Annex 4. Covariates included in regression models

In this analysis, we sought to include a range of studies using various definitions and methodologies. We used meta-regression to correct for differences in definitions and study methods as much as possible. For each set of meta-regressions below, we describe which covariates were fit for each model and give an example of STATA 14 code used to fit these models. We do not present a table with regression coefficients and model fit statistics because a separate model was run for each age, sex, and specific form of violence (meaning the total number of models we would need to present would be in the region of 200).

4.0   Physical and emotional violence from household members

For these meta regressions, all data was drawn from the MICS and DHS (which uses the MICS survey module). These surveys utilized very similar definitions and methodological characteristics, and thus we have not adjusted for any covariates in these models. Here is an example of STATA code used to fit a meta-regression model to describe the prevalence of emotional violence by household members in 2-year-old girls:

xi, noomit: metareg prevt i.WHOregion if form=="emo" & perpsg=="Family" & sex=="girls" & age==2 , wsse(sep) noconstant

Where: Prevt= prevalence estimate %, WHOregion = WHO region, form= form of violence, perpsg= perpetrator type, sex=sex of victim, age = age of victim in years, sep = standard error %.

Code used for emotional violence:

```
 1. forvalues a= 2/14{
 2. set more off
 3. cd "H:\02 know violence\meta analysis\regions"
 4. use  emofamgirls.dta, clear
 5. drop if proxy==0
 6. drop if age!=`a'
 7. xi, noomit: metareg prevt  i.WHOregion  if form=="emo" & perpsg=="Family"  & sex=="girls" &
age==`a' , wsse(sep) noconstant
 8. sort  WHOregion
 9. gen first=1 if WHOregion!=WHOregion[_n-1]
10. drop if first!=1
11. predict  emofamgirls
12. predict se_est, stdp
13. gen LL=emofamgirls-1.96*se_est
14. gen UL=emofamgirls+1.96*se_est
15. l  WHOregion emofamgirls LL UL
16. keep form perpsg age sex WHOregion emofamgirls LL UL se_est
17. save "H:\02 know violence\meta analysis\regions\emofamgirls_`a'_MICS.dta", replace
18. }
```

Example from log file for age 2:
```
H:\02 know violence\meta analysis\regions
(15 observations deleted)
```

```
(504 observations deleted)

Meta-regression                                     Number of obs  =        42
REML estimate of between-study variance             tau2           =    222.2
% residual variation due to heterogeneity           I-squared_res  =   94.83%
Joint test for all covariates                       Model F(6,36)  =    94.48
With Knapp-Hartung modification                     Prob > F       =   0.0000
----------------------------------------------------------------------------
        prevt |     Coef.   Std. Err.       t    P>|t|    [95% Conf. Interval]
--------------+-------------------------------------------------------------
_IWHOregion_1 |  64.93803    4.601592    14.11   0.000    55.60557   74.27049
_IWHOregion_2 |  43.49723    4.912136     8.86   0.000    33.53496    53.4595
_IWHOregion_3 |  76.92928     6.19335    12.42   0.000    64.36858   89.48997
_IWHOregion_4 |  42.71171    4.997839     8.55   0.000    32.57562    52.8478
_IWHOregion_5 |  67.74983    10.82758     6.26   0.000    45.79047   89.70918
_IWHOregion_6 |   51.9713    10.86949     4.78   0.000    29.92695   74.01564
----------------------------------------------------------------------------
(36 missing values generated)
(36 observations deleted)
(option xb assumed; fitted values)


    +-------------------------------------------+
    | WHOreg~n   emofam~s         LL         UL |
    |-------------------------------------------|
 1. |     AFR   64.93803   55.91891   73.95715 |
 2. |     AMR   43.49723   33.86944   53.12502 |
 3. |     EMR   76.92928   64.79031   89.06824 |
 4. |     EUR   42.71171   32.91594   52.50747 |
 5. |    SEAR   67.74982   46.52776   88.97189 |
    |-------------------------------------------|
 6. |     WPR    51.9713    30.6671    73.2755 |
    +-------------------------------------------+
```

4.1 Physical and emotional violence from students

The covariates included in meta-regression models for emotional and physical violence from
students were:

