



# **VIOLENCE UNWRAPPED**



**Save the Children**

**The Social and Economic Burden of  
Violence Against Children in South Africa**



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## TABLE OF CONTENTS

<b>Abbreviations</b>	<b>5</b>
<b>Key Definitions</b>	<b>5</b>
<b>EXECUTIVE SUMMARY</b>	<b>7</b>
Monetary value of DALYs lost from nonfatal violence against children	10
Monetary value of DALYs lost from fatal violence against children	10
Reduced earnings	11
Child welfare costs	11
<b>THE ECONOMIC BURDEN OF VIOLENCE AGAINST CHILDREN IN SOUTH AFRICA</b>	<b>14</b>
<b>BACKGROUND</b>	<b>14</b>
<b>METHODS</b>	<b>15</b>
Systematic review	15
Prevalence rates	17
Population attributable fractions	18
Economic burden	18
Systematic review of the consequences literature	20
<b>RESULTS</b>	<b>24</b>
Monetary value of DALYs lost from nonfatal violence against children	24
Monetary value of DALYs lost from fatal violence against children	24
Reduced earnings	24
Child welfare costs	25
Limitations	26
<b>RECOMMENDATIONS</b>	<b>27</b>
<b>CONCLUSIONS</b>	<b>29</b>
<b>References</b>	<b>30</b>
<b>APPENDIX A: Methods used in the Optimus Study South Africa: A summary</b>	<b>34</b>
<b>APPENDIX B: Odds ratios and relative risks for health outcomes associated with childhood violence, based on the systematic review and secondary analyses</b>	<b>40</b>
<b>TABLE OF TABLES</b>	
<b>Table 1:</b> Cost of Child Care and Protection	20
<b>Table 2:</b> Studies used to calculate RRs for maltreatment – outcomes	36
<b>Table 3:</b> Prevalence of violence against children	37
<b>Table 4:</b> Population attributable fractions (PAFs) and relative risks (RRs) for health outcomes associated with violence against children	38
<b>Table 5:</b> Estimated DALYs and economic value lost to violence against children in 2015	39
<b>Table 6:</b> Odd ratios (ORs) for health outcomes associated with childhood violence based on the systematic review	40
<b>Table 7:</b> Relative risks (RRs) for health outcomes associated with childhood violence based on the secondary analysis of the Cape Area Panel Study	41
<b>TABLE OF FIGURES</b>	
<b>Figure 1:</b> PRISMA flow chart	42



## Abbreviations

<b>DALY</b>	Disability-adjusted life year
<b>GBD</b>	Global Burden of Disease
<b>GDP</b>	Gross domestic product
<b>OR</b>	Odds ratio
<b>PAF</b>	Population attributable fraction
<b>RR</b>	Relative risk

## Key Definitions

**Odds ratio (OR):** An OR is a measure of association between an exposure and an outcome. The OR represents the odds that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure.

**Relative risk (RR):** In statistics and epidemiology, RR is the ratio of the probability of an event occurring (for example, developing a cancer) in an exposed group, to the probability of the event occurring in a comparison, non-exposed group.

**Disability-adjusted life year (DALY):** A DALY is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death.

**Population attributable fractions (PAF):** A PAF is the proportional reduction in population outcomes (such as cancer or substance misuse) that would occur if exposure to a risk factor (in this case violence against children) were reduced to an alternative ideal exposure scenario (e.g., no violence against children).

**Violence against children:** Violence against children is defined as constituting “all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child’s health, survival, development or dignity in the context of a relationship of responsibility, trust or power” (Krug et al., 2002, p.59). Definitions of forms of violence provided below come from the same source.

**Physical violence:** Physical violence against children is that which results in actual or potential physical harm from an interaction or lack of an interaction, which is reasonably within the control of a parent or person in a position of responsibility, power or trust. There may be single or repeated incidents.

**Sexual violence:** Sexual violence against children is the involvement of a child in sexual activity that he or she does not fully comprehend, is unable to give informed consent to, or for which the child is not developmentally prepared and cannot give consent, or that violate the laws or social taboos of society. Sexual violence against children is evidenced by this activity between a child and an adult or another child who by age or development is in a relationship of responsibility, trust or power, the activity being intended to gratify or satisfy the needs of the other person.

**Emotional violence:** Emotional violence against children involves the failure to provide a developmentally appropriate, supportive environment, including the availability of a primary attachment figure, so that the child can develop a stable and full range of emotional and social competencies commensurate with her or his personal potentials and in the context of the society in which the child dwells. There may also be acts toward the child that cause or have a high probability of causing harm to the child's health or physical, mental, spiritual, moral or social development. To be framed as abusive, these acts must be reasonably within the control of the parent or person in a relationship of responsibility, trust or power. Acts include restriction of movement, patterns of belittling, denigrating, scapegoating, threatening, scaring, discriminating, ridiculing or other non-physical forms of hostile or rejecting treatment.

**Neglect:** Neglect can be defined as the failure to provide for the development of the child in all spheres: health, education, emotional development, nutrition, shelter, and safe living conditions, in the context of resources reasonably available to the family or caretakers and causes or has a high probability of causing harm to the child's health or physical, mental, spiritual, moral or social development. This includes the failure to properly supervise and protect children from harm as much as is feasible.



## EXECUTIVE SUMMARY

Violence against children exists in every country in the world, cutting across culture, class, education, income and ethnic origin. South Africa is no exception. Violence against children can have lifelong adverse health, social and economic consequences for survivors, including behavioural problems and risky sexual behaviours; mental and physical health conditions; increased risk of delinquency, criminal and violent behaviours; disability from physical injury; reduced health-related quality of life; lower levels of educational achievement and impaired capacity of adults to generate income.

Given the high prevalence and the many negative short- and long-term consequences, the economic cost of violence against children is substantial. Estimating the economic burden of violence against children is important for several reasons, including: increasing awareness on the current severity of violence against children, assisting policy makers and government officials in prioritizing funding and developing preventative services, placing the problem in the context of other public health concerns, and providing data for economic evaluations of interventions to reduce or prevent violence against children. Estimates of the economic burden have been published for a few countries such as the United States, Australia, and China, but are lacking in most countries of the world, including South Africa.

Information on the cost of violence against children in South Africa will be crucial to further develop the child protection system in terms of the design, the enforcement and the effective allocation of budget for the operation of the system. Thus additional evidence and information on the economic burden of violence against children in South Africa and its budget implications are needed for planning, coordination and investing in violence prevention.

Save the Children South Africa aims to advocate for an effective child protection system that prevents and responds to violence against children. To make this happen, the government needs data and evidence to understand the consequences of violence against children both to the individual victims and their families, and to the society as a whole. In this way, violence against children can be understood as the public policy issue that it is, having implications for social and economic costs if not addressed.

The purpose of this study was to estimate the economic burden of violence against children in South Africa. We assembled summative estimates of lifetime prevalence, calculated the magnitude of associations with negative outcomes, and thereby estimated the economic burden of violence against children. The data generated in this study is intended to advance the awareness of policy makers of the economic impact of violence against children and therefore support budget allocations and investments in this regard.

### Summary of methods and data

Three steps were used to estimate the economic burden of violence against children in South Africa:

#### Step one - Systematic review of prevalence and consequences

A systematic review was conducted to identify studies reporting on the prevalence and consequences of violence against children in South Africa using the Africa-Wide Information, MEDLINE, PsycINFO, CINAHL, ERIC, SocINDEX and Embase databases. Given that there were too few studies to yield reliable estimates on the consequences of witnessing parental violence and exploitation, these forms of violence against children were not included in this study. This study only focuses on four major types of violence against children: physical violence, sexual violence, emotional violence, and neglect. Key child protection researchers

and organizations in South Africa were also contacted to identify additional studies. The reference lists of key narrative reviews on violence against children in South Africa and the region were also scanned for additional studies, and a manual search of eight international and national journals was also conducted.

The systematic review identified a total of 65 studies. For consequences, a total of 24 studies met the inclusion criteria: 10 measured the relationship between violence against children and interpersonal violence, 4 measured anxiety, 3 measured self-harm, 3 measured alcohol abuse, 3 measured depression, 3 measured sexually transmitted diseases, 2 measured drug abuse, 1 measured HIV, and 5 measured other types of outcomes such as unwanted pregnancy or high school drop-out.

Following a systematic review of the prevalence literature, we began a meta-analysis to determine the prevalence rates. However, at the same time, the results from the Optimus Study South Africa (Artz et al., 2016) were released (see [http://www.cjcp.org.za/uploads/2/7/8/4/27845461/08\\_cjcp\\_report\\_2016\\_d.pdf](http://www.cjcp.org.za/uploads/2/7/8/4/27845461/08_cjcp_report_2016_d.pdf)) – these provide the first nationally representative figures of violence against children in South Africa. Since nationally representative studies provide more accurate data than those that can be pieced together through a meta-analysis, the Optimus Study data were used in subsequent analyses.

#### Step two - Calculation of population attributable fractions (PAFs)

Population Attributable Fractions (PAFs) are used to estimate the proportion of morbidity or mortality attributable to a risk factor. All PAF formulas require: (1) Relative risk (RR) of a disease or outcome (e.g., depression) given exposure to a risk factor (violence against children), or an odds ratio (OR) which can be converted into an approximate estimate of the relative risk (RR); and (2) a measure of prevalence. In order to match the outcomes with the available Global Burden of Disease categories, the outcomes were limited to: alcohol abuse, drug abuse, sexually transmitted diseases (STDs), HIV, interpersonal violence, self-harm and mental disorder – including depression and anxiety. For each of these outcomes, we calculated a population attributable fraction for each form of violence against children for which we had data.

In addition to the data obtained from a systematic review of the outcomes literature, outcomes data from the Cape Area Panel Study (CAPS) were analysed to determine PAFs. The CAPS is a longitudinal study of a large representative sample of adolescents in Cape Town as they undergo the multiple transitions from adolescence to adulthood – it began in 2002 and ended in 2009.

PAFs for each selected outcome were estimated separately for each of four major types of violence against children (physical abuse, sexual abuse, emotional abuse, and neglect).

#### Step three - Estimating economic burden

Based on the available data, a prevalence-based approach was used to estimate the economic burden of violence against children in South Africa in 2015. The cost categories included: (1) the monetary value of disability-adjusted life years (DALYs) lost from fatal cases of violence against children, and physical and mental health outcomes and health risk behaviours attributable to nonfatal violence against children; (2) reduced earnings due to physical violence against children and emotional violence against children; and (3) child welfare costs.

1. We estimated the disability-adjusted life-years (DALYs) lost – due to violence against children-attributable mental health disorders and health-risk behaviours – and then estimated the monetary value of those DALYs in 2015 South African Rand

(ZAR). For each of the main types of violence against children that we considered, a population attributable fraction for an outcome of interest was multiplied by the estimate of the number of the DALYs expected to be lost because of that outcome.

Second, the DALYs lost from fatal cases of violence against children were calculated as the number of child deaths multiplied by a loss function specifying the years lost for deaths as a function of the age at which death occurs (WHO, 2013).

DALY losses were converted into monetary value by assuming that one DALY is equal to the country's per-capita GDP.

2. Using secondary analysis of the CAPS, we first estimated the percentage reduction in adulthood earnings attributable to physical violence against children and emotional violence against children. Next, we estimated the number of people among the population of labour force who are lifetime physical and emotional violence victims, respectively. Finally, we combined the two pieces of data to estimate the total productivity loss in South Africa in 2015 attributable to physical and emotional violence against children.
3. To determine child welfare costs we totalled the Department of Social Development's provincial revised estimates for the Child Care and Protection sub-programme to get a national figure.

