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Witnessing intimate partner violence and child maltreatment in Ugandan children: A cross-sectional survey

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2016-013583
Article Type:	Research
Date Submitted by the Author:	22-Jul-2016
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Primary Subject Heading:	Global health
Secondary Subject Heading:	Paediatrics
Keywords:	witnessing intimate partner violence, Uganda, violence against children, adolescent, physical violence, sexual violence

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3 **Witnessing intimate partner violence and child maltreatment in Ugandan children: A**
4 **cross-sectional survey**
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Abstract.

Objectives. Existing evidence, mainly from high income countries, shows children who witness intimate partner violence at home are more likely to experience other forms of violence, but very little evidence is available from lower income countries. In this paper we aim to explore whether Ugandan children who witness intimate partner violence at home are also more likely to experience other forms of maltreatment, factors associated with witnessing and experiencing violence, and whether any increased risk comes from parents, or others outside the home.

Design. A representative cross-sectional survey of primary schools.

Participants. 3427 non-boarding primary school students, aged about 11-14 years.

Setting. Luwero District, Uganda, 2012.

Measures. Exposure to child maltreatment was measured using the International Society for the Prevention of Child Abuse and Neglect Child Abuse Screening Tool-Child Institutional, and two questions measured witnessing intimate partner violence.

Results. 26% of children reported witnessing intimate partner violence, but nearly all of these children had also experienced violence themselves. Increased risk of violence was both from parents but also from other perpetrators besides parents. Both girls and boys who witnessed and experienced violence had between 1.66 (95%CI 0.96-2.87) and 4.50 (95%CI 1.78-11.33) times the odds of reporting mental health difficulties, and 3.23 (95%CI 1.99-5.24) and 8.12 (95%CI 5.15-12.80) times the odds of using physical or sexual violence themselves.

Conclusions. In this sample, witnessing intimate partner violence almost never occurred in isolation—almost all children who witnessed partner violence also experienced violence themselves. Our results imply that children in Uganda who are exposed to multiple forms of violence may benefit from intervention to mitigate mental health consequences and reduce use of violence. Intimate partner violence prevention interventions should be considered to reduce child maltreatment.

Words 282

Trial Registration: NCT01678846 (clinicaltrials.gov)

Article summary:

Strengths and Limitations

- In high income settings, there is a well established link between witnessing intimate partner violence and increased risk of exposure to other violence in childhood, but there is limited evidence from low income countries and on where increased risk of exposure to other violence is coming from.
- This paper provides rare evidence from Uganda, a low income country, on the relationship between witnessing intimate partner violence and other forms of child maltreatment
- We are able to explore who the perpetrator of other forms of child maltreatment are, including perpetrators both inside and outside the home

- We also explore sequelae associated with witnessing and experiencing violence, including mental health and children's risk of using violence against others
- The study provides valuable first evidence which may help inform intervention targetting, but is limited by its cross-sectional survey design.

Funding statement: The Good Schools Study was supported by the UK MRC, DfID and the Wellcome Trust under the Joint Global Health Trials Scheme (MR/L004321/1 to K Devries), and the Hewlett Foundation (to D Naker). This analysis was supported by the Bernard Van Leer Foundation (to C Watts).

Competing interests: D Naker developed the Good School Toolkit intervention, which was tested in the Good Schools Study. All other authors declare we have no competing interests.

Author contributions: K Devries conceptualised and performed the analysis, drafted the paper, and obtained funding. L Knight and J Child managed the Good Schools Study. D Naker and C Watts obtained funding. All authors participated in drafting of the manuscript.

Keywords. Witnessing intimate partner violence, child maltreatment, child abuse, physical violence, emotional violence, sexual violence, Uganda

Introduction

Intimate partner violence (IPV) against women is prevalent globally, with 30% of women reporting physical and or sexual IPV in their lifetime [1]. In addition to the known detrimental effects of IPV on women [2 3], witnessing IPV is increasingly being recognised as an important adverse exposure for children. Effects on children include increased risk of depression, anxiety, aggression, conduct disorders, attention deficit and hyperactivity [4 5]. There is evidence that growing up in an abusive family is positively related to future violent intimate relationships[6]. Estimates from high income countries indicate that in the range of 8%-25% of adults report exposure to IPV as children [7 8].

A growing body of research suggests that children who witness IPV are also at increased risk of being maltreated in other ways. In the USA, nationally representative data has shown that 33.9% of young people who witnessed IPV also experienced another form of maltreatment (neglect, sexual abuse by a known adult, physical abuse and psychological abuse) in the last year, versus only 8.6% of young people who did not witness IPV. In the same study other victimisation such as kidnapping, bullying and property crime was also associated with witnessing IPV [9]. This ‘poly-victimisation’[9] is associated with higher levels of adverse health outcomes versus single exposures[10].

The extent of the overlap between witnessing IPV and exposure to other forms of maltreatment is not known outside high income settings, where the epidemiology of violence exposure is likely to be quite different from the US [11]. Analyses often do not disaggregate by perpetrator, leaving open the question as to whether parents who have experienced or used IPV also are more likely to use violence against their children, or whether the increased risk of violence is coming from others besides parents. Additionally, studies on the health effects of witnessing IPV often do not account for the fact that witnessing may be correlated with experiencing other forms violence [9 12-14].

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3 We use baseline data from the Good Schools Study in Uganda to examine 1) the extent of
4 overlap between witnessing IPV between parents, and experience of violence from other
5 perpetrators; 2) whether witnessing is associated with increased risk of violence from parents
6 versus perpetrators besides parents; 3) factors associated with witnessing violence and
7 experiencing violence. We conducted all analyses separately by sex.
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Methods

Design

We analysed baseline survey data from the Good Schools Study [15], which is a cluster randomised controlled trial of The Good School Toolkit. The Toolkit was developed by Raising Voices to prevent violence against children in school and improve educational outcomes. The Toolkit is publicly available: <http://raisingvoices.org/good-school/>, and main trial results are available[16].

Setting

The survey took place in Luwero District, Uganda, from June-July 2012. Luwero is near Kampala and has both rural and more urban areas.

Sampling

We obtained a list of all 268 schools registered in Luwero in 2010 from the Ministry of Education and Sports. We excluded 97 small schools (with less than 40 students registered in Primary 5) and 20 schools with existing governance interventions. The remaining 151 schools formed our sampling frame. We stratified these 151 schools according to the gender ratio of pupils (>60% girls, >60% boys or about even). 42 schools were randomly selected, proportional to the size of the stratum. 100% of the schools agreed to participate. The sampled schools contain 79.7% of Primary 5, 6, and 7 students in Luwero. Within each school, we took a simple random sample of up to 130 pupils from P5, P6, P7 and a complete sample of school staff. If there were less than 130 students in a school, all were invited to participate. 77.0% or 3706 sampled students provided data; 19% were absent from school during the week of the survey or for extended periods. For this analysis, we excluded students who boarded at school, since their patterns of exposure to witnessing and experiencing violence from parents may differ from students who live at home.

Procedure

For each participating school, headmasters notified staff, students and parents in advance of the survey. Parents could opt their child out of participation; otherwise individual children provided consent to participate. Data were collected in a face-to-face interview. All interviewers received 3 weeks of training on how to ask about violence in a non-judgemental way, preserve confidentiality and procedures if participants became distressed. A comprehensive child protection plan, designed by the study team in conjunction with local services, was in place to provide support to those in need of services. We also had a trained counsellor available to any child who requested counselling.

Instruments

All items were translated into Luganda and reviewed by a panel of teachers and Raising Voices staff to ensure that they would be appropriate for Ugandan child participants and school staff. Items were then cognitively tested and refined iteratively in a sample of approximately 40 children from Kampala primary schools to ensure understanding and that meanings of original items were adequately captured. We then surveyed a larger sample of 697 children and 40 staff from Kampala schools to test distributions of items and to test study procedures.

Violence questions are outlined in Table 1. Witnessing shouting and physical violence between parents/caregivers was measured using two binary response items developed for the study. Experiences of violence were measured the International Society for the Prevention of Child Abuse and Neglect Child Abuse Screening Tool-Child Institutional (ICAST-CI)[17] and some items from the WHO Multi Country Study on Women's Health and Domestic Violence against Women[3]. Reliability and construct validity for the ICAST-CI were initially established in 4 countries and the instrument has since been translated into 20

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3 languages and used extensively in multi-country research[17]. Lifetime exposure to physical,
4
5 sexual, and emotional violence were constructed as binary variables. Violence questions were
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7 analysed by perpetrator type (parent/caretaker vs. others).
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11 Other measures include demographic variables, use of physical and sexual violence, and
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13 mental health. Disability was measured using the following question: “Do you have any
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15 mental or physical disability? For example, do you have trouble seeing, walking, speaking,
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17 with fits, or anything else?”. Responses were grouped into a binary variable, with students
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19 who reported any type of difficulty coded as ‘disabled’. Symptoms of common childhood
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21 mental health difficulties were measured using the Strengths and Difficulties Questionnaire
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23 (SDQ)[18]. The SDQ has been used in more than 60 different countries including several in
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25 Africa and validated in a variety of settings[18]. In our sample reliability for global
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27 difficulties scores was Cronbach alpha=0.70. The global SDQ score was constructed as a
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29 categorical variable, with children having ‘high’, ‘medium’ or ‘low’ levels of difficulties
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31 relative to their peers. To construct this measure responses to 20 items are summed, and
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33 children scoring in the highest decile of the overall distribution are deemed to have ‘high’
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35 difficulties; the next decile to have ‘medium’ difficulties and the remaining 80% to have
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37 ‘low’ difficulties[18 19].
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45 **Analysis**

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47 All analyses were conducted using STATA 12.0[20] and were carried out separately for male
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49 and female participants. Missing data were excluded from analyses involving those variables
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51 (pairwise deletion). 3.8% of children were missing data on witnessing parents shouting, and
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53 5.2% were missing data on witnessing physical violence.
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3 Descriptive statistics on participants' background characteristics, witnessing violence and
4 experiencing violence are presented by sex and compared using Chi-squared tests. We
5 examined overlap between witnessing parental IPV and violence exposure from both parents
6 and perpetrators other than parents by fitting logistic regression models adjusted for a priori
7 identified potential demographic confounders. Next, we examined factors associated with
8 witnessing and experience of violence by fitting another set of logistic regression models.
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17 All analyses account for the sampling scheme employed in the baseline survey—student
18 responses are weighted to account for unequal probabilities of selection for students.
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21 Standard errors are adjusted for clustering at the school level using Taylor linearization[21].
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Results

Demographic characteristics and prevalence of witnessing IPV

Table 2 describes the characteristics of students and prevalence of witnessing IPV in 3427 non-boarding students surveyed. The majority of students were aged 11 to 14 years old, and more than half of all students had eaten less than three meals in the day before the survey, indicating they were possibly hungry. About 8% of students reported some form of disability; more than 65% of students walked to school with others. 56% of boys but only 15% of girls indicated that they had ever worked for money, but when examining hours of both paid and unpaid work on an average school day, more than half of boys and girls reported working more than 1 hour per day.

