not (35 and 36)
38. comment.pt.
39. letter.pt.
40. editorial.pt.
41. or/37–40
42. domestic violence/ or partner violence/ or spouse abuse/ or spouse violence/ or domestic abuse/ or partner abuse.mp. [mp = title, original title, abstract, name of substance word, subject heading word]
43. *battered women/
44. (intimate adj4 partner adj4 violence).tw.
45. (intimate adj4 partner adj4 abuse).tw.
46. (intimate adj4 partner adj4 victimi*).tw.
47. domestic abuse.tw.
48. spou\$ abuse.tw.
49. dating violence.tw.

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4 50. sexual abuse.tw.
5 51. [(partner or relationship or wom\$ or domestic or spous*) adj4 (abus* or violen* or
6 victimi* or batter*)].mp.
7 52. dating violence.tw.
8 53. sexual violence.tw.
9 54. rape.tw.
10 55. prevalence.tw.
11 56. cross-sectional stud\$.mp. [mp = title, original title, abstract, name of substance word,
12 subject heading word]
13 57. survey.mp. [mp = title, original title, abstract, name of substance word, subject heading
14 word]
15 58. health survey\$.mp. [mp = title, original title, abstract, name of substance word, subject
16 heading word]
17 59. or/42-54
18 60. or/55-58
19 61. 59 and 60
20 62. 61 not 41
21 63. 62 and (21 or 34)
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374 **Ethics approval and consent to participate**

375 Not applicable

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PRISMA-P 2015 Checklist

This checklist has been adapted for use with systematic review protocol submissions to BioMed Central journals from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 4:1

An Editorial from the Editors-in-Chief of *Systematic Reviews* details why this checklist was adapted - Moher D, Stewart L & Shekelle P: Implementing PRISMA-P: recommendations for prospective authors. *Systematic Reviews* 2016 5:15

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	72
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input checked="" type="checkbox"/>	<input type="checkbox"/>	93, 154
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input checked="" type="checkbox"/>	<input type="checkbox"/>	162
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	75
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	373
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	155
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	367
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	367
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	367
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	126

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	170
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	185
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	154
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	402
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	248
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	248
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	248
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	253
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	253
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	274
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Not applicable
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294s