### Summary of results

From the Optimus Study South Africa we were able to obtain nationally representative prevalence data on violence against children in South Africa. The prevalence rates we used are as follows: 7.2% for contact sexual violence (6.1% for males and 8.5% for females), 26.1% for physical violence (24.0% for males and 28.7% for females), 12.6% for emotional violence (9.7% for males and 16.2% for females), and 12.2% (9.8% for males and 15.1% for females) for neglect.

Differences exist in the links between violence against children and health consequences and their associated economic burden.





## Monetary value of DALYs lost from nonfatal violence against children

### Physical violence against children

- An estimated 1 420 744 of the DALYs lost in South Africa in 2015 were attributable to physical violence against children. The estimated economic value of these lost DALYs was ZAR103.8 billion – or 2.6% of South Africa's gross domestic product (GDP) in 2015 (in 2015, GDP was estimated at R4 trillion – Statistics South Africa, 2016).

### Sexual violence against children

- An estimated 390 905 of the DALYs lost in South Africa in 2015 were attributable to sexual violence against children. The estimated economic value of these lost DALYs was ZAR28.6 billion – or 0.7% of GDP in 2015.

### Emotional violence against children

- An estimated 786 560 of the DALYs lost in South Africa in 2015 were attributable to emotional violence against children. The estimated economic value of these lost DALYs was ZAR57.5 billion – or 1.4% of GDP in 2015.

### Childhood neglect

- An estimated 85 764 of the DALYs lost in South Africa in 2015 were attributable to childhood neglect against children. The estimated economic value of these lost DALYs was ZAR6.3 billion – or 0.16% of 2015 GDP.

Adding up the economic value of DALY loss across different types of violence against children, 2.7 million DALYs lost in South Africa in 2015 were attributable to violence against children. The estimated economic value of DALYs lost to violence against children in South Africa in 2015 totalled ZAR196 billion – or 4.9% of South Africa's GDP in 2015.

## Monetary value of DALYs lost from fatal violence against children

The estimated economic value of the lost DALYs attributable to fatal violence against children was ZAR6.2 billion in 2015 – or 0.16% of South Africa's GDP in 2015.

## Reduced earnings

The total monthly productivity loss attributable to physical violence against children and emotional violence against children in South Africa in 2015 were ZAR2,100,262,762 (5,503,055\*382) and ZAR797,270,391 (2,656,647\*300), respectively. Multiplying by 12, the total productivity loss in South Africa for the year of 2015 that was attributable to physical violence against children and emotional violence against children were ZAR25.2 billion (0.63% of GDP) and ZAR9.6 billion (0.24% of GDP), respectively.

## Child welfare costs

Overall, provinces in South Africa spent ZAR1.58 billion (0.04% of GDP) on child care and protection in fiscal year 2015/2016.

## Total estimated cost of violence against children in South Africa

Summing up all the above cost we arrive at a total estimated cost of physical and emotional violence against children of ZAR238.58 billion – or 6% of South Africa's gross domestic product in 2015.

## Limitations

As with any research study, there are several limitations:

- In studies on violence against children in South Africa, there is a paucity of representative sampling, a lack of standardised definitions of violence against children, and a variety of measurement scales – this renders comparative analysis difficult.
- PAFs may be sensitive to small changes in the underlying parameters (prevalence and RR), and the implications can be significant when multiplied by an aggregate outcome. Although we carefully reviewed all input data to select appropriate studies, our results rest squarely on the quality of available data.
- While the DALY as a measure has made a central contribution to the assessment of disease burden, there has been some debate about their validity for disability specifically and about their universal application. The DALY results should thus be interpreted with caution.

- Another significant issue is that the studies of violence against children typically excluded many possibly important confounding factors, had small samples, and also rely on self-report. This may ultimately mean that the population attributable fractions are either over- or underestimated.

## Recommendations

These limitations to the study mean that we have most likely under-estimated the costs of violence against children, but it is clear that these costs are substantial. Preventing violence against children must therefore become an urgent priority, for policy, research and programming.

For policy-makers, there are two priorities:

1. Investing in prevention. A helpful list of evidence-based strategies for preventing violence of all forms, including violence against children, is provided by the World Health Organization (2009):
  - a. Developing safe, stable and nurturing relationships between children and their parents and caregivers
  - b. Developing life skills in children and adolescents.
  - c. Reducing the availability and harmful use of alcohol.
  - d. Reducing access to guns, knives and pesticides.
  - e. Promoting gender equality to prevent violence against women; and
  - f. Changing cultural and social norms that support violence.
  - g. Victim identification, care and support programmes.
2. Secondly, policy-makers should invest in improving the quality of data sources for tracking violence against children, such as the Child Protection Register, in order both to plan services more accurately and to assess whether prevention efforts are effective.

Concomitantly, a key ethical responsibility borne by both those involved in programming and by policy-makers is that programmes should have a strong evidence-base before they are rolled out widely; this is an ethical responsibility, as programmes without evidence may achieve nothing, or worse, do harm

(Wessels et al., 2013); it is also, for the same reasons, a fiscal responsibility, as whether programmes achieve an effect or not, they are costly.

Priorities for researchers lie in improving the amount and quality of data available. Our work here has been much constrained because of the lack of data on violence against South African children.

### Conclusion

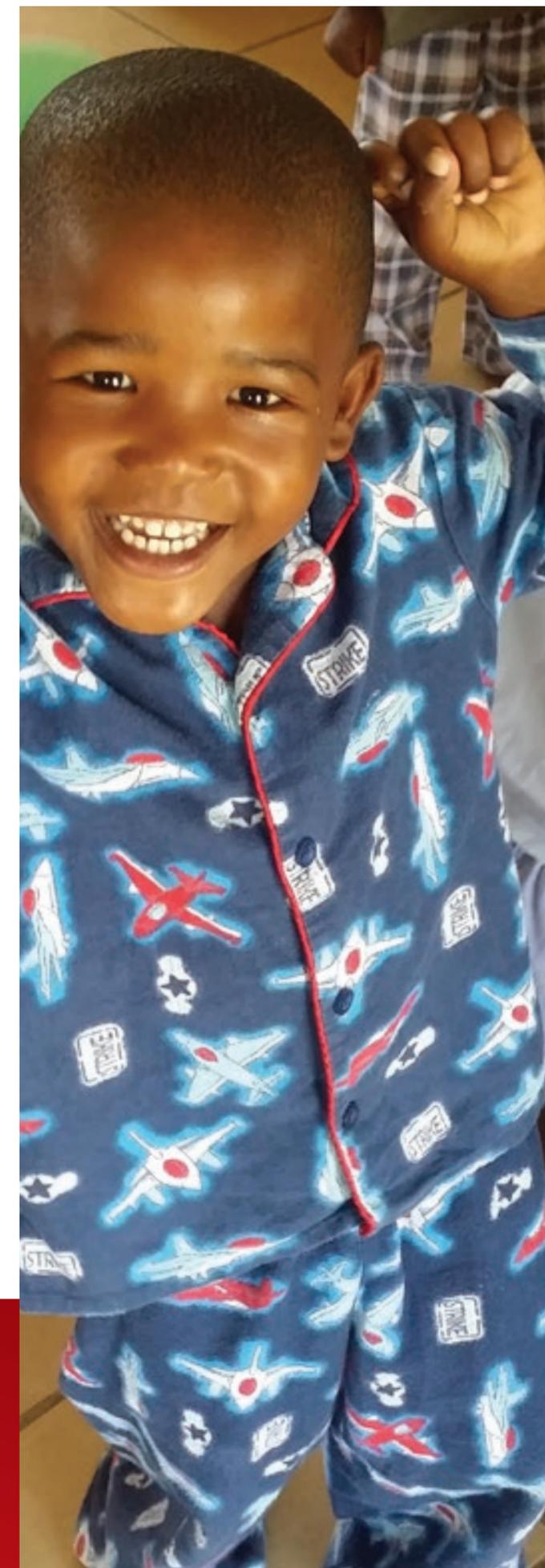
This is the first study to estimate the aggregate burden of violence against children in South Africa. Violence against children is a common experience for South African children, and causes great losses to South Africa society in terms of both DALYS and finance. According to our calculations, 2.7 million and 84 287 DALYs lost in South Africa in 2015 were attributable to nonfatal and fatal violence against children, respectively. The DALYs lost to nonfatal violence against children is larger than the corresponding estimates for diabetes mellitus – 1.0 million

DALYs lost – and stroke – 0.95 million DALYs lost. Comparing this with the DALY figures for HIV/AIDS, non-fatal violence against children led to the loss of 25% of the DALYs lost to HIV/AIDS in 2015 – HIV/AIDS was the leading cause of DALY loss in 2015. The estimated economic value of DALYs lost to violence against children (including both fatal and nonfatal) in South Africa in 2015 totalled ZAR202 billion. In addition, the reduced earnings attributable to childhood physical violence and emotional violence in South Africa in 2015 were ZAR25.2 billion and ZAR9.6 billion, respectively. In addition, South Africa spent ZAR1.6 billion on child care and protection in fiscal year 2005/2016, many of which costs are directly related to violence against children.

Considering all data limitations together, we suggest that the burden estimates derived from this study under-estimate the true situation. Our estimates of the burdens of violence against children are based on the available data on a small number of health outcomes. Many of the serious effects of violence against

children were not included because no studies exist in South Africa. These effects include: poor educational outcomes; higher levels of healthcare utilization; criminal behaviour; reproductive health problems; and chronic diseases such as diabetes, heart disease and cancer.

This study confirms the importance of prioritizing violence against children as a key social and economic concern for South Africa's future. The economic burden of violence against children in South Africa is substantial. The data generated as part of this analysis will help raise the awareness of policy makers on the lifetime impacts of violence against children, guide budget allocation and investment, and provide data for economic evaluations of interventions to reduce or prevent violence against children. It also underscores the need to steer resources towards prevention and to strengthening the knowledge base regarding the scale and consequences of violence against children at the national level.



# THE ECONOMIC BURDEN OF VIOLENCE AGAINST CHILDREN IN SOUTH AFRICA

## BACKGROUND

In 2014, the Human and Social Services department of KPMG undertook an analysis to estimate the cost of gender-based violence in South Africa. Based on a conservative approach, violence against women was estimated to cost South Africa between R28.4 billion to R42.4 billion for the year of 2012/2013, which represents 0.9% to 1.3% of the GDP. These costs are likely underestimated as they do not take into account numerous factors such as costs to the second generation, pain and suffering, lost tax revenues, and the like. Despite the limitations, the study found that violence against women in South Africa is commonplace, and enormously costly to the South African economy.

No such study could be identified with regard to violence against children - despite the deleterious impact that violence has on children's development and welfare, and the major economic implications it could have for South Africa. But, like violence against women, violence against children can be enormously costly. In the US, for instance, it was estimated that the average lifetime cost per victim of nonfatal violence against children was US\$210 012 in 2010; whereas the estimated average lifetime cost per death was US\$1 272 900. Together, the total lifetime economic burden resulting from new cases of fatal and nonfatal violence against children in the US in 2008 alone was estimated to be approximately US\$124 billion (Fang, Brown, Florence, & Mercy, 2010).

In 2013, Mathews and colleagues examined the epidemiology of child homicides in South Africa (Mathews, Abrahams, Jewkes, Martin, & Lombard, 2013). Based on data collected from mortuaries in 2009, the study reported that South Africa's estimated child homicide rate of 5.5 homicides per 100 000 children younger than 18 years is more than twice the global estimate (Pinheiro, 2006), the global estimate being 2.5 per 100 000. Moreover, the study estimated that nearly half of all child homicides in South Africa were related to child abuse and neglect.