About 26% of boys and girls reported ever witnessing their parents shouting at each other, and approximately 14% of boys and girls had ever witnessed physical violence from their mother's male partner towards their mother. Boys and girls differed dramatically on levels of violence experienced from parents or caregivers however—9% of girls but only 5% of boys reported emotional violence and neglect from parents or caregivers, and 27% of girls but only 10% of boys reported physical violence from parents or caregivers. No students reported sexual violence from parents or caregivers.

When examining the overlap in experience of witnessing and experiencing violence (Table 2), it becomes clear that witnessing violence almost never occurs in isolation. Less than 1.3% of children reported witnessing violence without also experiencing violence themselves and 26% of boys and girls have both witnessed IPV and experienced violence from any perpetrator. About 68% of boys and girls have experienced violence but not witnessed IPV, and only 5.6% of boys and 4.6% of girls report never witnessing IPV or experiencing violence.

What forms of violence does witnessing IPV put children at risk for?

We hypothesised that those who witnessed IPV would be at increased risk of various forms of violence from parents in particular. We found (Table 3 and 4) that girls and boys who witnessed shouting and who witnessed both shouting and physical IPV were at increased risk of emotional and combined emotional and physical violence from parents. Girls were also at increased risk for physical violence, but this association was inconsistent for boys. Boys witnessing shouting and physical IPV had over 6 times greater odds of experiencing emotional violence or combined emotional and physical violence from parents. Girls who witnessed shouting or shouting and physical IPV had almost 4 times the odds of combined emotional and physical violence compared to non-witnesses.

However, both boys and girls who witnessed IPV also had increased odds of emotional, physical and sexual violence from perpetrators *other* than parents. Children who witnessed IPV had between about 1.5 and 3.6 times the odds of reporting emotional, physical or sexual victimisation by a non-parent or caregiver, versus those who did not witness any violence between caregivers. So it appears that witnessing IPV inside the home is associated with violence both inside and outside the home.

Factors associated with witnessing and experiencing violence

In tables 5 and 6, we examined the associations between various factors and common patterns of exposure to violence and witnessing IPV. The patterns are: experiencing violence from any perpetrator but not witnessing IPV (Model 1), and witnessing IPV plus experiencing violence from any perpetrator (Model 2). For both Model 1 and Model 2, associations between demographic factors and violence or violence plus witnessing were similar. However, findings point towards additive effects of witnessing and experiencing violence on mental health and use of violence. Odds of having the higher levels of mental health

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3 difficulties and using physical or sexual violence against peers were respectively about 2 and
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5 5 times higher in female students who experienced violence vs. students who did not
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7 experience any violence (Model 1). In female students who experienced and witnessed
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9 violence, odds of having higher levels of mental health difficulties and using physical or
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11 sexual violence against peers were about 4 and 8 times higher vs. students who did not
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13 experience or witness any violence (Model 2). For male students, experiencing violence was
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15 associated with about 2 and 3 times the odds of high mental health difficulties and using
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17 physical or sexual violence (Model 1), whereas experiencing and witnessing violence was
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19 associated with about 4 and 5 times the odds of high levels of mental health difficulties and
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21 using physical or sexual violence (Model 2).
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Discussion

In Luwero district, nearly all students who have witnessed IPV have also experienced emotional, physical or sexual violence themselves. Some of this increased risk of exposure to violence is coming from caregivers—when there is violence between caregivers, there is also likely to be violence between caregivers and children. However children who witness IPV are also at increased risk of emotional, physical and sexual violence from other perpetrators outside the home.

The adverse effects of witnessing and experiencing violence are large—boys and girls who have witnessed and experience violence nearly 4 and almost 5 times the odds of having high levels of mental health difficulties and nearly 6 and 8 times the odds of using violence versus their peers who have not experienced or witnessed violence. Evidence suggests that witnessing IPV and experiencing violence have additive effects—with children who had witnessed and experienced violence having approximately 2 and 3 times the odds of mental health difficulties and using violence respectively compared to those who experiencing violence alone.

Other studies

In our sample, the overlap between witnessing IPV and experiencing violence was almost complete—it was extremely rare for children to witness IPV only. This differs somewhat from other representative samples from high income settings, where witnessing is more common than exposure to maltreatment[9]. In Uganda, similar to other countries in the region, exposure to violence from various perpetrators including parents, peers, and school staff may be more normative and more chronic versus some high income settings[22-24]. Further research is needed to fully understand the implications of this, both in terms of the

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3 health effects of exposure, and designing appropriate intervention strategies for children in
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5 Uganda and similar settings.
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9 In our sample, as in other samples, witnessing and experiencing IPV are strongly associated
10 with poor mental health, and externalising behaviours such as use of violence[25]. There are
11 various pathways through which witnessing IPV and exposure to violence may contribute to
12 poor mental health. Exposure to emotional, physical and sexual violence can induce a
13 traumatic stress response, which can lead to lasting post-traumatic stress disorder, depression,
14 anxiety, and attentional and memory problems[26]. The direct trauma and stress response of
15 witnessing IPV itself and indirect effect on mothers mental health [27], disruption in
16 caregiving due to injuries, economic effects, fathers behaviour and parenting style may all
17 have influence on the child mental health and wellbeing [28].
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29 In high income settings, evidence suggests that multiple exposures to different forms of
30 violence from different actors has an additive effect on subsequent health risks[10]. Our
31 evidence is consistent with this pattern, with those who are exposed to both witnessing and
32 violence showing very high odds of subsequent mental health difficulties and use of violence.
33 Further research is needed to understand how the differing patterns of violence exposure in
34 settings like Uganda, where some forms of violence, including corporal punishment of
35 children, and IPV against women, may be considered more normative. The influence of
36 context specific norms on pathways between early violence exposure and later adverse
37 outcomes is largely unknown.
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49 In our sample, there is some suggestion of a sex difference in health effects, where the effects
50 of both witnessing and experiencing violence have a stronger relationship with mental health
51 difficulties and use of violence in girls relative to boys. This may be related to the nature of
52 the violence experienced by girls—in our sample, girls are much more likely to report sexual
53 violence, which may have more severe effects relative to other forms of violence exposure.
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3 In the USA, witnessing partner violence is associated with a range of different forms of
4 victimisation, but especially increase the risk of being a victim of statutory rape, sexual
5 misconduct and dating violence [9]. This suggests that witnessing IPV may be associated
6 with having difficult romantic relationships in adolescence [9]. Further work is needed to
7 understand pathways—it could be that witnessing IPV provides a behavioural model which
8 young people then follow when engaged in interpersonal relationships with peers and adults
9 and in their own early romantic relationships.
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12 It is also unclear why children who witness IPV are more likely to experience violence from
13 other perpetrators besides parents and caregivers. Potential mechanisms could include
14 supervision—it could be that children who live in households where parents are in a violent
15 relationship and dysfunction is present have lower levels of supervision and parental support.
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18 In the USA, parental supervision can buffer the effects of exposure to violent environments
19 and reduce the risk of violent victimisation for adolescents who have this parental
20 support[29]. We have also shown that children who witness IPV have a higher risk of mental
21 health difficulties, which includes externalising behaviours, and have a higher risk of using
22 violence themselves. It could be that children who have difficulties at home are more likely
23 to behave disruptively in school and in their communities, which may increase the risk of
24 non-caregiver adults using physical violence to punish their behaviour.
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28 *Limitations*

29 Although we provide some of the first data on witnessing and exposure to violence reported
30 directly by child participants in a low income setting, our study is not without limitations.
31 Our data is cross-sectional, hence we are unable to make inferences about causal relationships
32 between witnessing violence, various forms of violence experience, mental health and other
33 factors under study. We used a robust instrument to measure violence exposure, however we
34 only had two questions to measure witnessing. A more detailed set of questions may have
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3 uncovered other types of witnessing experiences which may be important for understanding
4 health outcomes of early exposures to violence.
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8 We also included only severe physical violence from school staff in our measure of lifetime
9 physical violence exposure, but both more and less severe forms of physical violence from
10 other perpetrators. Physical violence from school staff was overwhelmingly high in our
11 sample (more than 93% of students reported lifetime experience), hence it would have
12 rendered our exposure measure meaningless if we had used a measure of ever exposure.
13 Further work needs to be done to understand the relationship between different severity levels
14 of violence from different perpetrators with health outcomes. This is a school based sample
15 so children not attending school, whose experience of witnessing and violence may be
16 different, are not represented.
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28 *Implications*