- Violence definition=0 if definition, 1-x if not (1) (variable name: def_phy)
  - Definition of physical violence: hit or hurt by another student at school.
  - Definition of emotional violence: something stolen from you at school, made fun of
    or called names at school, left out of games or activities by other students at school,
    made to do things you didn't want to do by other students, someone spread lies about
    you at school.
- Areas mixed urban and rural=0, 1 if urban (variable name: urban)
  - Area was not included in emotional violence to simplify the model because there was
    almost no variation in this variable.
- Subnational =0 if national, 1 if subnational. (variable name: rep)
- Interviewer trained =0 if trained, 1 if not or unclear. (variable name: interviewer)
- Recall period=0 if 12 months, 1 if under 12 months. (variable name: recallad)
- Proxy report=0 if child self reported, 1 if proxy report. (variable name: proxy)
- Study violence missing data recorded as under 5% =0, 1 if not. (variable name: missing)
- Standard Error obtained from study=0, 1 if derived. (variable name: seissue)

Here is an example of STATA code used to fit meta-regression model to describe the prevalence of physical violence from students among 8-year-old boys:

xi, noomit: metareg prevt i.WHOregion i.def_phy recallad rep urban interview proxy seissue missing if form=="emo" & perpsg=="Peer_as" & sex=="boys" & age==8 , wsse(sep) noconstant

Where: Prevt= prevalence estimate %, WHOregion = WHO region, form= form of violence, perpsg= perpetrator type, sex=sex of victim, age = age of victim in years, sep = standard error %.

Code used for physical violence:

1. forvalues a= 8/18{
2. set more off
3. cd "H:\02 know violence\meta analysis\regions"
4. use phystuboys.dta, clear
5. drop if age!=`a'
6. xi, noomit: metareg prevt i.WHOregion i.def_phy recallad rep urban proxy interview seissue missing if form=="phy" & perpsg=="Peer_as" & sex=="boys" & age==`a' , wsse(sep) noconstant
7. sort WHOregion
8. gen first=1 if WHOregion!=WHOregion[_n-1]
9. drop if first!=1
10. replace def_phy=0
11. replace recallad=0
12. replace rep=0
13. replace urban=0
14. replace proxy=0
15. replace interview=0
16. replace seissue=0
17. replace missing=0
18. predict phystuboys
19. predict se_est, stdp
20. gen LL=phystuboys-1.96*se_est
21. gen UL=phystuboys+1.96*se_est
22. l WHOregion phystuboys LL UL
23. keep form perpsg age sex WHOregion phystuboys se_est LL UL
24. save "H:\02 know violence\meta analysis\regions\phystuboys_`a'.dta", replace
25. }

Example from log file for age 8

```
H:\02 know violence\meta analysis\regions
(2,105 observations deleted)
note: _IWHOregion_1 dropped because of collinearity
note: rep dropped because of collinearity
note: urban dropped because of collinearity
note: proxy dropped because of collinearity
note: interview dropped because of collinearity

Meta-regression                                      Number of obs  =       52
REML estimate of between-study variance              tau2           =    227.1
% residual variation due to heterogeneity            I-squared_res  =   78.04%
Joint test for all covariates                        Model F(10,42) =    34.29
With Knapp-Hartung modification                      Prob > F       =   0.0000
```

```
------------------------------------------------------------------------------
       prevt |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_IWHOregion_2 |   15.9216    13.8489     1.15   0.257    -12.02661    43.86981
_IWHOregion_3 |  15.70263    13.41972    1.17   0.249    -11.37946    42.78472
_IWHOregion_4 |  9.694549    14.51083    0.67   0.508    -19.58949    38.97859
_IWHOregion_5 |  20.77766    17.91199    1.16   0.253     -15.3702    56.92552
_IWHOregion_6 |  29.17286    16.16236    1.80   0.078    -3.444109    61.78982
   _Idef_phy_0 |  39.06331    15.01724    2.60   0.013     8.757285    69.36933
   _Idef_phy_4 |      42.9    16.02697    2.68   0.011     10.55626    75.24373
     recallad | -21.28366    6.288703   -3.38   0.002    -33.97478   -8.592546
      seissue | -3.862676    21.16843   -0.18   0.856     -46.5823    38.85695
      missing |  4.050647    6.343839    0.64   0.527    -8.751739    16.85303
------------------------------------------------------------------------------
(46 missing values generated)
(46 observations deleted)
(3 real changes made)
(5 real changes made)
(0 real changes made)
(0 real changes made)
(0 real changes made)
(0 real changes made)
(0 real changes made)
(3 real changes made)
(option xb assumed; fitted values)


     +----------------------------------------+
     | WHOreg~n   phystu~s        LL        UL |
     |----------------------------------------|
  1. |      AFR       42.9  11.48714  74.31286 |
  2. |      AMR   58.82159  39.50122  78.14197 |
  3. |      EMR   54.76594  40.79076  68.74113 |
  4. |      EUR   48.75785  38.01067  59.50504 |
  5. |     SEAR   63.67765  36.78078  90.57452 |
     |----------------------------------------|
  6. |      WPR   68.23617  48.23888  88.23345 |
     +----------------------------------------+
file H:\02 know violence\meta analysis\regions\phystuboys_8.dta saved
```