It was against this backdrop that Save the Children South Africa (SCSA) appointed this team to estimate the economic burden of violence against children in South Africa. The information in this report is critical

to ensuring the necessary financial resources are invested in the development and execution of a clear implementation plan, and we hope that it will be used in that way.

## METHODS

### Systematic review

This study included a systematic review on the prevalence and incidence of violence against children, and another on the outcomes of violence. Peer-reviewed and non peer-reviewed journal articles, research reports and other 'grey' literature reporting prevalence and/or consequences of violence with a geographic focus in South Africa and were published between January 2000 and December 2015 were included. The systematic review included a comprehensive search of international and national databases – Africa-Wide Information, MEDLINE, PsycINFO, CINAHL, ERIC, SocINDEX and Embase – as well as a search of reference lists and both formal and informal databases for grey literature. Reference lists of included articles were searched for relevant studies, and key stakeholders in South Africa were also contacted to help locate studies. Finally, in addition, the following journals were manually searched:

- *Child Abuse and Neglect*
- *Child Maltreatment*
- *Child Abuse Review*
- *Journal of Interpersonal Violence*
- *South African Medical Journal*
- *South African Journal of Psychology*
- *African Journal of Psychiatry*
- *Journal of Child and Adolescent Mental Health*

Studies were included if they reported the prevalence/incidence of sexual, physical or emotional violence against children, neglect, witnessing family violence, community violence, bullying, gang violence and other forms of violence affecting children in South Africa. For prevalence/incidence studies additional inclusion criteria were: (i) Participants were recruited from a student or general population; (ii) quantitative methods were used to estimate the prevalence/incidence of the violence during childhood (e.g. younger than 18 years); (iii) the study reported the prevalence or incidence of violence against children; and (iv) the recorded violence had been reported directly by the victims or by parents.

A total of 50 met the inclusion criteria. Of these 26 measured the prevalence of sexual violence, 16 measured the prevalence of emotional violence, 33 measured physical violence, 12 measured witnessing family violence, 4 measured neglect, 10 measured community violence, 10 measured bullying, 2 measured intimate partner violence against adolescents, and 3 measured other forms of violence, such as polyvictimisation. However, shortly after this work was completed, the results of the nationally representative Optimus Study South Africa (Artz et al., 2016) were released, and since it provides more accurate figures, the Optimus Study figures were used instead of figures drawn from the published literature.

For the review of outcomes studies, additional inclusion criteria included: (i) primary research that explored the relationship between at least one form of violence against children and its impact on employment, education, mental health, physical health, health behaviours, aggression, violence, criminality, exposure to further violence or use of health services; (ii) included the calculation of odds ratios (ORs) or relative risks (RRs) or marginal effects (MEs) disaggregated by the type of violence; and (iii) did not sample on the basis of the presence of any specified outcome – since this would invalidate the calculation of an OR or RR or MR for that outcome. A total of 24 outcomes articles met the inclusion criteria. Of these, 10 measured the relationship between violence against children and interpersonal violence, 4 measured anxiety, 3 measured self-harm, 3 measured alcohol abuse, 3 measured depression, 3 measured sexually transmitted diseases, 2 measured drug abuse, 1 measured HIV, and 5 measured other types of outcomes such as unwanted pregnancy or high school drop-out (see PRISMA flow diagram; Fig. 1).

The review utilised both free text and controlled vocabulary of subject heading and keyword searches to identify articles and grey literature via the electronic databases. To provide the broadest coverage of articles, the initial search term consisted of:

- *Population*
- *[Type of Maltreatment, e.g., physical abuse]*
- *South Africa*

Search strings are given in the following table:

## Search Strings

The search string for the study was as follows and adapted for each database:

“child\*” OR “tee-ger\*” OR “adolesc\*” OR “pre-teens” OR “young people” OR “youth” OR “babies” OR “infants” AND...[see strings below]...AND “South Africa”

“physical abuse” OR “slapping” OR “hitting” OR “hurting” OR “punching” OR “burning” OR “corporal punishment” OR “punishment” OR “child death” OR “intentional injury” OR “child harm” OR “bullying” OR “peer violence” OR “intimate partner violence” OR “dating violence” OR “gender based violence” OR “youth violence” OR “discipline”

“sexual abuse” OR “sexual harassment” OR “molest” OR “incest” OR “rape” OR “sexual violence” OR “attempted rape” OR “forced sex” OR “sexual assault” OR “inappropriate touching” OR “forced marriage” OR “early marriage” OR “sexual harm” OR “sexual and gender based violence” OR “sexual trauma” OR “commercial sexual exploitation” OR “sex trafficking”

“emotional abuse” OR “emotional harm” OR “attachment” OR “mental abuse” OR “verbal abuse” OR “psychological abuse” OR “belittling” OR “denigrating” OR “scapegoating” OR “threatening” OR “scaring” OR “discriminating” OR “ridiculing” OR “hostile treatment” OR “controlling” OR “rejecting” OR “witnessing intimate partner violence” OR “witnessing domestic abuse” OR “witnessing domestic violence”

“gang violence” OR “community violence” OR “political violence” OR “homicide” OR “murder” OR “trafficking”

“maltreatment” OR “child abuse” OR “violence”

All abstracts (for peer reviewed journal articles) and grey literature executive summaries were examined to determine whether they met the inclusion criteria developed for the study. If they met the inclusion criteria, full documents were retrieved and again reviewed against the inclusion criteria by two reviewers.

When the abstract or executive summary did not provide sufficient information to determine inclusion, the full article was retrieved for further examination. Articles and other documents that ultimately met the inclusion criteria were reviewed and key variables of

information extracted. In addition, the bibliographies of all included articles, as well as relevant review articles, were examined as an additional measure to ensure that all articles meeting the inclusion criteria were located.

The data were extracted into one master MS Excel file with multiple pages where each study was assigned a number and the following information was included:

- Authors & year
- Total sample size
- Types of violence measured
- Overall prevalence/incidence (%)
- Overall sample size
- Males: prevalence/incidence (%)
- Males: sample size
- Females: prevalence/incidence (%)
- Females: sample size
- Sample site (urban, rural or both; or location by province)
- Sample source (children, parents, young adult or adults)
- Sample type (convenience or population-based)
- Number of questions asked
- Response rate (%)
- The age cut-offs for the study (e.g. what ages are used to define “childhood”)
- Probability sampling or not (y/n)
- Household or school-based (H or S)
- Self-administered questions or not (y/n)

For each outcome, the following information was also extracted:

- Odds ratio
- 95% confidence interval for the odds ratio
- Adjusted odds ratio
- 95% confidence interval for the adjusted odds ratio
- Relative risk
- Adjusted relative risk
- 95% confidence interval for the adjusted relative risk
- Marginal effects
- Adjusted marginal effects
- 95% confidence interval for the adjusted marginal effects
- Confounders controlled for in the models
- $P_0$  (the incidence of the outcomes of interest in the non-exposed group)

## Prevalence rates

To determine accurate prevalence rates, we began by conducting a meta-analysis of the prevalence rates of violence against children. However, when the analyses were nearly completed, the study results from the household weighted data from the Optimus Study South Africa (see Table 1) were released which provided nationally representative lifetime prevalence estimates (Artz et al., 2016). The Optimus Study South Africa used two different samples – the nationally representative household survey, and a school survey – and two different interview approaches – an interviewer-administered questionnaire, and a self-administered questionnaire. For the purposes of this study, we used only data from the household survey (after weighting to account for the sampling frame). We used figures from the self-administered questionnaire where these rates were higher, reasoning that this method allowed for greater confidentiality and therefore greater disclosure; unfortunately, the self-administered questionnaire was considerably shorter than the interviewer-administered questionnaire and therefore did not include all the data in which we were interested.

The data we did include were as follows:

- Contact sexual violence against children (self-administered questionnaire, Artz et al., 2016, p.85): 7.2% in total: 6.1% for males and 8.5% for females.
- Physical violence against children (self-administered questionnaire, Artz et al., 2016, p.102): 26.1% in total: 24.0% for males and 28.7% for females.
- Emotional violence against children (interviewer-administered questionnaire, Artz et al., 2016, p.98): 12.6% in total: 9.7% for males and 16.2% for females.
- Neglect (interviewer-administered questionnaire, Artz et al., 2016, p.89): 12.2% in total: 9.8% for males and 15.1% for females.

The prevalence of contact sexual violence was used as the estimate of sexual violence prevalence because broad definition of non-contact sexual violence may overestimate prevalence (Choo et al., 2011). These prevalence estimates were used in the subsequent calculations. The methods used in the Optimus Study South Africa can be found in Appendix A.



## Population attributable fractions

To calculate a population attributable fraction, it is necessary to know the prevalence of a risk factor – e.g. violence against children – and the relative rate for the disease or outcome of interest – e.g. depression – given exposure to that risk factor. In order to match the outcomes with the available Global Burden of Disease categories, the outcomes were further limited to: alcohol abuse, drug abuse, sexually transmitted diseases (STDs), HIV, interpersonal violence, self-harm and mental disorder – including depression and anxiety]. For each of these outcomes, we attempted to calculate a population attributable fraction for each form of violence against children for which we had data.

Table B.1 in the Appendix B presents the ORs for health outcomes associated with childhood violence that were found from the systematic review. In addition to the findings from the systematic review regarding the outcomes of violence, we conducted additional data analyses to explore outcomes of violence against children based on the Cape Area Panel Study (CAPS). The CAPS follows the lives of a large and representative sample of adolescents in Cape Town as they undergo the multiple transitions from adolescence to adulthood. The CAPS started in 2002 and ended in 2009, and includes five successive waves of survey. The study investigated the multidimensional nature of the lives of the young men and women - educational, psychological, familial, sociological, economic, and community.

Based on the data from the CAPS, generalized linear models (for binary outcome variables) or linear regression (for continuous outcome variables) were used to estimate the associations between the different types of violence against children (childhood emotional violence and physical violence) and the related young adult consequences and risk behaviours: violence perpetration, wages earned, alcohol use, drug use, obesity, and mental health. The Heckman two-stage method was used to correct for the selection bias (i.e., people who work are selected non-randomly from the population) and to estimate the marginal effect of violence against children on wages. All these regressions were controlled for socio-demographic or

biological confounding factors: sex, race, respondent's education, marital status, childhood family poverty, childhood family size, childhood family structure, and mother's education. The Stata software (command SVY) was used to control for the survey design effects of individuals clustered in sampling units of enumeration areas (EAs) and stratification of major population groups in Cape Town – black African, coloured, and white.

If only the unadjusted ORs for a study were available, we produced corresponding estimates of adjusted ORs using the ratios between adjusted and unadjusted ORs reported for other studies (Andrews et al., 2004). As most studies included in the systematic review reported ORs but not RRs, RRs had to be estimated from the ORs using a simple formula (Zhang & Yu, 1998). The secondary data analyses based on the CAPS generated RRs directly, using generalized linear models (See Table B.2 in the Appendix B).

Finally, for each type of violence, the estimated RRs were grouped according to outcomes and then combined using meta-analysis with sample size weighting.