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32 Our study has shown that in our study district, homes with IPV are also highly likely to have
33 child maltreatment. The effects of both witnessing and experiencing violence on children
34 results in poor mental health, and greatly increase the odds of use of violence by the child.
35 Our findings suggest that interventions to reduce IPV should be explored for their efficacy in
36 prevention of child maltreatment. One US study of maltreated children showed a decreased
37 in both internalising and externalising problems associated with resolution of IPV in the
38 home over time [30].
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48 Our findings also suggest that many children are experiencing violence in homes where there
49 they are not aware of any IPV, suggesting that other child maltreatment prevention strategies
50 are also needed. Programs which seek to address norms and attitudes about violence against
51 children may change levels of violence[31], and programs which build safe, stable, nurturing
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3 and supportive relationships may assist children who have been maltreated or who otherwise
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5 have difficulties in achieving better outcomes[32].
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8 *Conclusions*

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11 Child maltreatment and children's witnessing of IPV between caregivers overlaps
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13 substantially, and children who experience both are at greatly increased risk of poor mental
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15 health outcomes and externalising behaviour including use of violence against others.
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17 Improved understanding the context specific epidemiology of multiple and chronic violence
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19 exposures in settings like Uganda is needed to help develop and target interventions to reduce
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21 child maltreatment and also the adverse consequences associated with it.
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3 Acknowledgements.
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5 We wish to thank the Raising Voices team, our team of interviewers in Luwero District, the
6 participants who so generously gave their time to be part of this work, and our donors.
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Table 1. Definitions of violence variables

Variable name	Items	Coding
Witnessing IPV:		
Shouting	Have you ever seen or overheard your parents or caregivers shouting at each other?	Coded 1 if answered yes; 0 if answered no.
Witnessing physical IPV	Have you ever seen or overheard your father hit or beat your mother?	Coded 1 if answered yes; 0 if answered no.
Violence experience:	(Note: each participant asked about experience of items below, then asked about perpetrators and time frame)	
Emotional violence, (includes Neglect)	Insulted you, or called you rude or hurtful names? Accused you of witchcraft? Locked you out or made you stay outside? Not given you food?	Lifetime exposure from any perpetrator. Coded 1 if answered yes to any of the items; 0 if answered no to all items.
Physical violence	From perpetrators other than school staff: Twisted your arm or any other body part, slapped you, pushed you or thrown something at you? Punched you, kicked you, or hit you with a closed fist? Hit you with an object, such as a stick or a cane, or whipped you? Cut you with a sharp object or burnt you? Severe violence from school staff: Burnt you as punishment? Choked you? Tried to cut you purposefully with a sharp object? Severely beat you up?	Lifetime exposure from any perpetrator other than school staff, plus lifetime exposure to severe violence from school staff. Coded 1 if answered yes to any of the items; 0 if answered no to all items.
Sexual violence	Disturbed or bothered you by making sexual comments about you? Kissed you, when you did not want them to? Touched your genitals or breasts when you did not want them to, or in a way that made you uncomfortable? Threaten or pressure you to make you do something sexual with them? Make you have sex with them, because they threatened or pressured you? Had sex with you, by physically forcing you?	Lifetime exposure from any perpetrator. Coded 1 if answered yes to any of the items; 0 if answered no to all items.

Table 2. Characteristics of included students

Characteristic	Male		Female		p
	%	se	%	se	
Students	N=1656		N=1771		
Age					<0.001
10 years or less	3.0	0.7	5.3	1.0	
11 to 14 years	78.7	1.6	84.7	1.2	
15 or more years	18.3	1.7	10.0	1.3	
Number of meals eaten yesterday					0.032
1 meal	12.7	1.2	15.1	1.2	
2 meals	41.7	2.0	36.7	1.6	
3+ meals	45.6	2.7	48.0	1.8	
Disability	8.0	0.7	7.2	0.8	0.352
Transport to school					0.019
Other	6.1	1.6	3.3	1.2	
Walking alone	28.7	3.1	26.9	3.1	
Walking with others	65.3	3.3	69.8	3.7	
Ever worked for money	55.9	3.1	14.7	1.2	<0.001
Hours worked on average school day					0.149
Less than 1	38.2	3.8	38.6	2.5	
1-2 hours	43.6	2.5	47.1	2.0	
More than 2 hours	18.2	2.3	14.3	1.2	
Violence from parents or caregivers					
No violence	87.0	1.9	69.0	4.1	<0.001
Sexual violence, lifetime	0	-	0	-	
Emotional violence only, lifetime	2.7	0.6	4.4	1.3	
Physical violence only, lifetime	8.3	1.3	21.9	3.3	
Emotional and physical violence, lifetime	2.0	0.6	4.7	0.9	
Witnessing IPV^a					
No witnessing	73.2	1.7	72.9	1.6	0.836
Witnessed shouting only, ever	12.4	1.7	13.3	1.0	
Witnessed physical IPV only, ever	3.8	0.6	4.0	0.6	
Witnessed shouting and physical IPV, ever	10.7	1.0	9.8	1.0	
Violence from non-caregivers					
Emotional violence, lifetime	58.7	2.7	55.8	2.9	0.485
Physical violence ^b , lifetime	39.8	2.8	39.2	2.2	0.768
Sexual violence, lifetime	3.9	0.6	13.3	1.3	<0.001
Witnessing IPV^c and violence from any perpetrator^{d,a}					
Not witnessed parental IPV or experienced violence	5.6	0.9	4.6	1.6	0.446
Witnessed IPV but not experienced any violence	0.6	0.2	1.3	0.5	
Not witnessed IPV but experienced violence	67.6	1.8	68.3	1.6	
Witnessed IPV and experience violence	26.3	1.8	25.8	1.7	

^an=3500, ^bincludes physical violence from any perpetrator but only severe physical violence from school staff,

^cwitnessing parental IPV includes shouting or physical IPV, ^dviolence from caregiver or non-caregiver (sexual or emotional violence from any perpetrator and any physical violence from non-parents but severe physical violence from school staff)

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Table 3. Associations between violence exposure and witnessing violence between parents, female students

Characteristic	Female (n=1423) Witnessed shouting versus witnessed no parental IPV			Female (n=1268) Witnessed physical IPV versus witnessed no parental IPV			Female (n=1364) Witnessed shouting and physical IPV versus witnessed no parental IPV		
	aOR	95% CI	p	aOR	95%CI	p	aOR	95% CI	p
Parental violence									
Emotional only	1.88	1.06-3.33	0.031	1.15	0.27-4.85	0.844	1.93	0.91-4.10	0.084
Physical only	1.51	1.05-2.18	0.028	1.04	0.45-2.41	0.930	1.74	1.09-2.77	0.021
Emotional and physical	3.90	1.95-7.81	<0.001	3.79	1.66-8.64	0.002	3.90	1.84-8.30	0.001
Non-parental violence									
Emotional	2.65	1.84-3.81	<0.001	1.28	0.75-2.21	0.356	2.02	1.37-2.98	0.001
Physical*	2.33	1.83-2.96	<0.001	1.68	1.00-2.81	0.049	2.54	1.82-3.54	<0.001
Sexual	2.36	1.49-3.76	0.001	3.19	0.67-15.14	0.139	2.98	1.81-4.89	<0.001

aOR is odds ratio, adjusted for age (years), eaten at least 3 meals in the past day versus less, share sleeping area with 2 or more children, versus less, share sleeping area with one or more adults versus less, have a disability versus not, worked 1-2 hours or 2 or more hours per day versus less than one hour. CI is confidence interval. *Any physical violence from non-parents but severe physical violence from school staff.

Table 4. Associations between parental violence and witnessing violence between parents, male students

Characteristic	Male (n=1334) Witnessed shouting versus witnessed no parental violence			Male (n=1195) Witnessed physical IPV versus witnessed no parental violence			Male (n=1317) Witnessed shouting and physical IPV versus witnessed no parental violence		
	aOR	95% CI	p	aOR	95%CI	p	aOR	95% CI	p
Parental violence									
Emotional only	4.28	2.20-8.31	<0.001	0.74	0.08-6.72	0.781	6.77	3.96-11.56	<0.001
Physical only	1.65	0.94-2.89	0.077	1.05	0.36-3.00	0.933	0.77	0.39-1.51	0.436
Emotional and physical	6.53	3.29-12.96	<0.001	-	-		6.22	2.63-14.72	<0.001
Non-parental violence									
Emotional	2.67	1.86-3.86	<0.001	1.48	0.83-2.62	0.175	2.87	1.72-4.78	<0.001
Physical*	1.69	1.09-2.64	0.021	2.48	1.67-3.68	<0.001	2.34	1.52-3.56	<0.001
Sexual	1.84	0.94-3.61	0.074	2.24	0.57-8.83	0.243	3.51	1.52-8.10	0.004

aOR is odds ratio, adjusted for age (years), eaten at least 3 meals in the past day versus less, share sleeping area with 2 or more children, versus less, share sleeping area with one or more adults versus less, have a disability versus not, worked 1-2 hours or 2 or more hours per day versus less than one hour. CI is confidence interval. *Any physical violence from non-parents but severe physical violence from school staff.

Table 5. Factors associated with experiencing violence and experiencing violence plus witnessing IPV, female students

Characteristic	Model 1			Model 2		
	Experienced violence from any perpetrator but did not witness shouting or physical parental violence, n=1190			Experienced violence from any perpetrator and witnessed shouting or physical parental violence, n=2477		
	aOR	95% CI	P	aOR	95%CI	p
Age (years)	0.97	0.83-1.14	0.703	1.07	0.91-1.25	0.403
Ate at least 3 meals yesterday (versus less)	1.24	0.99-1.56	0.063	0.88	0.55-1.40	0.578
Share sleeping area with 2 or more children (versus less)	0.68	0.53-0.89	0.005	0.93	0.65-1.33	0.674
Share sleeping area with 1 or more adults (versus none)	1.03	0.73-1.47	0.853	1.47	0.77-2.83	0.239
Disability (versus not)	1.23	0.30-5.09	0.772	2.09	0.97-4.53	0.060
Work less than 1 hour per day	1			1		
Work 1-2 hours per day	1.52	1.08-2.15	0.017	1.72	1.04-2.86	0.036
Work more than 2 hours per day	3.69	1.83-7.46	0.001	4.50	1.78-11.33	0.002
Low SDQ score	1			1		
Medium SDQ score	2.29	1.33-3.95	0.004	3.84	1.69-8.72	0.002
High SDQ score	1.85	0.91-3.78	0.089	4.35	1.95-9.69	0.001
Used physical or sexual violence	5.14	2.99-8.84	<0.001	8.12	5.15-12.80	<0.001

SDQ: Strengths and Difficulties Questionnaire. aOR is adjusted odds ratio, adjusted for all other variables in the model.