4.2 Physical, emotional and sexual violence from intimate partners

The covariates included in meta-regression models for physical violence from partners were:

- ‹ Subnational =0 if national, 1 if subnational.
- ‹ Sample from community=0, 1 if school. (variable name: samp)
- ‹ Interviewer trained =0 if trained, 1 if not or unclear.
- ‹ Recall period=0 if 12 months, 1 if not.*
- ‹ Violence definition gold standard 0, 1 if not. (variable name: acts)
    - ‹ DHS, RHS, WHO VAW and Publications that asked about 5 or more acts of physical violence were set as the gold standard e.g.: DHS 1) pushed her, shaken her, thrown something at her, 2) slap her or twist her arm, 3) punched her with his fist or with something that could hurt her 4) kicked her, dragged her, 5) tried to strangle her or burn her, 6) threatened her with a knife, gun or other type of weapon.

   * one estimate for approximately 18 month recall (age 15).

The covariates included in meta-regression models for emotional violence from partners were:

- ‹ Violence definition gold standard 0, 1 if not.

‹ DHS, RHS, WHO VAW definition was set as the gold standard; some variation but all DHS/RHS ask 2 or 3 modified CTS questions and WHO VAW 4 questions, e.g. DHS: 1) said or done something to humiliate her in front of others; 2) threatened to hurt or harm her or someone close to her; 3) insulted her or made her feel bad about herself.

The covariates included in meta-regression models for sexual violence from partners were:

‹ Subnational =0 if national, 1 if subnational.
‹ Sample from community=0, 1 if school
‹ Area mixed urban and rural =0, rural=1
‹ Violence definition gold standard =0, 1 if not.

   ‹ DHS surveys only with 3 or more sexual violence questions and WHO VAW surveys which asked 4 questions were considered gold standard e.g.: DHS with the minimum number of 3 questions: 1) physically forced her to have unwanted sexual intercourse or 2) forced her to perform any other unwanted sexual acts, 3) forced her with threats or in any other way to perform sexual acts she did not want to.

Here are examples of STATA code used to fit meta-regression model to describe the prevalence of physical, emotional and sexual violence from students among 17-year-old girls:
Physical:

```
xi, noomit: metareg prevps i.WHOregion  rep acts samp interview  recallad  if form=="phy" &
perpsg=="Partner"  & sex=="girls" & age==17 , wsse(sep) noconstant
```

Emotional:

```
xi, noomit: metareg prevps i.WHOregion  acts   if form=="emo" & perpsg=="Partner"  & sex=="girls"
& age==17 , wsse(sep) noconstant
```

Sexual:

```
xi, noomit: metareg prevps i.WHOregion   acts rep samp urban   if form=="sex" & perpsg=="Partner"
& sex=="girls" & age==17 , wsse(sep) noconstant
```

Where: Prevs= percentage prevalence estimate adjusted by proportion of country population ever had sex by aged 20, sep = standard error %, form= form of violence, perpsg= perpetrator subgroup.

Code used fophysical violence:

```
 1. forvalues a= 15/19{
 2. set more off
 3. cd "H:\02 know violence\meta analysis\regions"
 4. use  phyipvgirls_220817.dta, clear
 5. drop if age!=`a'
 6. xi, noomit: metareg prevps i.WHOregion  rep acts samp interview  recallad  if form=="phy" &
perpsg=="Partner"  & sex=="girls" & age==`a' , wsse(sep) noconstant
 7. sort  WHOregion
 8. gen first=1 if WHOregion!=WHOregion[_n-1]
 9. drop if first!=1
10. replace rep=0
```