## Economic burden

Finally, we estimated the economic losses associated with violence against children in South Africa. Based on the available data, a prevalence-based approach was used to estimate the economic burden of violence against children in South Africa in 2015. The cost categories included: (1) the monetary value of disability-adjusted life years (DALYs) lost from fatal cases of violence against children, and physical and mental health outcomes and health risk behaviours attributable to nonfatal violence against children; (2) reduced earnings due to physical violence against children and emotional violence against children; and (3) child welfare costs.

## Monetary value of DALY loss

Based on the findings from the literature review and data analyses, we first estimated monetary value of DALY loss attributable to nonfatal violence against children. Following the work of the World Health Organization (2001) and Brown (2008), we estimated the disability-adjusted life-years (DALYs) lost – due to

violence against children-attributable mental health disorders and health-risk behaviours – and then estimated the monetary value of those DALYs in 2015 South African Rand (ZAR).

For each of the main types of violence against children that we considered, a population attributable fraction for an outcome of interest was multiplied by the estimate of the number of the DALYs expected to be lost because of that outcome. Population attributable fractions of our selected health and behavioural outcomes (alcohol abuse, drug abuse, sexually transmitted diseases (STDs), HIV, interpersonal violence, self-harm, serious mental illness, depression and anxiety) were matched to definitions of “alcohol use disorders”, “drug use disorders”, “STDs excluding HIV”, “HIV/AIDS”, “interpersonal violence”, “self-harm”, “mental disorder”, “unipolar depressive disorders”, and “anxiety disorders” from the 2012 Global Burden of Disease South Africa study (available at [http://www.who.int/healthinfo/global\\_burden\\_disease/estimates/en/index2.html](http://www.who.int/healthinfo/global_burden_disease/estimates/en/index2.html)).

Second, the DALYs lost from fatal cases of violence against children were calculated as the number of child deaths multiplied by a loss function specifying the years lost for deaths as a function of the age at which death occurs (WHO, 2013). Since the loss function is intended to represent the maximum life span of an individual in good health, who is not exposed to avoidable health risks, or severe injuries, and receives appropriate health services, the 2012 Global Burden of Disease study chose

to base this on the frontier national life expectancy projected for the year 2050 by the World Population Prospects 2012 (UN Population Division, 2013).

To convert the DALY losses into a monetary value, a method employed by WHO (2001) and Brown (2008) was used. This method assumes that one DALY is equal to the country's per-capita GDP. In other words, it is assumed that a year lost due to either disability or mortality (one year lived with disability or one year of life lost) is a year lost from the productive capacity of a country's economy and can therefore, on average, be approximated by the per capita GDP; the “human capital” approach to valuing DALYs. Data on 2015 population, GDP, and GDP per capita for South Africa were obtained from Statistics South Africa (available at <http://cs2016.statssa.gov.za/>).

## Reduced earnings

Based on the secondary analyses of the Cape Area Panel Study, we first estimated the percentage reduction in adulthood earnings attributable to physical violence against children and emotional violence against children. We then estimated the number of people among the population of labour force who are lifetime physical and emotional violence victims, respectively. Finally, we combined the two pieces of data to estimate the total productivity loss in South Africa in 2015 attributable to physical and emotional violence against children.





### Child welfare costs

Violence against children not only costs the economy in terms of lost wages and productivity, but also has direct costs in terms of the provision of services to children who have experienced this violence. One estimate of this is the cost of welfare services, which in South Africa is as follows:

**Table 1: Cost of Child Care and Protection**

Province	Revised estimate of Child Care and Protection (2015/2016) – ZAR thousand
Eastern Cape	216 512
Free State	78 284
Western Cape	175 376
North West	55 023
Gauteng	507 563
KZN	324 436
Northern Cape	36 687
Mpumalanga	54 092
Limpopo	133 190
<b>National Total</b>	<b>1 581 163</b>

Source: National Treasury; <http://www.treasury.gov.za/documents/provincial%20budget/2016/7.%20EPRE%20standardised%20tables%20in%20Excel%20format/Default.aspx>

This cost under-estimates the direct costs, for several reasons:

- It only includes what is currently spent on services, not what would be spent if all children who were victims of violence actually received services;
- It only includes welfare services, and no other services that child victims may need (for instance, costs of policing violence against children, taking cases through the courts, or physical or mental health services).

### Systematic review of the consequences literature

The literature shows a strong relationship between experiencing sexual violence during childhood and a number of mental and behavioural health issues, sexual health outcomes and substance use disorders. A cluster randomized controlled trial of 2,782 young people enrolled in an HIV prevention behavioural intervention in rural Eastern Cape found that both males and females aged 15 to 26 years who had experienced some form of sexual violence (either unwanted touching, coerced or forced sex, or sex with a person more than 5 years older) before the age of 18 were over 3 times more likely to report symptoms of alcohol abuse (OR = 3.7, 95% CI 2.0, 6.8 among men; and, OR = 3.9, 95% CI 1.9, 8.2 among women; Jewkes et al., 2010). This study also found statistically significant relationships between sexual violence in childhood and

incident HIV infection among women (IRR = 1.7, 95% CI 1.0, 2.6) and depression among men (OR = 2.2, 95% CI 1.3, 3.5; Jewkes et al., 2010). According to secondary analysis of the national South Africa Stress and Health Study (SASH), participants who had experienced more than 3 instances of sexual violence before the age of 18 were more likely to report substance use disorders (OR = 4.9, 95% CI 2.0, 12.1) and behavioural disorders (specifically, intermittent explosive disorder; OR = 7.0, 95% CI 1.1, 46.3; Slopen et al., 2011). SASH data also found a strong association between sexual violence in childhood and lifetime suicide attempts (OR = 9.3, 95% CI 2.5-35.2; Bruwer et al., 2014).

Future violence was also more common among those who had experienced sexual violence in childhood than those who had not (Shamu et al., 2015; Meinck, Cluver, & Boyes, 2015; Heusser & Elkonin, 2014; Dunkle et al., 2004). In a longitudinal study of 3,515 children aged 10 to 17 years in rural and urban areas in Mpumalanga and the Western Cape provinces, sexual violence at baseline strongly predicted sexual violence at follow-up one year later (OR = 3.4, 95% CI 2.0, 5.7; Meinck, Cluver, & Boyes, 2015). Child sexual violence was also associated with intimate partner violence (IPV) perpetration among boys (OR = 2.1, 95% CI 1.5, 3.0) and IPV victimisation among girls (OR = 2.0, 95% CI, 1.5, 2.7) in Grade 8 in schools around Pretoria City (Shamu et al., 2015). This association was also seen among adults. In an online study of 230 men who have sex with men, forced sexual activity before the age of 15 was

associated with involvement in physically or emotionally abusive intimate relationships in the previous 5 years (OR = 2.4, 95% CI 1.2, 5.0; Heusser & Elkonin, 2014). Among women age 16 and older attending antenatal clinics in Soweto, child sexual assault before the age of 15 (unwanted or forced touching, or coerced or forced sex) increased risk of physical and/or sexual IPV (risk ratio = 2.4, 95% CI, 1.9, 3.1; Dunkle et al., 2004). This study also found that sexual violence in childhood was a risk factor for sexual assault by a non-partner (risk ratio = 2.3, 95% CI, 1.4, 3.9).

Coerced first sexual intercourse was associated with unwanted pregnancy (OR = 1.3) and ever having an STI (OR = 2.2) among about 1,000 young women in KwaZulu-Natal (Maharaj & Munthree, 2007) and rape was associated with PTSD among secondary school students in Durban (OR = 2.8; Collings, Penning & Valjee, 2014).

Like sexual violence, outcomes of experiencing physical violence in childhood identified in the literature include alcohol and substance use disorders, mental health disorders and sexual health outcomes. In a longitudinal study in the Eastern Cape, incident HIV infections one to two years after baseline measurement were more common among women who experienced physical punishment before the age of 18 (IRR = 2.1, 95% CI 1.3, 3.1; Jewkes et al., 2010). Focusing solely on the 174 girls aged 15-18 years who had become pregnant over the 2-year follow up period, the same study found that those who reported physical IPV victimisation

were more likely to report that their pregnancy was unwanted (OR = 1.7, 95% CI 1.1, 2.7; Christofides et al., 2014). Analysis of SASH data showed that adults who experienced violent discipline in childhood were more likely to report a range of alcohol-related outcomes, including alcohol dependence before the age of 23 and onset of problem drinking before the age of 16, with the strongest association after adjusting for age and sex with drinking onset at age 12 or earlier (OR = 3.0, 95% CI 1.4, 6.5; Sorsdahl et al., 2015). SASH analysis also found that physical violence against children perpetrated by parents or caregivers was a risk factor for anxiety disorders (OR = 1.9, 95% CI 1.5, 2.3; Slopen et al., 2010), lifetime suicide attempts (OR = 2.1, 95% CI 1.2, 3.7; Bruwer et al., 2014) and PTSD among males (OR = 4.5, 95% CI 2, 10.2; Kaminer et al., 2008). Collings, Penning and Valjee (2014) also found associations, albeit less pronounced, between PTSD and domestic assault (OR = 2) and domestic injury (OR = 1.8) in childhood among both genders.

Experiences of physical violence during childhood were also associated with further violence, including sexual violence among children (Meinck, Cluver, & Boyes, 2015), IPV perpetration among Grade 8 boys (Shamu et al., 2015) and IPV victimisation among adult women (Jewkes, Levin & Penn-Kekana, 2002). Using information from the 1,715 currently married or cohabiting adults who participated in the SASH study, physical violence in childhood was a risk factor for IPV perpetration among men (OR = 2.2, 95% CI 1.1-4.3) and for both IPV perpetration (OR = 1.6, 95% CI 1.6, 1.0-2.5) and victimisation (OR = 2.2, 95% CI 1.4-3.4) among women (Gass et al., 2011). Experience of physical or sexual IPV among adolescents was linked with a number of sexual risk-taking behaviours, most markedly among females, including multiple sex partners in the previous year, not using a condom at last sex and ever engaging in transactional sex (Decker et al., 2014).

Few papers focused on the outcomes of experiencing emotional violence in childhood, but there is evidence that it is a risk factor for PTSD (Collings, Penning & Valjee, 2014) and self-injurious behaviour (Penning & Collings, 2014). Witnessing parental violence in childhood was sometimes measured as a form of emotional violence. Jewkes and colleagues (2010)



measured emotional violence by asking if participants had been told they were lazy, stupid or ugly by a family member, if they were insulted or humiliated by a family member in front of other people, or if they saw or heard their mother beaten by her husband or boyfriend. Experiencing any of these forms of violence was associated with incident HIV infection in women (OR = 2, 95% CI 1.3, 3.1) and alcohol abuse in men (OR = 1.5, 95% CI 1, 2.2; Jewkes et al., 2010). Witnessing parental violence was also associated with IPV victimisation and perpetration among both men and women in adulthood (Gass et al., 2011). In a Cape Town study of the effects of 1,368 men witnessing violence against their mothers during their childhood, this was found to be a risk factor not only for physical IPV perpetration, but also involvement in fights in the community, at their workplace, and arrest for possession of an illegal gun (Abrahams & Jewkes, 2005).

There were also few studies on the outcomes of childhood neglect. Those studies that were identified found it to be linked with perpetration or victimisation of sexually abusive behaviour or self-injurious behaviour (Penning & Collings, 2014) and PTSD (Collings, Penning & Valjee, 2014). Emotional neglect in childhood, as measured by living in different households, spending time outside the home without adults knowing where they were, or parents who were too drunk to care for them, was a risk factor for drug abuse and depression among men and incident STD infection, depression, alcohol abuse and suicidal thoughts among women, with the latter being the strongest association (OR = 5.1, 95% CI 2.1, 12.5; Jewkes et al., 2010). Similarly, this study found that physical hardship, or not being washed, having very dirty clothes, not being warm enough or not having enough to eat in childhood was associated only with alcohol abuse among men (Jewkes et al., 2010).