Table 6: Factors associated with experiencing violence and experiencing violence plus witnessing, male students

Characteristic	Model 1			Model 2		
	Experienced violence from any perpetrator but did not witness shouting or physical parental violence n=1190			Experienced violence from any perpetrator and witnessed shouting or physical parental violence n=598		
	aOR	95% CI	P	aOR	95%CI	p
Age (years)	0.88	0.79-0.97	0.015	1.01	0.85-1.21	0.887
Ate at least 3 meals yesterday (versus less)	0.96	0.67-1.37	0.803	1.19	0.72-1.98	0.488
Share sleeping area with 2 or more children (versus less)	0.73	0.57-0.93	0.013	0.52	0.36-0.74	0.001
Share sleeping area with 1 or more adults (versus none)	1.18	0.86-1.63	0.301	1.16	0.68-1.96	0.579
Disability (versus not)	1.49	0.91-2.44	0.114	1.12	0.51-2.46	0.775
Work less than 1 hour per day	1			1		
Work 1-2 hours per day	1.69	1.15-2.49	0.008	1.86	1.14-3.04	0.014
Work more than 2 hours per day	1.63	0.88-3.02	0.119	2.07	0.91-4.72	0.082
Low SDQ score	1			1		
Medium SDQ score	1.66	0.96-2.87	0.069	2.90	1.60-5.26	0.001
High SDQ score	2.28	1.29-4.07	0.006	3.85	1.16-10.17	0.008
Used physical or sexual violence	3.23	1.99-5.24	<0.001	5.55	2.94-10.49	<0.001

SDQ: Strengths and Difficulties Questionnaire. aOR is adjusted odds ratio, adjusted for all other variables in the model.

BMJ Open

Witnessing intimate partner violence and child maltreatment in Ugandan children: A cross-sectional survey

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2016-013583.R1
Article Type:	Research
Date Submitted by the Author:	20-Oct-2016
Complete List of Authors:	Devries, Karen; London School of Hygiene & Tropical Medicine, Department of Global Health and Development Knight, Louise; London School of Hygiene and Tropical Medicine Child, Jennifer; London School of Hygiene and Tropical Medicine Kyegombe, Nambusi; London School of Hygiene and Tropical Medicine Hossain, Mazedra; London School of Hygiene & Tropical Medicine, Lees, Shelley; London School of Hygiene and Tropical Medicine Watts, Charlotte; London School of Hygiene & Tropical Medicine Naker, Dipak; Raising Voices
Primary Subject Heading:	Global health
Secondary Subject Heading:	Paediatrics
Keywords:	witnessing intimate partner violence, Uganda, violence against children, adolescent, physical violence, sexual violence

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3 **Witnessing intimate partner violence and child maltreatment in Ugandan children: A**
4 **cross-sectional survey**
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Abstract.

Objectives. Existing evidence, mainly from high income countries, shows children who witness intimate partner violence at home are more likely to experience other forms of violence, but very little evidence is available from lower income countries. In this paper we aim to explore whether Ugandan children who witness intimate partner violence at home are also more likely to experience other forms of maltreatment, factors associated with witnessing and experiencing violence, and whether any increased risk comes from parents, or others outside the home.

Design. A representative cross-sectional survey of primary schools.

Participants. 3427 non-boarding primary school students, aged about 11-14 years.

Setting. Luwero District, Uganda, 2012.

Measures. Exposure to child maltreatment was measured using the International Society for the Prevention of Child Abuse and Neglect Child Abuse Screening Tool-Child Institutional, and two questions measured witnessing intimate partner violence.

Results. 26% of children reported witnessing intimate partner violence, but nearly all of these children had also experienced violence themselves. Only 0.6% of boys and 1.6% of girls had witnessed partner violence and not experienced violence. Increased risk of violence was both from parents but also from other perpetrators besides parents. Both girls and boys who witnessed and experienced violence had between 1.66 (95%CI 0.96-2.87) and 4.50 (95%CI 1.78-11.33) times the odds of reporting mental health difficulties, and 3.23 (95%CI 1.99-5.24) and 8.12 (95%CI 5.15-12.80) times the odds of using physical or sexual violence themselves.

Conclusions. In this sample, witnessing intimate partner violence almost never occurred in isolation—almost all children who witnessed partner violence also experienced violence themselves. Our results imply that children in Uganda who are exposed to multiple forms of violence may benefit from intervention to mitigate mental health consequences and reduce use of violence. Intimate partner violence prevention interventions should be considered to reduce child maltreatment. Large numbers of children also experience maltreatment in homes with no partner violence, highlighting the need for interventions to prevent child maltreatment more broadly.

Words 322

Trial Registration: NCT01678846 (clinicaltrials.gov)

Article summary:

Strengths and Limitations

- In high income settings, there is a well established link between witnessing intimate partner violence and increased risk of exposure to other violence in childhood, but there is limited evidence from low income countries and on where increased risk of exposure to other violence is coming from.

- This paper provides rare evidence from Uganda, a low income country, on the relationship between witnessing intimate partner violence and other forms of child maltreatment
- We are able to explore who the perpetrator of other forms of child maltreatment are, including perpetrators both inside and outside the home
- We also explore sequelae associated with witnessing and experiencing violence, including mental health and children's risk of using violence against others
- The study provides valuable first evidence which may help inform intervention targeting, but is limited by its cross-sectional survey design.

Funding statement: The Good Schools Study was supported by the UK MRC, DfID and the Wellcome Trust under the Joint Global Health Trials Scheme (MR/L004321/1 to K Devries), and the Hewlett Foundation (to D Naker). This analysis was supported by the Bernard Van Leer Foundation (to C Watts).

Competing interests: D Naker developed the Good School Toolkit intervention, which was tested in the Good Schools Study. All other authors declare we have no competing interests.

Author contributions: K Devries conceptualised and performed the analysis, drafted the paper, and obtained funding. L Knight and J Child managed the Good Schools Study. D Naker and C Watts obtained funding. All authors participated in drafting of the manuscript.

Keywords. Witnessing intimate partner violence, child maltreatment, child abuse, physical violence, emotional violence, sexual violence, Uganda

Introduction

Intimate partner violence (IPV) against women is prevalent globally, with 30% of women reporting physical and or sexual IPV in their lifetime [1]. In addition to the known detrimental effects of IPV on women [2 3], witnessing IPV is increasingly being recognised as an important adverse exposure for children. Effects on children include increased risk of depression, anxiety, aggression, conduct disorders, attention deficit and hyperactivity [4 5]. There is evidence that growing up in an abusive family is positively related to future violent intimate relationships[6]. Estimates from high income countries indicate that in the range of 8%-25% of adults report exposure to IPV as children [7 8].

A growing body of research suggests that children who witness IPV are also at increased risk of being maltreated in other ways. In the USA, nationally representative data has shown that 33.9% of young people who witnessed IPV also experienced another form of maltreatment (neglect, sexual abuse by a known adult, physical abuse and psychological abuse) in the last year, versus only 8.6% of young people who did not witness IPV. In the same study other victimisation such as kidnapping, bullying and property crime was also associated with witnessing IPV [9]. This ‘poly-victimisation’[9] is associated with higher levels of adverse health outcomes versus single exposures[10].

The extent of the overlap between witnessing IPV and exposure to other forms of maltreatment is not known outside high income settings, where the epidemiology of violence exposure is likely to be quite different from the US [11]. Analyses often do not disaggregate by perpetrator, leaving open the question as to whether parents who have experienced or used IPV also are more likely to use violence against their children, or whether the increased risk of violence is coming from others besides parents. Additionally, studies on the health effects

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3 of witnessing IPV often do not account for the fact that witnessing may be correlated with
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5 experiencing other forms of violence [9 12-14].
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8 We use baseline data from the Good Schools Study in Uganda to examine 1) the extent of
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10 overlap between witnessing IPV between parents, and experience of violence from other
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12 perpetrators; 2) whether witnessing is associated with increased risk of violence from parents
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14 versus perpetrators besides parents; 3) factors associated with witnessing violence and
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16 experiencing violence. We conducted all analyses separately by sex.
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Methods

Design

We analysed baseline survey data from the Good Schools Study [15], which is a cluster randomised controlled trial of The Good School Toolkit. The Toolkit was developed by Raising Voices to prevent violence against children in school and improve educational outcomes. The Toolkit is publicly available: <http://raisingvoices.org/good-school/>, and main trial results are available [16].

Setting

The survey took place in Luwero District, Uganda, from June-July 2012. Luwero is near Kampala and has both rural and more urban areas.