Exposure to multiple adverse childhood experiences (ACEs) has been linked with multiple health and behavioural outcomes later in life (Bellis et al., 2014). In South Africa, the strongest associations were with PTSD (OR = 2.7, 95% CI 1.9, 3.8; Collings, Penning & Valjee, 2014) and mood disorders including major depressive disorder and dysthymia (OR = 3.5, 95% CI 1.1, 11.2; Slopen et al., 2010).

A study of Grade 6 students in Cape Town found that witnessing or victimisation of community violence positively correlated with anxiety and depression (Ward et al., 2007b). Victimisation of community violence was also associated with conduct problems (Ward et al., 2007b) while another study of Grade 8-12 students in Durban found that witnessing community violence was associated with PTSD (Collings, Penning & Valjee, 2014).

For educational outcomes, females who report both bullying behaviours and bullying victimisation were more likely to drop out of high school (OR = 2.6, 95% CI 1.3, 5.1; Townsend et al., 2008). Analysis of the Cape Area Panel Study (CAPS) dataset showed that being put down by adults, being pushed, and fear of being hurt negatively impacted numeracy test scores among young people aged 14 to 22 years, as did being hit hard, particularly among girls (Pieterse, 2015). Being hit hard also increased the probability of dropping out of school (Pieterse, 2015).

## RESULTS

### Monetary value of DALYs lost from nonfatal violence against children

Table 3 (see end of the report for the tables) presents the prevalence estimates by type of violence against children: 7.2% for contact sexual violence (6.1% for males and 8.5% for females), 26.1% for physical violence (24.0% for males and 28.7% for females), 12.6% for emotional violence (9.7% for males and 16.2% for females), and 12.2% (9.8% for males and 15.1% for females) for neglect.

Table 4 shows the RRs and PAFs for health outcomes associated with each type of violence against children. DALYs and economic value of DALYs lost from nonfatal violence against children are shown in Table 5.

Although only a limited number of health outcomes were considered, an estimated 390 905, 1 420 744, 786 560, and 85 764 of DALYs lost in South Africa in 2015 were attributable to childhood sexual violence, physical violence, emotional violence, and neglect, respectively. The estimated economic value of these lost DALYs was 28.6, 103.8, 57.5, and 6.3 billion South Africa Rand (0.7%, 2.6%, 1.4%, and 0.16% of GDP) respectively.

Adding up the economic value of DALY loss across different types of violence against children, 2.7 million DALYs lost in South Africa in 2015 were attributable to violence against children, a full 53% of those attributed to HIV/AIDS in 2000. The estimated economic value of DALYs lost to violence against children in South Africa in 2015 totalled ZAR196 billion (4.9% of the 2015 GDP in South Africa).

### Monetary value of DALYs lost from fatal violence against children

An estimated 1 018 child homicides occurred in 2009 in South Africa (Mathews et al., 2013). Among them, 405 cases were in the 0-4 year age group, 87 in the 5-9 year age group, 110 in 10-14 year age group, and 416 in 15-17 year age group. Since Mathews et al.'s study (2013) is the only study we found that included the information on the number of child homicides, we assumed that the number of child homicides in 2015 equalled to that in 2009. We also used the median age of the age group as the mean age of victims in that age group. In other words, we assumed the mean age of 405 child deaths in the 0-4 age group to be 2. Similarly, we used the mean age 7 for the 5-9 age group, 12 for the 10-14 age group, and 16 for the 15-17 age group.

According to the WHO standard life table for years of life lost (WHO, 2013), the standard expected years of life lost for a death at age 2, 7, 12 and 16 are 90.01, 85.02, 80.03, and 76.04, respectively. Multiplying the number of deaths in the four age groups by the corresponding years of life lost for the deaths at the mean age of that specific age group, the total number of DALYs lost from the 1018 child deaths is 84287 (90.01\*405+85.02\*87+80.03\*110+76.04\*416). The estimated economic value of these lost DALYs was 6.2 billion South Africa Rand (0.16% of South Africa's GDP).

### Reduced earnings

Based on the secondary analyses of the Cape Area Panel Study, we found that physical violence against children and emotional violence against children on average reduces victim monthly earnings by 11.7% and 9.2%, respectively. According to Statistics South Africa (2015), the median monthly earnings for South Africa for 2014 (including employees, employers and own-account workers)



is ZAR3,120. Adjusted to the 2015 Rand using the Consumer Price Index, the median monthly earnings is ZAR3,262. Combining these two pieces of data, physical violence against children and emotional violence against children on average reduce victim monthly earnings by ZAR382 (3,262\*11.7%) and ZAR300 (3,262\*9.2%) respectively.

According to the Optimus Study, 26.1% of respondents in the household survey (weighted & self-administered) reported physical violence as having occurred in their lifetimes. In terms of emotional violence, 12.6% of young people reported this type of violence on the household questionnaire (weighted & interviewer-administered). Based on the data from Statistics South Africa (available at <http://cs2016.statssa.gov.za/>), the average size of the labour force was 21,084,500 in South Africa in 2015. Among them, 5,503,055 (21,084,500\*26.1%) are lifetime victims of childhood physical violence, and 2,656,647

(21,084,500\*12.6%) are lifetime victims of childhood emotional violence.

Thus, the total monthly productivity loss attributable to physical violence against children and emotional violence against children in South Africa in 2015 were ZAR2,100,262,762 (5,503,055\*382) and ZAR797,270,391 (2,656,647\*300), respectively. Multiplying by 12, the total productivity loss in South Africa for the year of 2015 that was attributable to physical violence against children and emotional violence against children were ZAR25.2 (0.63% of GDP) and ZAR9.6 billion (0.24% of GDP), respectively.

### Child welfare costs

Overall, provinces in South Africa spent ZAR1.58 billion (0.04% of GDP) on child care and protection in fiscal year 2015/2016.

## Limitations

As with any research study, there are several limitations that should be noted. The exercise undertaken here has limitations given several major gaps in the evidence base. Most of the studies used for calculating PAF did not have representative samples. Not only do different surveys use different definitions of violence against children and different questionnaires, they often use different types of samples, rendering comparative analysis difficult. PAFs may be sensitive to small changes in the underlying parameters (prevalence and RR), and the implications can be significant when multiplied by an aggregate outcome. Although we carefully reviewed all input data to select appropriate studies, our results rest squarely on the quality of available data. This problem is not limited to research into violence against children; such challenges generally emerge in any research that draws on a variety of secondary data sources.

Although the DALYs measure has made a central contribution to the comparative assessment of disease burden, it is important to note that the measure has been the subject of some debate (Anand & Hanson, 1997; Arnesen & Nord, 1999; James & Foster, 1999). For example, researchers have questioned the validity and universality of the disability weights (Arnesen & Nord, 1999; James & Foster, 1999). Another concern is that standard life expectancy figures may overestimate DALYs saved when actual or local life expectancy is shorter (Sassi, 2006). Thus, the DALY results should be interpreted with caution.

It is important to account for poly-victimization when estimating the burden of violence against children. Poly-victimization, also known as complex trauma, describes the experience of multiple victimizations of different types. Given that input data for this study came from different sources, we were not able to deal with poly-victimization when we summed up the economic burden across different types of violence against children. This may lead to over-estimation of the aggregate economic burden of violence against children.

Another significant issue is that the studies of violence against children typically excluded many possibly important confounding factors. For example, none of the studies we found had taken into account genetic factors which may explain some portion of the associations between violence against children and later outcomes. Without this and other unmeasured family factors, it is likely that PAFs could be overestimated. The fact that most of the effects are measured by self-report in cross sectional studies where violence against children is measured retrospectively may lead to either over- or underestimation.

Moreover, most studies on the consequences of violence against children are based on observational data and only reported ORs. Approximate RRs needed for PAF were calculated with from ORs with a simple formula (Zhang & Yu, 1998). Given that the majority of studies are based on small sample sizes, the RRs generated from these studies may not be generalizable to the entire population and the resultant PAFs could be biased up or down. Meta-analysis with sample size weighting is used to alleviate, but does not fully eliminate this bias.

# RECOMMENDATIONS

These limitations to the study mean that we have probably under-estimated the costs of violence. Nonetheless, we have established that the costs of violence against children are substantial – at least 6% of GDP. Violence against children must therefore become an urgent priority, for policy, research and programming.

The policy priorities are clear: preventing violence against children is both about advancing human rights, as well as an economic imperative. This will of course require investment in prevention initiatives, and here policy-makers must take a long-term view: investing in prevention will in the long term (at least longer than one electoral cycle) save both lives and money.

There are two priorities for policy-makers:

- I. Investing in prevention. The World Health Organization provides a helpful list of evidence-based strategies for preventing violence, as follows (World Health Organization, 2009):
  - a. Developing safe, stable and nurturing relationships between children and their parents and caregivers. The Optimus Study (Artz et al., 2016) shows clearly that children are at lower risk when their parents are able to monitor their whereabouts and maintain warm relationships with them. Parent support programmes are mandated as a prevention strategy under the Children's Act (No. 38 of 2005); efforts should urgently be made either to identify or to develop evidence-based programmes that support parents, and to work towards rolling these out at larger scale.
  - b. Developing life skills in children and adolescents. Many children are victimised by their peers (Artz et al., 2016), and effective interpersonal and social skills have been shown to reduce aggression. This can be done through schools, and perhaps through the Life Orientation curriculum – although here again it is critical that the components in the Life Orientation curriculum are assessed for evidence of impact, and that the curriculum is adequately resourced so that these components maintain impact. Investment



in education is part of the National Development Plan 2030; investing in supporting children to develop interpersonal skills should be a key part of this, as such skills have been shown both to reduce aggression between children and to improve academic outcomes (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Making this investment thus achieves two key goals with one intervention.

- c. Reducing the availability and harmful use of alcohol. For instance, young people whose parents misuse alcohol and other substances are at significantly increased risk of sexual abuse (Artz et al., 2016), making intervention here a key priority. The National Development Plan 2030's commitment to reducing crime should prioritise enforcing and tightening South Africa's alcohol laws, and the Plan's commitment to improving health care should include a key emphasis on making substance abuse treatment more widely available. Reducing both demand for alcohol through strategies such as treatment and price increases, and enforcing laws, are all needed to achieve this successfully (Parry & Dewing, 2006).
  - d. Reducing access to guns, knives and pesticides. This will reduce the lethality of violence against children.
  - e. Promoting gender equality to prevent violence against women; and
  - f. Changing cultural and social norms that support violence. Together, such changes in norms will reduce violence against children.
  - g. Victim identification, care and support programmes. Appropriate care and support programmes in place will reduce the long-term consequences of violence against children, and hence reduce the additional costs that these incur.
2. Secondly, policy-makers should invest in improving the quality of data sources for tracking violence against children. One good administrative source for tracking child maltreatment should be the Child Protection Register, but the quality of this data has been shown to be poor (Ward et al., 2007a). Another key investment is in large national studies to collect data from children about the violence they suffer, as much violence against children goes unreported to authorities (Artz et al., 2016). Key good examples are the recent Optimus Study (Artz et al., 2016),

funded by the UBS Optimus Foundation; and the national school violence studies conducted by the Centre for Justice and Crime Prevention and funded by the Department of Basic Education (see [www.cjcp.org.za](http://www.cjcp.org.za) for copies of the reports of these studies). Having this data will allow both for more accurate estimates of costs, and for assessing whether there have been any changes in the situation of South African children.

Concomitantly, there are also responsibilities for those who are engaged in programme delivery. There are several programmes being tested at present in South Africa for their capacity to reduce violence against and by children (see, for instance, Shai and Sikweyiya, 2015; Ward et al., 2014). A key ethical responsibility borne by both those involved in programming and by policy-makers is that programmes should have a strong evidence-base before they are rolled out widely: this is an ethical responsibility, as programmes without evidence may achieve nothing, or worse, do harm (Wessels et al., 2013); it is also, for the same reasons, a fiscal responsibility, as whether programmes achieve an effect or not, they are costly.

Priorities for researchers lie in improving the amount and quality of data available. Our work here has been much constrained because of the lack of data on violence against South African children. We need more high-quality data to further the evidence-base for prevention and response. Data on the consequences of all forms of violence against children are needed, and there are two key gaps: the effects of neglect, and the effects of all forms of violence against children on education. These need further study, preferably in longitudinal studies and not cross-sectional ones, so that causal relationships can be clearly established. Researchers also have a role to play in seeking to carry out large national studies, such as the Optimus Study South Africa and the Centre for Justice and Crime Prevention's work on violence in schools. Finally, we were not able to trace the costs of violence against children to government departments: those with expertise in costing and children's budgets should pursue this vigorously.

It is clear from these findings that violence against children costs the South African economy an enormous amount, and that combatting it must be a priority.

## CONCLUSIONS



This is the first study to estimate the aggregate burden of violence against children in South Africa. Violence against children is a common experience for South African children. Violence against children causes great losses to South Africa society in terms of both DALYs and finance. According to our calculations, 2.7 million and 84 287 DALYs lost in South Africa in 2015 were attributable to nonfatal and fatal violence against children, respectively. The DALYs lost to nonfatal violence against children are larger than the corresponding estimates for diabetes mellitus – 1.0 million DALYs lost – and stroke – 0.95 million DALYs lost (available at [http://www.who.int/healthinfo/global\\_burden\\_disease/estimates/en/index2.html](http://www.who.int/healthinfo/global_burden_disease/estimates/en/index2.html)). Comparing this with the DALY figures for HIV/AIDS (available at [http://www.who.int/healthinfo/global\\_burden\\_disease/estimates/en/index2.html](http://www.who.int/healthinfo/global_burden_disease/estimates/en/index2.html)), non-fatal violence against children led to the loss of 25% of the DALYs lost to HIV/AIDS in 2015 – HIV/AIDS was the leading cause of DALY loss in 2015. The estimated economic value of DALYs lost to violence against children (including both fatal and nonfatal) in South Africa in 2015 totalled ZAR202 billion (5.1% of GDP). In addition, the reduced earnings attributable to physical violence against children and emotional violence against children in South Africa in 2015 were ZAR25.2 billion and ZAR9.6 billion, respectively. South Africa spent ZAR1.6 billion on child care and protection in fiscal year 2005/2016.

Considering all data limitations together, we suggest that the burden estimates derived from this study under-estimate the true situation. Our estimates of the burdens of violence against children are based on the available data on a small number of health outcomes. Many of the serious effects of violence against children were not included because few studies exist. These effects include: poor educational outcomes; higher levels of healthcare utilization; criminal behaviour; reproductive health problems; and chronic diseases such as diabetes, heart disease and cancer.

This study confirms the importance of prioritizing violence against children as a key social and economic concern for South Africa's future. The economic burden of violence against children in South Africa is substantial. The data generated as part of this analysis will help raise the awareness of policy-makers of the lifetime impacts of violence against children, guide budget allocation and investment, and provide data for economic evaluations of interventions to reduce or prevent violence against children. It also underscores the need to steer resources towards prevention and to strengthening the knowledge base regarding the scale and consequences of violence against children at the national level.

# REFERENCES

Abrahams, N., & Jewkes, R. (2005). Effects of South African men's having witnessed abuse of their mothers during childhood on their levels of violence in adulthood. *American Journal of Public Health, 95*(10), 1811-1815. doi:10.2105/AJPH.2003.035006

Alderson, P., Green, S., & Higgins, J. (eds.). (2004). *Cochrane Reviewers' Handbook 4.2.2* [updated March 2004]. The Cochrane Library, Issue 1. Chichester, UK: John Wiley & Sons, Ltd.

Andrews, G., Corry, J., Slade, T., Issakadis, C., & Swanston, H. (2004). Child sexual abuse. In M. Ezzati, A. D. Lopez, A. Rodgers, C. Murray (Eds.), *Comparative quantification of health risks: global and regional burden of disease attributable to selected major risk factors*. Geneva: World Health Organization.

Artz, L., Burton, P., Ward, C. L., Leoschut, L., Phyfer, J., ... & Le Mottee, C. (2016). *Optimus Study South Africa: Technical Report*. Zurich: UBS Optimus Foundation.

Bellis, M.A., Hughes, K., Leckenby, N., Jones, L., Baban, A., ... & Terzic, N. (2014). Adverse childhood experiences and associations with health-harming behaviours in young adults: Surveys in eight eastern European countries. *Bulletin of the World Health Organization, 92*, 641-655. doi: <http://dx.doi.org/10.2471/BLT.13.129247>

Briere, J. (2001). *Trauma Symptom Checklist for Children: Professional Manual*. Lutz, Florida: Psychological Assessment Resources.

Brown D.W. (2008). Economic value of disability-adjusted life years lost to violence: estimates for WHO Member States. *Revista Panamericana de Salud Pública, 4*(3), 203-9.

Bruwer, B., Govender, R., Bishop, M., Williams, D. R., ... & Seedat, S. (2014). Association between childhood adversities and long-term suicidality among South Africans from the results of the South African Stress and Health study: a cross-sectional study. *BMJ Open, 4*(6), e004644. doi:10.1136/bmjopen-2013-004644

Christofides, N. J., Jewkes, R. K., Dunkle, K. L., McCarty, F., Shai, N. J., ... & Sterk, C. (2014). Risk factors for unplanned and unwanted teenage pregnancies occurring over two years of follow-up among a cohort of young South African women. *Global Health Action, 7*. doi:10.3402/gha.v7.23719

Collings, S. J., Penning, S. L., & Valjee, S. R. (2014). Lifetime poly-victimization and posttraumatic stress disorder among school-going adolescents in Durban, South Africa. *Journal of Psychiatry: Open Access, 17*(5). doi:10.4172/Psychiatry.1000133

Choo, W.Y., Dunne M.P., Marret, M.J., Fleming, M.L., & Wong Y.L. Victimization Experiences of Adolescents in Malaysia. *Journal of Adolescent Health 2011; 49*(6): 627-34.

Decker, M. R., Peitzmeier, S., Olumide, A., Acharya, R., Ojengbede, O., ... & Brahmabhatt, H. (2014). Prevalence and health impact of intimate partner violence and non-partner sexual violence among female adolescents aged 15-19 years in vulnerable urban environments: A multi-country study. *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine, 55*(6), S58-S67. doi:10.1016/j.jadohealth.2014.08.022

Dunkle, K. L., Jewkes, R. K., Brown, H. C., Yoshihama, M., Gray, G. E., ... & Harlow, S. D. (2004). Prevalence and patterns of gender-based violence and revictimization among women attending antenatal clinics in Soweto, South Africa. *American Journal of Epidemiology, 160*(3), 230-239.

Durlak, J.A., Weissberg, R.A., Dymnicki, A.B., Taylor, R.D., & Schellinger, K.B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development, 82*, 405-432.

Fang, X., Brown, D.S., Florence, C., & Mercy, J.A. (2010). The economic burden of child maltreatment in the United States and implications for prevention. *Child Abuse & Neglect, 36*, 156-165.

Finkelhor, D., Hamby, S. L., Ormrod, R., & Turner, H. (2005). The Juvenile Victimization Questionnaire: reliability, validity, and national norms. *Child Abuse & Neglect, 29*(4), 383-412.

Gass, J. D., Stein, D. J., Williams, D. R., & Seedat, S. (2011). Gender differences in risk for intimate partner violence among South African adults. *Journal of Interpersonal Violence, 26*(14), 2764-2789.

Heusser, S., & Elkonin, D. (2014). Childhood sexual abuse and HIV sexual-risk behaviour among men who have sex with men in South Africa. *South African Journal of*

*Psychology, 44*(1), 83-96. doi:10.1177/0081246313516258

Jewkes, R., Dunkle, K., Nduna, M., Jama, P. N., & Puren, A. (2010). Associations between childhood adversity and depression, substance abuse and HIV and HSV2 incident infections in rural South African youth. *Child Abuse & Neglect, 34*(11), 833-841.

Jewkes, R., Levin, J., & Penn-Kekana, L. (2002). Risk factors for domestic violence: findings from a South African cross-sectional study. *Social Science & Medicine, 55*(9), 1603-1617.

Kaminer, D., Grimsrud, A., Myer, L., Stein, D. J., & Williams, D. R. (2008). Risk for post-traumatic stress disorder associated with different forms of interpersonal violence in South Africa. *Social Science & Medicine, 67*(10), 1589-1595.

Khan, K.S., TerRiet, G., Glanville, J., Sowden, A.J., & Kleijnen, J. (2001). *Undertaking systematic reviews of research on effectiveness*. CRD's Guidance for those Carrying Out or Commissioning Reviews. CRD Report Number 4, second ed., NHS Centre for Reviews and Dissemination, University of York.

Krug, E. G., Dahlberg, L. L., Mercy, J.A., Zwi, A. B., & Lozano, R. (eds.). (2002). *World report on violence and health*. Geneva: World Health Organization. Retrieved from: [http://www.who.int/violence\\_injury\\_prevention/violence/world\\_report/en/](http://www.who.int/violence_injury_prevention/violence/world_report/en/)

Maharaj, P., & Munthre, C. (2007). Coerced first sexual intercourse and selected reproductive health outcomes among young women in KwaZulu-Natal, South Africa. *Journal of Biosocial Science, 39*(2), 231-244.

Mathews, S., Abrahams, N., Jewkes, R., Martin, L.J., & Lombard, C. (2013). The epidemiology of child homicides in South Africa. *Bulletin of the World Health Organization, 91*, 562-568.

Meinck, F., Cluver, L. D., & Boyes, M. E. (2015). Longitudinal predictors of child sexual abuse in a large community-based sample of South African youth. *Journal of Interpersonal Violence, 1-33*. doi:10.1177/0886260515596331.

Parry, C.D.H., & Dewing, S. (2006). A public health approach to addressing alcohol-related crime in South Africa. *African Journal of Drug and Alcohol Abuse, 5*, 41-56.

Penning, S. L., & Collings, S. J. (2014). Perpetration, revictimization, and self-injury: Traumatic reenactments of child sexual abuse in a nonclinical sample of South African adolescents. *Journal of Child Sexual Abuse: Research, Treatment, & Program Innovations For Victims, Survivors, & Offenders*, 23(6), 708-726. doi:10.1080/10538712.2014.931319

Pieterse, D. (2015). Childhood maltreatment and educational outcomes: Evidence from South Africa. *Health Economics*, 24(7), 876-894. doi:10.1002/hec.3065

Pinheiro, P. (2006). World report on violence against children. Geneva: United Nations.

Shai, N.J., & Sikweyiya, Y. (2015). Programmes for change: Addressing sexual and intimate partner violence in South Africa. *South African Crime Quarterly*, 51, 31-42.