Sampling

We obtained a list of all 268 schools registered in Luwero in 2010 from the Ministry of Education and Sports. We excluded 97 small schools (with less than 40 students registered in Primary 5) and 20 schools with existing governance interventions. The remaining 151 schools formed our sampling frame. We stratified these 151 schools according to the gender ratio of pupils (>60% girls, >60% boys or about even). 42 schools were randomly selected, proportional to the size of the stratum. 100% of the schools agreed to participate. The sampled schools contain 79.7% of Primary 5, 6, and 7 students in Luwero (equivalent to Grades 5,6,7 in the US education system; in Uganda, students in upper primary are about age 11-14 on average). Within each school, we took a simple random sample of up to 130 pupils from P5, P6, P7 and a complete sample of school staff. If there were less than 130 students in a school, all were invited to participate. 77.0% or 3706 sampled students provided data; 19% were absent from school during the week of the survey or for extended periods. The

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3 remaining 4% were entered on class lists in error, had a parent opt them out, refused or the
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5 reason for participation was not recorded. For this analysis, we excluded students who
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7 boarded at school, since their patterns of exposure to witnessing and experiencing violence
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9 from parents may differ from students who live at home.
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11 12 13 **Procedure**

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15 For each participating school, headmasters notified staff, students and parents in advance of
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17 the survey. Parents could opt their child out of participation; otherwise individual children
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19 provided consent to participate. Data were collected in a face-to-face interview. All
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21 interviewers received 3 weeks of training on how to ask about violence in a non-judgemental
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23 way, preserve confidentiality and procedures if participants became distressed. A
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25 comprehensive child protection plan, designed by the study team in conjunction with local
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27 services, was in place to provide support to those in need of services. We also had a trained
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29 counsellor available to any child who requested counselling. The study had full ethical
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31 approvals from the LSHTM (6183) and the Uganda National Council for Science and
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33 Technology (SS2520).
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39 **Instruments**

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41 All items were translated into Luganda and reviewed by a panel of teachers and Raising
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43 Voices staff to ensure that they would be appropriate for Ugandan child participants and
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45 school staff. Items were then cognitively tested and refined iteratively in a sample of
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47 approximately 40 children from Kampala primary schools to ensure understanding and that
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49 meanings of original items were adequately captured. We then surveyed a larger sample of
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51 697 children and 40 staff from Kampala schools to test distributions of items and to test study
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53 procedures.
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3 Violence questions are outlined in Table 1. Witnessing shouting and physical violence
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5 between parents/caregivers was measured using two binary response items developed for the
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7 study. Experiences of violence were measured by the International Society for the Prevention
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9 of Child Abuse and Neglect Child Abuse Screening Tool-Child Institutional (ICAST-CI)[17]
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11 and some items from the WHO Multi Country Study on Women's Health and Domestic
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13 Violence against Women[3]. Reliability and construct validity for the ICAST-CI were
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15 initially established in 4 countries and the instrument has since been translated into 20
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17 languages and used extensively in multi-country research[17]. Lifetime exposure to physical,
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19 sexual, and emotional violence were constructed as binary variables. Violence questions were
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21 analysed by perpetrator type (parent/caretaker vs. others).
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28 Other measures include demographic variables, use of physical and sexual violence, and
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30 mental health. Disability was measured using the following question: "Do you have any
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32 mental or physical disability? For example, do you have trouble seeing, walking, speaking,
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34 with fits, or anything else?". Responses were grouped into a binary variable, with students
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36 who reported any type of difficulty coded as 'disabled'. Symptoms of common childhood
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38 mental health difficulties were measured using the Strengths and Difficulties Questionnaire
39
40 (SDQ)[18]. The SDQ has been used in more than 60 different countries including several in
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42 Africa and validated in a variety of settings[18]. In our sample reliability for global
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44 difficulties scores was Cronbach alpha=0.70. The global SDQ score was constructed as a
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46 categorical variable, with children having 'high', 'medium' or 'low' levels of difficulties
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48 relative to their peers. To construct this measure responses to 20 items are summed, and
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50 children scoring in the highest decile of the overall distribution are deemed to have 'high'
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52 difficulties; the next decile to have 'medium' difficulties and the remaining 80% to have
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54 'low' difficulties[18 19].
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Analysis

All analyses were conducted using STATA 12.0[20] and were carried out separately for male and female participants. Missing data were excluded from analyses involving those variables (pairwise deletion). 3.8% of children were missing data on witnessing parents shouting, and 5.2% were missing data on witnessing physical violence.

Descriptive statistics on participants' background characteristics, witnessing violence and experiencing violence are presented by sex and compared using Chi-squared tests. When discussing results, we refer to 'students' or 'boys and girls' where findings are similar, and then present separate percentages and highlight where there are differences for boys and girls. We examined overlap between witnessing parental IPV and violence exposure from both parents and perpetrators other than parents by fitting logistic regression models adjusted for a priori identified potential demographic confounders (Tables 3-4). Next, we examined factors associated with experience of violence also, and witnessing plus experience of violence, by fitting another set of logistic regression models (Tables 5-6).

All analyses account for the sampling scheme employed in the baseline survey—student responses are weighted to account for unequal probabilities of selection for students. Standard errors are adjusted for clustering at the school level using Taylor linearization[21].

Results

Demographic characteristics and prevalence of witnessing IPV

Table 2 describes the characteristics of students and prevalence of witnessing IPV in 3427 non-boarding students surveyed. The majority of students were aged 11 to 14 years old, and more than half of all students had eaten less than three meals in the day before the survey, indicating they were possibly hungry. About 8% of the students reported some form of disability; more than 65% of students walked to school with others. Fifty-six percent of boys but only 15% of girls indicated that they had ever worked for money, but when examining hours of both paid and unpaid work on an average school day, more than half of boys and girls reported working more than 1 hour per day.

About 26% of boys and girls reported ever witnessing their parents shouting at each other, and approximately 14% of boys and girls had ever witnessed physical violence from their mother's male partner towards their mother. Boys and girls differed dramatically on levels of violence experienced from parents or caregivers however—9% of girls but only 5% of boys reported emotional violence and neglect from parents or caregivers, and 27% of girls but only 10% of boys reported physical violence from parents or caregivers. No students reported sexual violence from parents or caregivers.

When examining the overlap in experience of witnessing and experiencing violence (Table 2), it becomes clear that witnessing violence almost never occurs in isolation. Less than 1.3% of children reported witnessing violence without also experiencing violence themselves and 26% of boys and girls have both witnessed IPV and experienced violence from any perpetrator. About 68% of boys and 68% of girls have experienced violence but not witnessed IPV, and only 5.6% of boys and 4.6% of girls report never witnessing IPV or experiencing violence.

What forms of violence does witnessing IPV put children at risk for?

We hypothesised that those who witnessed IPV would be at increased risk of various forms of violence from parents in particular. We found (Table 3 and 4) that girls and boys who witnessed shouting and who witnessed both shouting and physical IPV were at increased risk of emotional and combined emotional and physical violence from parents. Girls were also at increased risk for physical violence, but this association was inconsistent for boys. Boys witnessing shouting and physical IPV had over 6 times greater odds of experiencing emotional violence or combined emotional and physical violence from parents. Girls who witnessed shouting or shouting and physical IPV had almost 4 times the odds of combined emotional and physical violence compared to non-witnesses.

However, both boys and girls who witnessed IPV also had increased odds of emotional, physical and sexual violence from perpetrators *other* than parents. Children who witnessed IPV had between about 1.5 and 3.6 times the odds of reporting emotional, physical or sexual victimisation by a non-parent or caregiver, versus those who did not witness any violence between caregivers. So it appears that witnessing IPV inside the home is associated with violence both inside and outside the home.

Factors associated with witnessing and experiencing violence

In tables 5 and 6, we examined the associations between various factors and common patterns of exposure to violence and witnessing IPV. The patterns are: experiencing violence from any perpetrator but not witnessing IPV (Model 1), and witnessing IPV plus experiencing violence from any perpetrator (Model 2). For both Model 1 and Model 2, associations between demographic factors and violence or violence plus witnessing were similar. However, findings point towards additive effects of witnessing and experiencing violence on mental health and use of violence. Odds of having the higher levels of mental health

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3 difficulties and using physical or sexual violence against peers were respectively about 2 and
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5 5 times higher in female students who experienced violence vs. students who did not
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7 experience any violence (Model 1). In female students who experienced and witnessed
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9 violence, odds of having higher levels of mental health difficulties and using physical or
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11 sexual violence against peers were about 4 and 8 times higher vs. students who did not
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13 experience or witness any violence (Model 2). For male students, experiencing violence was
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15 associated with about 2 and 3 times the odds of high mental health difficulties and using
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17 physical or sexual violence (Model 1), whereas experiencing and witnessing violence was
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19 associated with about 4 and 5 times the odds of high levels of mental health difficulties and
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21 using physical or sexual violence (Model 2).
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Discussion

In Luwero district, nearly all students who have witnessed IPV have also experienced emotional, physical or sexual violence themselves. Some of this increased risk of exposure to violence is coming from caregivers—when there is violence between caregivers, there is also likely to be violence between caregivers and children. However children who witness IPV are also at increased risk of emotional, physical and sexual violence from other perpetrators outside the home.

The adverse effects of witnessing and experiencing violence are large. Boys and girls who have witnessed and experienced violence have nearly 4 and 5 times the odds of having high levels of mental health difficulties, and nearly 6 and 8 times the odds of using violence, versus their boys and girls who have not experienced or witnessed violence. Evidence suggests that witnessing IPV and experiencing violence have additive effects—with children who had witnessed and experienced violence having approximately 2 and 3 times the odds of mental health difficulties and using violence respectively compared to those who experiencing violence alone.