Shamu, S., Gevers, A., Mahlangu, B. P., JamaShai, P. N., ... & Jewkes, R. K. (2015). Prevalence and risk factors for intimate partner violence among Grade 8 learners in urban South Africa: baseline analysis from the Skhokho Supporting Success cluster randomised controlled trial. *International Health*, 8, 18-26.

Statistics South Africa (2016). *Gross domestic product: fourth quarter 2015 (P0441)*. Pretoria: Statistics South Africa.

Slopen, N., Williams, D. R., Seedat, S., Moomal, H., ... & Stein, D. J. (2010). Adversities in childhood and adult psychopathology in the South Africa Stress and Health Study: Associations with first-onset DSM-IV disorders. *Social Science & Medicine*, 71(10), 1847-1854.

Sorsdahl, K., Stein, D. J., Williams, D. R., Anthony, J., & Myers, B. (2015). Childhood punishment and risk for alcohol use disorders: Data from South Africa. *International Journal of Mental Health and Addiction*, 13(1), 103-114. doi:10.1007/s11469-014-9516-z

Townsend, L., Flisher, A. J., Chikobvu, P., Lombard, C., & King, G. (2008). The relationship between bullying behaviours and high school dropout in Cape Town, South Africa. *South African Journal of Psychology*, 38(1), 21-32.

United Nations Population Division. (2013). *World population prospects - the 2012 revision*. New York: United Nations.

Ward, C.L., Dawes, A., Willenberg, I., Gwele, M., & Latief, S. (2007a). Indicators for children, families and the elderly. Report to the Research Directorate, Department of Social Development, Provincial Government of the Western Cape. Cape Town, South Africa: Human Sciences Research Council.

Ward, C. L., Martin, E., Theron, C., & Distiller, G. B. (2007b). Factors affecting resilience in children exposed to violence. *South African Journal of Psychology*, 37(1), 165-187.

Ward, C.L., Mikton, C., Cluver, L., Cooper, P., Gardner, F., ... & Wessels, I.M. (2014). Parenting for Lifelong Health: from South Africa to other low- and middle-income countries. *Early Childhood Matters*, 122, 49-53.

Wessels, I., Mikton, C., Ward, C.L., Kilbane, T., Alves, R., ... & Madrid, B. (2013). Preventing violence: Evaluating outcomes of parenting programmes. Geneva, Switzerland: World Health Organization.

World Health Organization. (2001). *Macroeconomics and Health. Investing in health for economic development*. Geneva, Switzerland: WHO.

World Health Organization. (2006). *Violence prevention: the evidence*. Geneva, Switzerland: WHO.

World Health Organization. (2013). *WHO methods and data sources for global burden of disease estimates 2000-2011*. Global Health Estimates Technical Paper WHO/HIS/HSI/GHE/2013.4. Retrieved from: [http://www.who.int/healthinfo/statistics/GlobalDALYmethods\\_2000\\_2011.pdf?ua=1](http://www.who.int/healthinfo/statistics/GlobalDALYmethods_2000_2011.pdf?ua=1)

Zhang, J., & Yu, K. F. (1998). What's the relative risk? A method of correcting the odds ratio in cohort studies of common outcomes. *JAMA*, 280(19), 1690-1691.





## APPENDIX A: METHODS USED IN THE OPTIMUS STUDY SOUTH AFRICA: A SUMMARY

The Optimus Study South Africa (Artz et al., 2016) provides the first nationally representative data on violence against children in South Africa. Two samples were surveyed: adolescents in households, and adolescents at school. The household survey is nationally representative, and for this reason provides the most robust estimates – and therefore has been used in this costing study. Within the household survey, two survey formats were used – interviewer-administered (so as to overcome any problems with literacy) and self-administered (so as to overcome any concerns about privacy in reporting stigmatised acts).

### Sampling

Enumeration Area (EA) data from the 1996 Census were benchmarked against the 2001 Census, the 2007 Community Survey data, and other national surveys, to construct the sampling frame. A negative binomial approach was employed to sample the households within EAs for inclusion so that a nationally representative sample of 15-17-year-olds was randomly selected for interview. A total of 725 EAs were included in the study (65%/35% urban-rural split) and in each EA, 5-10 interviews were conducted.

### Study participation

Participants took part in the study on a voluntary basis. In all household interviews, active informed consent was obtained from parents and informed assent was obtained from respondents. All interviews followed strict ethics of anonymity and confidentiality – all limits to confidentiality were described before the interview commenced. The household study refusal rate was 5.2%.

### Representativeness

A multistage stratified sample was designed for the household survey – explicitly stratifying by the following variables: province, geographical area (rural/urban), and race group. The sample was weighted to most accurately represent the target population.

## Measures

### Variables

The household questionnaire focused on answering the following questions: the prevalence and incidence of sexual violence against children, in the context of other forms of maltreatment, as well as the consequences of, and risk and protective factors for, such maltreatment. To answer these questions, the variables were tested using the following measures:

- The prevalence and incidence of:
  - Sexual violence against children; physical violence against children; emotional violence against children; neglect; violence between adults in the home; community victimisation; and other forms of victimisation were measured using the Juvenile Victimization Questionnaire (JVQ; Finkelhor, Hamby, Ormrod, & Turner, 2005). The measure was adapted to suit the South African context and was then piloted through cognitive interviewing techniques so as to ensure clear understanding of all items.
- The following consequences of violence against children were measured:
  - Mental health consequences – anxiety, depression, and post-traumatic stress symptoms – were measured using the Trauma Symptom Checklist for Children (TSCC; Briere, 2001). Again, this was adapted and piloted to

ensure clear understanding of all items;

- Educational problems (defined as poor academic performance and truancy); and
- Sexual problems such as sexually transmitted diseases, pregnancy, and engaging in risky sexual behaviour.
- The following risk factor for violence against children were measured:
  - Sleeping density – that is to say the number of people with whom the child shared a bedroom, as well as their ages;
  - Family and household structure – such as presence of step-parent in the home, whether the child's mother was employed (and consequent absence from the home), and teenagers sharing rooms;
  - Frequent violence in the home;
  - Harsh parenting;
  - Parental psychiatric hospitalisation;
  - Parental substance misuse; and
  - Child disability.

The entire questionnaire was translated from English into Afrikaans, isiXhosa, isiZulu, and SeSotho. Translations were checked by back-translation.

The study was granted approval by the Human Research Ethics Committee of the Faculty of Health Sciences, and the Research Ethics Committee of the Faculty of Humanities, of the University of Cape Town.



**Table 2: Studies used to calculate RRs for maltreatment - outcomes**

Study Reference	Maltreatment – Outcomes Relationship
Bruwer, B., Govender, R., Bishop, M., Williams, D. R., Stein, D. J., & Seedat, S. (2014). Association between childhood adversities and long-term suicidality among South Africans from the results of the South African Stress and Health study: a cross-sectional study. <i>BMJ Open</i> , 4(6), e004644. doi:10.1136/bmjopen-2013-004644	Sexual Violence – Self-harm Physical Violence – Self-harm
Collings, S. J. (2011). Childhood exposure to community and domestic violence: prevalence, risk factors and posttraumatic outcomes in a South African student sample. <i>Journal of Psychology in Africa</i> , 21(4), 535-539. doi:10.1080/14330237.2011.10820494	Physical Violence – Anxiety
Collings, S. J., Penning, S. L., & Valjee, S. R. (2014). Lifetime poly-victimization and posttraumatic stress disorder among school-going adolescents in Durban, South Africa. <i>Journal of Psychiatry: Open Access</i> , 17(5). doi:10.4172/psychiatry.1000133	Sexual Violence – Anxiety Physical Violence – Anxiety Emotional Violence – Anxiety Neglect – Anxiety
Dunkle, K. L., Jewkes, R. K., Brown, H. C., Yoshihama, M., Gray, G. E., McIntyre, J. A., & Harlow, S. D. (2004). Prevalence and patterns of gender-based violence and revictimization among women attending antenatal clinics in Soweto, South Africa. <i>American Journal Of Epidemiology</i> , 160(3), 230-239.	Sexual Violence – Interpersonal Violence
Gass, J. D., Stein, D. J., Williams, D. R., & Seedat, S. (2011). Gender differences in risk for intimate partner violence among South African adults. <i>Journal of Interpersonal Violence</i> , 26(14), 2764-2789.	Physical Violence – Interpersonal Violence
Heusser, S., & Elkonin, D. (2014). Childhood sexual abuse and HIV sexual-risk behaviour among men who have sex with men in South Africa. <i>South African Journal Of Psychology</i> , 44(1), 83-96. doi:10.1177/0081246313516258	Sexual Violence – Drug Abuse Sexual Violence – Interpersonal Violence
Jewkes, R., Dunkle, K., Nduna, M., Jama, P. N., & Puren, A. (2010). Associations between childhood adversity and depression, substance abuse and HIV and HSV2 incident infections in rural South African youth. <i>Child abuse &amp; neglect</i> , 34(11), 833-841.	Sexual Violence – Depression Sexual Violence – Alcohol Abuse Sexual Violence – HIV Physical Violence – HIV Emotional Violence – Alcohol Abuse Emotional Violence – HIV Neglect – Depression Neglect – Alcohol Abuse Neglect – Drug Abuse Neglect – STDs
Jewkes, R., Levin, J., & Penn-Kekana, L. (2002). Risk factors for domestic violence: findings from a South African cross-sectional study. <i>Social science &amp; medicine</i> , 55(9), 1603-1617.	Physical Violence – Interpersonal Violence
Kaminer, D., Grimsrud, A., Myer, L., Stein, D. J., & Williams, D. R. (2008). Risk for post-traumatic stress disorder associated with different forms of interpersonal violence in South Africa. <i>Social Science &amp; Medicine</i> , 67(10), 1589-1595.	Physical Violence - Anxiety
Maharaj, P., & Munthree, C. (2007). Coerced first sexual intercourse and selected reproductive health outcomes among young women in KwaZulu-Natal, South Africa. <i>Journal of biosocial science</i> , 39(2), 231-244.	Sexual Violence – STD

Meinck, F., Cluver, L. D., & Boyes, M. E. (2015). Longitudinal predictors of child sexual abuse in a large community-based sample of South African youth. <i>Journal of interpersonal violence</i> , 1-33. doi:10.1177/0886260515596331.	Sexual Violence – Interpersonal Violence Physical Violence – Interpersonal Violence
Nduna, M., Jewkes, R. K., Dunkle, K. L., JamaShai, N. P., & Colman, I. (2013). Prevalence and factors associated with depressive symptoms among young women and men in the Eastern Cape Province, South Africa. <i>Journal of Child &amp; Adolescent Mental Health</i> , 25(1), 43-54. doi:10.2989/17280583.2012.731410	Sexual violence – Depression
O'Leary, A., Jemmott 3rd, J. B., Jemmott, L. S., Teitelman, A., Heeren, G. A., Ngwane, Z., ... & Lewis, D. A. (2015). Associations between psychosocial factors and incidence of sexually transmitted disease among South African adolescents. <i>Sexually transmitted diseases</i> , 42(3), 135-139. doi:10.1097/OLQ.0000000000000247	Sexual violence – STD
Penning, S. L., & Collings, S. J. (2014). Perpetration, revictimization, and self-injury: Traumatic reenactments of child sexual abuse in a nonclinical sample of South African adolescents. <i>Journal Of Child Sexual Abuse: Research, Treatment, &amp; Program Innovations For Victims, Survivors, &amp; Offenders</i> , 23(6), 708-726. doi:10.1080/10538712.2014.931319	Emotional Violence – Self-harm
Shamu, S., Gevers, A., Mahlangu, B. P., JamaShai, P. N., Chirwa, E. D., & Jewkes, R. K. (2015). Prevalence and risk factors for intimate partner violence among Grade 8 learners in urban South Africa: baseline analysis from the Skhokho Supporting Success cluster randomised controlled trial. <i>International Health</i> , 8, 18-26.	Sexual Violence – Interpersonal Violence Physical Violence – Interpersonal Violence
Slopen, N., Williams, D. R., Seedat, S., Moomal, H., Herman, A., & Stein, D. J. (2010). Adversities in childhood and adult psychopathology in the South Africa Stress and Health Study: Associations with first-onset DSM-IV disorders. <i>Social science &amp; medicine</i> , 71(10), 1847-1854.	Sexual Violence – Substance use disorders Physical Violence – Anxiety
Sorsdahl, K., Stein, D. J., Williams, D. R., Anthony, J., & Myers, B. (2015). Childhood punishment and risk for alcohol use disorders: Data from South Africa. <i>International Journal Of Mental Health And Addiction</i> , 13(1), 103-114. doi:10.1007/s11469-014-9516-z	Physical Violence – Alcohol Abuse

**Table 3: Prevalence of violence against children**

Type of violence against children	Prevalence rate (%)	Type of violence against children	Prevalence rate (%)
<b>Sexual violence</b>	7.2%	<b>Emotional violence</b>	12.6%
<b>Males</b>	6.1%	<b>Males</b>	9.7%
<b>Females</b>	8.5%	<b>Females</b>	16.2%
<b>Physical violence</b>	26.1%	<b>Neglect</b>	12.2%
<b>Males</b>	24.0%	<b>Males</b>	9.8%
<b>Females</b>	28.7%	<b>Females</b>	15.1%

	Sexual violence		Physical violence		Emotional violence		Neglect		Aggregate costs	
	DALY loss	Economic value (million rand)	DALY loss	Economic value (million rand)	DALY loss	Economic value (million rand)	DALY loss	Economic value (million rand)	DALY loss	Economic value (million rand)
Serious mental illness		6710	4347	3172					135249	9881
Depression	18635	1391			57073	4170			75708	5531
Anxiety	10612	775	18399	13441	15390	1124			68772	5025
Alcohol abuse	20635	1508	12012	878	6431	470			74775	5493
Drug abuse	30500	2228	10830	791	6036	441			70997	5187
STDs	860	63			834	61			1694	124
HIV	27147	19831	684018	49975	26627	1945			2173575	158804
Interpersonal Violence	30452	2225	26627	1945					93395	6824
Self-harm	777	568	9663	706					32578	2380
<b>Total</b>	<b>390905</b>	<b>28560</b>	<b>786560</b>	<b>57467</b>	<b>85764</b>	<b>6266</b>			<b>2683973</b>	<b>196094</b>

**Table 5: Estimated DALYs and economic value lost to violence against children in 2015**

**Table 4: Population attributable fractions (PAFs) and relative risks (RRs) for health outcomes associated with violence against children**

	SMI		Depression		Anxiety		Alcohol Abuse		Drug Abuse		STDs		HIV		Interpersonal Violence		Self-harm				
	RR	PAF	RR	PAF	RR	PAF	RR	PAF	RR	PAF	RR	PAF	RR	PAF	RR	PAF	RR	PAF			
<b>Sexual violence</b>																					
Total	-	-	-	-	1.83	0.06	-	-	3.23	0.14	1.4	0.03	-	-	-	-	1.18	0.0449	2.84	0.12	
Males	-	-	-	-	-	-	2.2	0.07	-	-	-	-	-	-	-	-	1.35	0.0775	-	-	
Females	-	-	1.73	0.06	-	-	2.25	0.1	-	-	2	0.08	1.6	0.05	1.94	0.074	-	-	-	-	
<b>Physical violence</b>																					
Total	1.41	0.1	-	-	1.57	0.13	1.55	0.13	1.46	0.11	-	-	-	-	-	-	1.18	0.0449	2.13	0.23	
Males	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.35	0.0775	-	-	
Females	-	-	-	-	-	-	-	-	-	-	-	-	1.86	0.12	-	-	1.48	0.1211	-	-	
<b>Emotional violence</b>																					
Total	1.38	0.05	-	-	1.86	0.1	1.35	0.04	1.41	0.05	-	-	-	-	-	-	1.27	0.0329	2.35	0.15	
Males	-	-	-	-	-	-	1.33	0.03	-	-	-	-	-	-	-	-	-	-	-	-	
Females	-	-	1.66	0.09	-	-	2.12	0.14	-	-	1.39	0.06	-	-	-	-	-	-	-	-	
<b>Witnessing family violence</b>																					
Total	-	-	-	-	1.59	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Males	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.86	0.1591	-	-	
Females	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.71	0.1648	-	-	

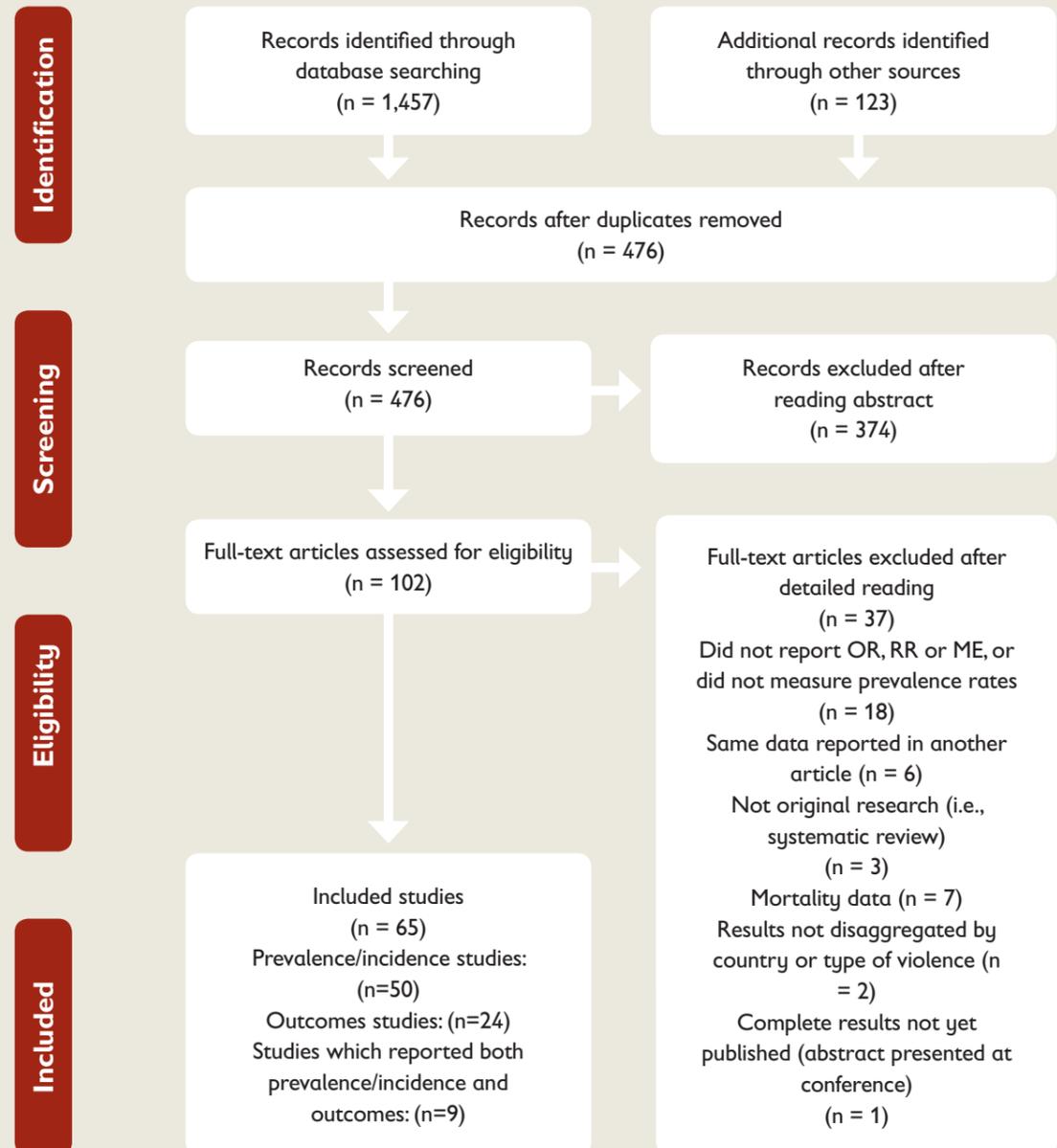
Notes: (1) SMI, serious mental illness; STD, sexually transmitted disease. (2) - indicates not applicable.

**Table 7: Relative risks (RRs) for health outcomes associated with childhood violence based on the secondary analysis of the Cape Area Panel Study**

	<b>SMI</b>	<b>Obesity</b>	<b>Perpetrating Violence</b>	<b>Smoking</b>	<b>Problem Drinking</b>	<b>Illicit Drug Use</b>
Physical abuse	1.409** (1.065,1.863)	1.348** (1.045,1.740)	1.184* (0.992,1.414)	1.103** (1.009,1.206)	1.124 (0.739,1.709)	1.460** (1.050,2.031)
Emotional abuse	1.382** (1.007,1.896)	1.309** (1.045,1.708)	1.273** (1.046,1.549)	1.045 (0.954,1.146)	1.349* (0.891,2.043)	1.410** (1.027,1.935)

\*p<0.10; \*\*p<0.05

**Figure 1: PRISMA flow chart**



**APPENDIX B: ODDS RATIOS AND RELATIVE RISKS FOR HEALTH OUTCOMES ASSOCIATED WITH CHILDHOOD VIOLENCE, BASED ON THE SYSTEMATIC REVIEW AND SECONDARY ANALYSES**

**Table 6: Odd ratios (ORs) for health outcomes associated with childhood violence based on the systematic review**

	<b>SMI</b>	<b>Depression</b>	<b>Anxiety</b>	<b>Alcohol Abuse</b>	<b>Drug Abuse</b>	<b>STDs</b>	<b>HIV</b>	<b>Interpersonal Violence</b>	<b>Selfharm</b>
<b>Sexual abuse</b>									
Total	-	-	2.8	-	4.9	1.4	-	-	9.3
Males	-	-	-	3.7	-	-	-	2.1	-
Females	-	-	2.2, 1.5	3.9	-	2.2	1.7	3.4, 2.4, 2.3, 2	-
<b>Physical abuse</b>									
Total	-	-	1.9	2.2, 2.2	-	-	-	-	2.2
Males	-	-	-	-	-	-	-	2.2, 1.4	-
Females	-	-	-	-	-	-	2.1	1.6, 2.2	-
<b>Emotional abuse</b>									
Total	-	-	2.9	-	-	-	-	-	2.4
Males	-	-	-	1.5	-	-	-	-	-
Females	-	-	-	-	-	-	2.0	-	-
<b>Neglect</b>									
Total	-	-	2.5	-	-	-	-	-	-
Males	-	3.4	-	-	2.0	-	-	-	-
Females	-	1.8	-	2.2	-	1.6	-	-	-
<b>Witnessing family violence</b>									
Total	-	-	2.1	-	-	-	-	-	-
Males	-	-	-	-	-	-	-	1.5, 1.7, 2.0, 2.3	-
Females	-	-	-	-	-	-	-	1.6, 1.8, 1.7	-





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