Other studies

In our sample, the overlap between witnessing IPV and experiencing violence was almost complete—it was extremely rare for children to witness IPV only. This differs somewhat from other representative samples from high income settings, where witnessing is more common than exposure to maltreatment[9]. In Uganda, similar to other countries in the region, exposure to violence from various perpetrators including parents, peers, and school staff may be more normative and more chronic versus some high income settings[22-24]. Further research is needed to fully understand the implications of this, both in terms of the

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3 health effects of exposure, and designing appropriate intervention strategies for children in
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5 Uganda and similar settings.
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9 In our sample, as in other samples, witnessing and experiencing IPV are strongly associated
10 with poor mental health, and externalising behaviours such as use of violence[25]. There are
11 various pathways through which witnessing IPV and exposure to violence may contribute to
12 poor mental health. Exposure to emotional, physical and sexual violence can induce a
13 traumatic stress response, which can lead to lasting post-traumatic stress disorder, depression,
14 anxiety, and attentional and memory problems[26]. The direct trauma and stress response of
15 witnessing IPV itself and indirect effect on mothers mental health [27], disruption in
16 caregiving due to injuries, economic effects, fathers behaviour and parenting style may all
17 have influence on the child mental health and wellbeing [28].
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29 In high income settings, evidence suggests that multiple exposures to different forms of
30 violence from different actors has an additive effect on subsequent health risks[10]. Our
31 evidence is consistent with this pattern, with those who are exposed to both witnessing and
32 violence showing very high odds of subsequent mental health difficulties and use of violence.
33 Further research is needed to understand how the differing patterns of violence exposure in
34 settings like Uganda, where some forms of violence, including corporal punishment of
35 children, and IPV against women, may be considered more normative. The influence of
36 context specific norms on pathways between early violence exposure and later adverse
37 outcomes is largely unknown.
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49 In our sample, there is some suggestion of a sex difference in health effects, where the effects
50 of both witnessing and experiencing violence have a stronger relationship with mental health
51 difficulties and use of violence in girls relative to boys. This may be related to the nature of
52 the violence experienced by girls—in our sample, girls are much more likely to report sexual
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3 violence, which may have more severe effects relative to other forms of violence exposure.
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5 In the USA, witnessing partner violence is associated with a range of different forms of
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7 victimisation, but especially increase the risk of being a victim of statutory rape, sexual
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9 misconduct and dating violence [9]. This suggests that witnessing IPV may be associated
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11 with having difficult romantic relationships in adolescence [9]. Further work is needed to
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13 understand pathways—it could be that witnessing IPV provides a behavioural model which
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15 young people then follow when engaged in interpersonal relationships with peers and adults
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17 and in their own early romantic relationships.
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21 It is also unclear why children who witness IPV are more likely to experience violence from
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23 other perpetrators besides parents and caregivers. Potential mechanisms could include
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25 supervision—it could be that children who live in households where parents are in a violent
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27 relationship and dysfunction is present have lower levels of supervision and parental support.
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29 In the USA, parental supervision can buffer the effects of exposure to violent environments
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31 and reduce the risk of violent victimisation for adolescents who have this parental
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33 support[29]. We have also shown that children who witness IPV have a higher risk of mental
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35 health difficulties, which includes externalising behaviours, and have a higher risk of using
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37 violence themselves. It could be that children who have difficulties at home are more likely
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39 to behave disruptively in school and in their communities, which may increase the risk of
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41 non-caregiver adults using physical violence to punish their behaviour. Of course, there are
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43 also macro-level factors, including socio-economic context, poverty, and related stress, and
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45 cultural and social norms that will shape risk of violence and maltreatment at the level of the
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47 family, and the community—individual experiences and behaviours must be seen in the
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49 broader socio-economic and cultural context.
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55 *Limitations*

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3 Although we provide some of the first data on witnessing and exposure to violence reported
4 directly by child participants in a low income setting, our study is not without limitations.
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6 Our data is cross-sectional, hence we are unable to make inferences about causal relationships
7 between witnessing violence, various forms of violence experience, mental health and other
8 factors under study. We used a robust instrument to measure violence exposure, however we
9 only had two questions to measure witnessing. A more detailed set of questions may have
10 uncovered other types of witnessing experiences which may be important for understanding
11 health outcomes of early exposures to violence. We asked only about witnessing physical
12 IPV from male partners to female caregivers, which may have underestimated prevalence.
13 We also asked about violence from parents and other perpetrators in less detail relative to
14 violence from school staff (as the main objective of our study was to document violence from
15 school staff). This may also have underestimated prevalence. We excluded boarding
16 students, as they may spend substantially less time at home and thus be less exposed to
17 witnessing IPV, hence our results should not be interpreted as generalizable to this group.
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35 In our measure of lifetime physical violence exposure, we included only severe physical
36 violence from school staff, but both more and less severe forms of physical violence from
37 other perpetrators. Physical violence from school staff was overwhelmingly high in our
38 sample (more than 93% of students reported lifetime experience), hence it would have
39 rendered our exposure measure meaningless if we had used a measure of ever exposure.
40 Further work needs to be done to understand the relationship between different severity levels
41 of violence from different perpetrators with health outcomes. This is a school based sample
42 so children not attending school, whose experience of witnessing and violence may be
43 different, are not represented.
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54 55 *Implications* 56 57 58 59 60

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3 Our study has shown that in our study district, homes with IPV are also highly likely to have
4 child maltreatment. The effects of both witnessing and experiencing violence on children
5 results in poor mental health, and greatly increase the odds of use of violence by the child.
6
7 Our findings suggest that interventions to reduce IPV should be explored for their efficacy in
8 prevention of child maltreatment. One US study of maltreated children showed a decreased
9 in both internalising and externalising problems associated with resolution of IPV in the
10 home over time [30].
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19 Our findings also suggest that many children are experiencing violence in homes where they
20 are not aware of any IPV, suggesting that other child maltreatment prevention strategies are
21 also needed. Programs which seek to address norms and attitudes about violence against
22 children may change levels of violence[16], and programs which build safe, stable, nurturing
23 and supportive relationships may assist children who have been maltreated or who otherwise
24 have difficulties in achieving better outcomes[31].
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32 33 *Conclusions*

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36 Child maltreatment and children's witnessing of IPV between caregivers overlaps
37 substantially, and children who experience both are at greatly increased risk of poor mental
38 health outcomes and externalising behaviour including use of violence against others.
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40 Improved understanding the context specific epidemiology of multiple and chronic violence
41 exposures in settings like Uganda is needed to help develop and target interventions to reduce
42 child maltreatment and also the adverse consequences associated with it.
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3 Acknowledgements.
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5 We wish to thank the Raising Voices team, our team of interviewers in Luwero District, the
6 participants who so generously gave their time to be part of this work, and our donors.
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Table 1. Definitions of violence variables

Variable name	Items	Coding
Witnessing IPV:		
Shouting	Have you ever seen or overheard your parents or caregivers shouting at each other?	Coded 1 if answered yes; 0 if answered no.
Witnessing physical IPV	Have you ever seen or overheard your father hit or beat your mother?	Coded 1 if answered yes; 0 if answered no.
Violence experience: (Note: each participant asked about experience of items below, then asked about perpetrators and time frame)		
Emotional violence, (includes Neglect)	Insulted you, or called you rude or hurtful names? Accused you of witchcraft? Locked you out or made you stay outside? Not given you food?	Lifetime exposure from any perpetrator. Coded 1 if answered yes to any of the items; 0 if answered no to all items.
Physical violence	From perpetrators other than school staff: Twisted your arm or any other body part, slapped you, pushed you or thrown something at you? Punched you, kicked you, or hit you with a closed fist? Hit you with an object, such as a stick or a cane, or whipped you? Cut you with a sharp object or burnt you? Severe violence from school staff: Burnt you as punishment? Choked you? Tried to cut you purposefully with a sharp object? Severely beat you up?	Lifetime exposure from any perpetrator other than school staff, plus lifetime exposure to severe violence from school staff. Coded 1 if answered yes to any of the items; 0 if answered no to all items.
Sexual violence	Disturbed or bothered you by making sexual comments about you? Kissed you, when you did not want them to? Touched your genitals or breasts when you did not want them to, or in a way that made you uncomfortable? Threaten or pressure you to make you do something sexual with them? Make you have sex with them, because they threatened or pressured you? Had sex with you, by physically forcing you?	Lifetime exposure from any perpetrator. Coded 1 if answered yes to any of the items; 0 if answered no to all items.

Table 2. Characteristics of included students

Characteristic	Male			Female			p
	N ^a	%	se	N ^a	%	se	
Age							<0.001
10 years or less	50	3.0	0.7	93	5.3	1.0	
11 to 14 years	1275	78.7	1.6	1503	84.7	1.2	
15 or more years	329	18.3	1.7	172	10.0	1.3	
Number of meals eaten yesterday							0.032
1 meal	225	12.7	1.2	280	15.1	1.2	
2 meals	716	41.7	2.0	644	36.7	1.6	
3+ meals	715	45.6	2.7	846	48.0	1.8	
Disability	122	8.0	0.7	113	7.2	0.8	0.352
Transport to school							0.019
Other	96	6.1	1.6	43	3.3	1.2	
Walking alone	443	28.7	3.1	447	26.9	3.1	
Walking with others	1067	65.3	3.3	1247	69.8	3.7	
Ever worked for money	961	55.9	3.1	272	14.7	1.2	<0.001
Hours worked on average school day							0.149
Less than 1	570	38.2	3.8	650	38.6	2.5	
1-2 hours	757	43.6	2.5	847	47.1	2.0	
More than 2 hours	327	18.2	2.3	264	14.3	1.2	
Violence from parents or caregivers							
No violence	1428	87.0	1.9	1205	69.0	4.1	<0.001
Sexual violence, lifetime	0	0	-	0	0	-	
Emotional violence only, lifetime	48	2.7	0.6	78	4.4	1.3	
Physical violence only, lifetime	143	8.3	1.3	395	21.9	3.3	
Emotional and physical violence, lifetime	37	2.0	0.6	92	4.7	0.9	
Witnessing IPV							
No witnessing	1143	73.2	1.7	1199	72.9	1.6	0.836
Witnessed shouting only, ever	191	12.4	1.7	225	13.3	1.0	
Witnessed physical IPV only, ever	64	3.8	0.6	69	4.0	0.6	
Witnessed shouting and physical IPV, ever	174	10.7	1.0	165	9.8	1.0	
Violence from non-caregivers							
Emotional violence, lifetime	938	58.7	2.7	993	55.8	2.9	0.485
Physical violence ^b , lifetime	625	39.8	2.8	675	39.2	2.2	0.768
Sexual violence, lifetime	63	3.9	0.6	239	13.3	1.3	<0.001
Witnessing IPV^c and violence from any perpetrator^d							
Not witnessed parental IPV or experienced violence	92	5.6	0.9	72	4.6	1.6	0.446
Witnessed IPV but not experienced any violence	9	0.6	0.2	24	1.3	0.5	
Not witnessed IPV but experienced violence	1051	67.6	1.8	1127	68.3	1.6	
Witnessed IPV and experience violence	420	26.3	1.8	435	25.8	1.7	

^aNs are number of participants in each category and are not adjusted for survey design; % and se are weighted and adjusted for clustering, ^bincludes physical violence from any perpetrator but only severe physical violence from school staff, ^cwitnessing parental IPV includes shouting or physical IPV, ^dviolence from caregiver or non-caregiver (sexual or emotional violence from any perpetrator and any physical violence from non-parents but severe physical violence from school staff)

For peer review only

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Table 3. Associations between violence exposure and witnessing violence between parents, female students

Characteristic	Female (n=1423) Witnessed shouting versus witnessed no parental IPV			Female (n=1268) Witnessed physical IPV versus witnessed no parental IPV			Female (n=1364) Witnessed shouting and physical IPV versus witnessed no parental IPV		
	aOR	95% CI	p	aOR	95%CI	p	aOR	95% CI	p
Parental violence									
Emotional only	1.88	1.06-3.33	0.031	1.15	0.27-4.85	0.844	1.93	0.91-4.10	0.084
Physical only	1.51	1.05-2.18	0.028	1.04	0.45-2.41	0.930	1.74	1.09-2.77	0.021
Emotional and physical	3.90	1.95-7.81	<0.001	3.79	1.66-8.64	0.002	3.90	1.84-8.30	0.001
Non-parental violence									
Emotional	2.65	1.84-3.81	<0.001	1.28	0.75-2.21	0.356	2.02	1.37-2.98	0.001
Physical*	2.33	1.83-2.96	<0.001	1.68	1.00-2.81	0.049	2.54	1.82-3.54	<0.001
Sexual	2.36	1.49-3.76	0.001	3.19	0.67-15.14	0.139	2.98	1.81-4.89	<0.001

aOR is odds ratio, adjusted for age (years), eaten at least 3 meals in the past day versus less, share sleeping area with 2 or more children, versus less, share sleeping area with one or more adults versus less, have a disability versus not, worked 1-2 hours or 2 or more hours per day versus less than one hour. CI is confidence interval. *Any physical violence from non-parents but severe physical violence from school staff.

Table 4. Associations between parental violence and witnessing violence between parents, male students

Characteristic	Male (n=1334) Witnessed shouting versus witnessed no parental violence			Male (n=1195) Witnessed physical IPV versus witnessed no parental violence			Male (n=1317) Witnessed shouting and physical IPV versus witnessed no parental violence		
	aOR	95% CI	p	aOR	95%CI	p	aOR	95% CI	p
Parental violence									
Emotional only	4.28	2.20-8.31	<0.001	0.74	0.08-6.72	0.781	6.77	3.96-11.56	<0.001
Physical only	1.65	0.94-2.89	0.077	1.05	0.36-3.00	0.933	0.77	0.39-1.51	0.436
Emotional and physical	6.53	3.29-12.96	<0.001	-	-		6.22	2.63-14.72	<0.001
Non-parental violence									
Emotional	2.67	1.86-3.86	<0.001	1.48	0.83-2.62	0.175	2.87	1.72-4.78	<0.001
Physical*	1.69	1.09-2.64	0.021	2.48	1.67-3.68	<0.001	2.34	1.52-3.56	<0.001
Sexual	1.84	0.94-3.61	0.074	2.24	0.57-8.83	0.243	3.51	1.52-8.10	0.004

aOR is odds ratio, adjusted for age (years), eaten at least 3 meals in the past day versus less, share sleeping area with 2 or more children, versus less, share sleeping area with one or more adults versus less, have a disability versus not, worked 1-2 hours or 2 or more hours per day versus less than one hour. CI is confidence interval. *Any physical violence from non-parents but severe physical violence from school staff.

Table 5. Factors associated with experiencing violence and experiencing violence plus witnessing IPV, female students

Characteristic	Model 1			Model 2		
	Experienced violence from any perpetrator but did not witness shouting or physical parental violence, n=1190			Experienced violence from any perpetrator and witnessed shouting or physical parental violence, n=2477		
	aOR	95% CI	P	aOR	95%CI	p
Age (years)	0.97	0.83-1.14	0.703	1.07	0.91-1.25	0.403
Ate at least 3 meals yesterday (versus less)	1.24	0.99-1.56	0.063	0.88	0.55-1.40	0.578
Share sleeping area with 2 or more children (versus less)	0.68	0.53-0.89	0.005	0.93	0.65-1.33	0.674
Share sleeping area with 1 or more adults (versus none)	1.03	0.73-1.47	0.853	1.47	0.77-2.83	0.239
Disability (versus not)	1.23	0.30-5.09	0.772	2.09	0.97-4.53	0.060
Work less than 1 hour per day	1			1		
Work 1-2 hours per day	1.52	1.08-2.15	0.017	1.72	1.04-2.86	0.036
Work more than 2 hours per day	3.69	1.83-7.46	0.001	4.50	1.78-11.33	0.002
Low SDQ score	1			1		
Medium SDQ score	2.29	1.33-3.95	0.004	3.84	1.69-8.72	0.002
High SDQ score	1.85	0.91-3.78	0.089	4.35	1.95-9.69	0.001
Used physical or sexual violence	5.14	2.99-8.84	<0.001	8.12	5.15-12.80	<0.001

SDQ: Strengths and Difficulties Questionnaire. aOR is adjusted odds ratio, adjusted for all other variables in the model.

Table 6: Factors associated with experiencing violence and experiencing violence plus witnessing, male students

Characteristic	Model 1			Model 2		
	Experienced violence from any perpetrator but did not witness shouting or physical parental violence n=1190			Experienced violence from any perpetrator and witnessed shouting or physical parental violence n=598		
	aOR	95% CI	P	aOR	95%CI	p
Age (years)	0.88	0.79-0.97	0.015	1.01	0.85-1.21	0.887
Ate at least 3 meals yesterday (versus less)	0.96	0.67-1.37	0.803	1.19	0.72-1.98	0.488
Share sleeping area with 2 or more children (versus less)	0.73	0.57-0.93	0.013	0.52	0.36-0.74	0.001
Share sleeping area with 1 or more adults (versus none)	1.18	0.86-1.63	0.301	1.16	0.68-1.96	0.579
Disability (versus not)	1.49	0.91-2.44	0.114	1.12	0.51-2.46	0.775
Work less than 1 hour per day	1			1		
Work 1-2 hours per day	1.69	1.15-2.49	0.008	1.86	1.14-3.04	0.014
Work more than 2 hours per day	1.63	0.88-3.02	0.119	2.07	0.91-4.72	0.082
Low SDQ score	1			1		
Medium SDQ score	1.66	0.96-2.87	0.069	2.90	1.60-5.26	0.001
High SDQ score	2.28	1.29-4.07	0.006	3.85	1.16-10.17	0.008
Used physical or sexual violence	3.23	1.99-5.24	<0.001	5.55	2.94-10.49	<0.001

SDQ: Strengths and Difficulties Questionnaire. aOR is adjusted odds ratio, adjusted for all other variables in the model.

STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies*

	Item No	Recommendation	Page reported
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1,2
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4
Objectives	3	State specific objectives, including any prespecified hypotheses	4-5
Methods			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	6
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6-8, Table 1
Data sources/measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	6-8, Table 1
Bias	9	Describe any efforts to address potential sources of bias	8-9
Study size	10	Explain how the study size was arrived at	6-7
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8, Table 1
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	9
		(b) Describe any methods used to examine subgroups and interactions	9
		(c) Explain how missing data were addressed	9
		(d) If applicable, describe analytical methods taking account of sampling strategy	9
		(e) Describe any sensitivity analyses	n/a
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible,	6

		included in the study, completing follow-up, and analysed	
		(b) Give reasons for non-participation at each stage	6
		(c) Consider use of a flow diagram	n/a
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	10
		(b) Indicate number of participants with missing data for each variable of interest	9, Table 2
Outcome data	15*	Report numbers of outcome events or summary measures	Table 2
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Tables 3-6 for adjusted estimates, confounders in footnotes. Unadjusted estimates are not presented to save space.
		(b) Report category boundaries when continuous variables were categorized	8, Table 1
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	n/a
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	n/a
Discussion			
Key results	18	Summarise key results with reference to study objectives	13
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	15-16
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	16-17
Generalisability	21	Discuss the generalisability (external validity) of the study results	16
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Acknowledgement, and funding statement provided to journal.

*Give information separately for exposed and unexposed groups.

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2 **Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and
3 published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely
4 available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at
5 <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is
6 available at www.strobe-statement.org.
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Table 1. Definitions of violence variables

Variable name	Items	Coding
Witnessing IPV:		
Shouting	Have you ever seen or overheard your parents or caregivers shouting at each other?	Coded 1 if answered yes; 0 if answered no.
Witnessing physical IPV	Have you ever seen or overheard your father hit or beat your mother?	Coded 1 if answered yes; 0 if answered no.
Violence experience: (Note: each participant asked about experience of items below, then asked about perpetrators and time frame)		
Emotional violence, (includes Neglect)	Insulted you, or called you rude or hurtful names? Accused you of witchcraft? Locked you out or made you stay outside? Not given you food?	Lifetime exposure from any perpetrator. Coded 1 if answered yes to any of the items; 0 if answered no to all items.
Physical violence	From perpetrators other than school staff: Twisted your arm or any other body part, slapped you, pushed you or thrown something at you? Punched you, kicked you, or hit you with a closed fist? Hit you with an object, such as a stick or a cane, or whipped you? Cut you with a sharp object or burnt you? Severe violence from school staff: Burnt you as punishment? Choked you? Tried to cut you purposefully with a sharp object? Severely beat you up?	Lifetime exposure from any perpetrator other than school staff, plus lifetime exposure to severe violence from school staff. Coded 1 if answered yes to any of the items; 0 if answered no to all items.
Sexual violence	Disturbed or bothered you by making sexual comments about you? Kissed you, when you did not want them to? Touched your genitals or breasts when you did not want them to, or in a way that made you uncomfortable? Threaten or pressure you to make you do something sexual with them? Make you have sex with them, because they threatened or pressured you? Had sex with you, by physically forcing you?	Lifetime exposure from any perpetrator. Coded 1 if answered yes to any of the items; 0 if answered no to all items.

Table 2. Characteristics of included students

Characteristic	Male			Female			p
	N ^a	%	se	N ^a	%	se	
Age							<0.001
10 years or less	50	3.0	0.7	93	5.3	1.0	
11 to 14 years	1275	78.7	1.6	1503	84.7	1.2	
15 or more years	329	18.3	1.7	172	10.0	1.3	
Number of meals eaten yesterday							0.032
1 meal	225	12.7	1.2	280	15.1	1.2	
2 meals	716	41.7	2.0	644	36.7	1.6	
3+ meals	715	45.6	2.7	846	48.0	1.8	
Disability	122	8.0	0.7	113	7.2	0.8	0.352
Transport to school							0.019
Other	96	6.1	1.6	43	3.3	1.2	
Walking alone	443	28.7	3.1	447	26.9	3.1	
Walking with others	1067	65.3	3.3	1247	69.8	3.7	
Ever worked for money	961	55.9	3.1	272	14.7	1.2	<0.001
Hours worked on average school day							0.149
Less than 1	570	38.2	3.8	650	38.6	2.5	
1-2 hours	757	43.6	2.5	847	47.1	2.0	
More than 2 hours	327	18.2	2.3	264	14.3	1.2	
Violence from parents or caregivers							
No violence	1428	87.0	1.9	1205	69.0	4.1	<0.001
Sexual violence, lifetime	0	0	-	0	0	-	
Emotional violence only, lifetime	48	2.7	0.6	78	4.4	1.3	
Physical violence only, lifetime	143	8.3	1.3	395	21.9	3.3	
Emotional and physical violence, lifetime	37	2.0	0.6	92	4.7	0.9	
Witnessing IPV							
No witnessing	1143	73.2	1.7	1199	72.9	1.6	0.836
Witnessed shouting only, ever	191	12.4	1.7	225	13.3	1.0	
Witnessed physical IPV only, ever	64	3.8	0.6	69	4.0	0.6	
Witnessed shouting and physical IPV, ever	174	10.7	1.0	165	9.8	1.0	
Violence from non-caregivers							
Emotional violence, lifetime	938	58.7	2.7	993	55.8	2.9	0.485
Physical violence ^b , lifetime	625	39.8	2.8	675	39.2	2.2	0.768
Sexual violence, lifetime	63	3.9	0.6	239	13.3	1.3	<0.001
Witnessing IPV^c and violence from any perpetrator^d							
Not witnessed parental IPV or experienced violence	92	5.6	0.9	72	4.6	1.6	0.446
Witnessed IPV but not experienced any violence	9	0.6	0.2	24	1.3	0.5	
Not witnessed IPV but experienced violence	1051	67.6	1.8	1127	68.3	1.6	
Witnessed IPV and experience violence	420	26.3	1.8	435	25.8	1.7	

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3 ^aNs are number of participants in each category and are not adjusted for survey design; % and se are weighted
4 and adjusted for clustering, ^bincludes physical violence from any perpetrator but only severe physical violence
5 from school staff, ^cwitnessing parental IPV includes shouting or physical IPV, ^dviolence from caregiver or non-
6 caregiver (sexual or emotional violence from any perpetrator and any physical violence from non-parents but
7 severe physical violence from school staff)
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Table 3. Associations between violence exposure and witnessing violence between parents, female students

Characteristic	Female (n=1423) Witnessed shouting versus witnessed no parental IPV			Female (n=1268) Witnessed physical IPV versus witnessed no parental IPV			Female (n=1364) Witnessed shouting and physical IPV versus witnessed no parental IPV		
	aOR	95% CI	p	aOR	95%CI	p	aOR	95% CI	p
Parental violence									
Emotional only	1.88	1.06-3.33	0.031	1.15	0.27-4.85	0.844	1.93	0.91-4.10	0.084
Physical only	1.51	1.05-2.18	0.028	1.04	0.45-2.41	0.930	1.74	1.09-2.77	0.021
Emotional and physical	3.90	1.95-7.81	<0.001	3.79	1.66-8.64	0.002	3.90	1.84-8.30	0.001
Non-parental violence									
Emotional	2.65	1.84-3.81	<0.001	1.28	0.75-2.21	0.356	2.02	1.37-2.98	0.001
Physical*	2.33	1.83-2.96	<0.001	1.68	1.00-2.81	0.049	2.54	1.82-3.54	<0.001
Sexual	2.36	1.49-3.76	0.001	3.19	0.67-15.14	0.139	2.98	1.81-4.89	<0.001

aOR is odds ratio, adjusted for age (years), eaten at least 3 meals in the past day versus less, share sleeping area with 2 or more children, versus less, share sleeping area with one or more adults versus less, have a disability versus not, worked 1-2 hours or 2 or more hours per day versus less than one hour. CI is confidence interval. *Any physical violence from non-parents but severe physical violence from school staff.

Table 4. Associations between parental violence and witnessing violence between parents, male students

Characteristic	Male (n=1334) Witnessed shouting versus witnessed no parental violence			Male (n=1195) Witnessed physical IPV versus witnessed no parental violence			Male (n=1317) Witnessed shouting and physical IPV versus witnessed no parental violence		
	aOR	95% CI	p	aOR	95%CI	p	aOR	95% CI	p
Parental violence									
Emotional only	4.28	2.20-8.31	<0.001	0.74	0.08-6.72	0.781	6.77	3.96-11.56	<0.001
Physical only	1.65	0.94-2.89	0.077	1.05	0.36-3.00	0.933	0.77	0.39-1.51	0.436
Emotional and physical	6.53	3.29-12.96	<0.001	-	-		6.22	2.63-14.72	<0.001
Non-parental violence									
Emotional	2.67	1.86-3.86	<0.001	1.48	0.83-2.62	0.175	2.87	1.72-4.78	<0.001
Physical*	1.69	1.09-2.64	0.021	2.48	1.67-3.68	<0.001	2.34	1.52-3.56	<0.001
Sexual	1.84	0.94-3.61	0.074	2.24	0.57-8.83	0.243	3.51	1.52-8.10	0.004

aOR is odds ratio, adjusted for age (years), eaten at least 3 meals in the past day versus less, share sleeping area with 2 or more children, versus less, share sleeping area with one or more adults versus less, have a disability versus not, worked 1-2 hours or 2 or more hours per day versus less than one hour. CI is confidence interval. *Any physical violence from non-parents but severe physical violence from school staff.

Table 5. Factors associated with experiencing violence and experiencing violence plus witnessing IPV, female students

Characteristic	Model 1			Model 2		
	Experienced violence from any perpetrator but did not witness shouting or physical parental violence, n=1190			Experienced violence from any perpetrator and witnessed shouting or physical parental violence, n=2477		
	aOR	95% CI	P	aOR	95%CI	p
Age (years)	0.97	0.83-1.14	0.703	1.07	0.91-1.25	0.403
Ate at least 3 meals yesterday (versus less)	1.24	0.99-1.56	0.063	0.88	0.55-1.40	0.578
Share sleeping area with 2 or more children (versus less)	0.68	0.53-0.89	0.005	0.93	0.65-1.33	0.674
Share sleeping area with 1 or more adults (versus none)	1.03	0.73-1.47	0.853	1.47	0.77-2.83	0.239
Disability (versus not)	1.23	0.30-5.09	0.772	2.09	0.97-4.53	0.060
Work less than 1 hour per day	1			1		
Work 1-2 hours per day	1.52	1.08-2.15	0.017	1.72	1.04-2.86	0.036
Work more than 2 hours per day	3.69	1.83-7.46	0.001	4.50	1.78-11.33	0.002
Low SDQ score	1			1		
Medium SDQ score	2.29	1.33-3.95	0.004	3.84	1.69-8.72	0.002
High SDQ score	1.85	0.91-3.78	0.089	4.35	1.95-9.69	0.001
Used physical or sexual violence	5.14	2.99-8.84	<0.001	8.12	5.15-12.80	<0.001

SDQ: Strengths and Difficulties Questionnaire. aOR is adjusted odds ratio, adjusted for all other variables in the model.

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Table 6: Factors associated with experiencing violence and experiencing violence plus witnessing, male students

Characteristic	Model 1			Model 2		
	Experienced violence from any perpetrator but did not witness shouting or physical parental violence n=1190			Experienced violence from any perpetrator and witnessed shouting or physical parental violence n=598		
	aOR	95% CI	P	aOR	95%CI	p
Age (years)	0.88	0.79-0.97	0.015	1.01	0.85-1.21	0.887
Ate at least 3 meals yesterday (versus less)	0.96	0.67-1.37	0.803	1.19	0.72-1.98	0.488
Share sleeping area with 2 or more children (versus less)	0.73	0.57-0.93	0.013	0.52	0.36-0.74	0.001
Share sleeping area with 1 or more adults (versus none)	1.18	0.86-1.63	0.301	1.16	0.68-1.96	0.579
Disability (versus not)	1.49	0.91-2.44	0.114	1.12	0.51-2.46	0.775
Work less than 1 hour per day	1			1		
Work 1-2 hours per day	1.69	1.15-2.49	0.008	1.86	1.14-3.04	0.014
Work more than 2 hours per day	1.63	0.88-3.02	0.119	2.07	0.91-4.72	0.082
Low SDQ score	1			1		
Medium SDQ score	1.66	0.96-2.87	0.069	2.90	1.60-5.26	0.001
High SDQ score	2.28	1.29-4.07	0.006	3.85	1.16-10.17	0.008
Used physical or sexual violence	3.23	1.99-5.24	<0.001	5.55	2.94-10.49	<0.001

SDQ: Strengths and Difficulties Questionnaire. aOR is adjusted odds ratio, adjusted for all other variables in the model.