THE ECONOMIC BURDEN OF VIOLENCE AGAINST CHILDREN

Nigeria Study

Analysis of Selected Health and Education Outcomes

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Preface

Data on economic burden of Violence Against Children (VAC) in Nigeria with the associated budgetary implications are required for planning, investment and other actions aimed at improving the prevention of VAC. This will contribute towards improved child protection system in Nigeria; design, agenda setting and adequate budgetary allocations for optimal system operations.

His Excellency, Muhammadu Buhari GCFR, President and Commander in Chief of the Armed Forces of the Federal Republic of Nigeria at the commemoration of the Campaign to End Violence Against Children on 26th October 2016 provided the impetus for costing the child protection services. He committed to analyzing the level of public expenditure on child protection and cost for a minimum package of child protection services. Hence, the implementation of the present study commissioned by the Federal Ministry of Budget and National Planning in collaboration with the Federal Ministry of Women Affairs and Social Development and UNICEF. The study is the first of its kind in Nigeria and is in fulfillment of His Excellency, President Muhammadu Buhari's commitment to end violence against children by 2030.

Data from the National Violence Against Children Survey of 2014 were analyzed to provide the magnitude of losses due to violence against children. The impact on selected health and education outcomes were considered
The analysis was done in four steps:

I. Estimation of the national prevalence of violence against children;

II. conducting regression analyses to estimate violence against children outcome relationships;

III. establishing the Population Attributable Fractions (PAFs) for specific outcomes and effect that are linked to violence against children and

IV. developing a costing model to estimate the economic burden of violence against children for various health outcomes based on PAFs calculated in step three

The study revealed that about half of Nigerian children reported some form of physical violence by a parent, adult relative, community member or intimate partner prior to attaining the age of eighteen. The study also revealed that the cumulative loss of earnings as a result of productivity losses across different types of violence against children was 967 billion Naira (US $6.1 billion) accounting for 1.07 per cent of Nigeria's GDP.

There were some data limitations including the non-inclusion of several serious consequences of violence against children, as such studies were not conducted in Nigeria at the time of compiling the report. It is therefore possible that the present study has under-estimated the economic burden of violence against children in Nigeria.

The findings of the study point to the strong need for urgent development and funding of interventions by government and relevant stakeholders to reduce violence against children in Nigeria. The results of the study also underscore the importance of prioritizing elimination of violence against children as a key factor in Nigeria's social and economic development.

Mrs Ifeoma N. Anagbogu
Permanent Secretary
Federal Ministry of Women Affairs and Social Development
March 2019

Foreword

The 2014 National Survey on Violence Against Children in Nigeria (NVACS) indicates that violence in childhood makes men and women significantly more likely to engage in risky behaviours (i.e alcoholism, smoking, drugs abuse), experience negative health outcomes (like mental illnesses, Sexually Transmitted Infection's including HIV) or/and drop out from school. International research has also confirmed that violence of any kind experienced in childhood has a life-long negative impact on the individual's physical, psychological and cognitive development and consequently, affects entire communities and nations by diminishing their human capital.

The fact that the human capital is considered the most critical capital in economic development, The Federal Government under the leadership of the Ministry of Budget and National Planning and in collaboration with the Federal Ministry of Women Affairs and Social Development and UNICEF engaged a renowned scholar in this field, Professor Xiang Ming Fang, Professor of Health Economics at Georgia State University and previously Senior Health Economist with the Division of Violence Prevention at the Centre for Disease Control (CDC) to interrogate the economic burden of Violence Against Children in Nigeria, by estimating the size of the economic burden of VAC and to analyse the index causes using the Disability Adjusted Life Years (DALY). The estimate calculates both the years of fully productive life lost to mortality and morbidity caused by VAC and the subsequent economic value of this loss of productivity. These estimations paint a clear picture of the significant impact that VAC has on Nigerian children, and the economic burden on the country as a whole.

In summary, this report provides the evidence, especially the economic justification that is needed to prioritize child protection services, especially those that will lead to elimination of violence against children, recognizing the need to arrest the build-up of risks and vulnerabilities throughout the life cycle as associated with the adverse health, education and productivity effects of VAC.

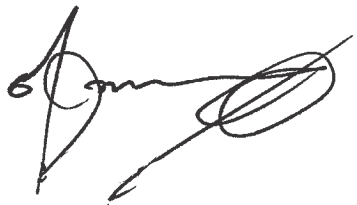
I therefore join other stakeholders that make a case that sufficient attention should be place on arresting the negative and avoidable build up that has serious economic cost, human capital development and lifelong impacts associated with VAC. With the current ranking of the country on the Global Human Capital Development Index there is no better

opportunity than now to create a fiscal space for child protection especially to specific preventive Child Protection programmes and services.

I recommend this report as it provides us with veritable answers to questions that must be asked before budgetary apportionment and expenditures is made. It is also well aligned to the strategic objectives set out in the Economic Recovery and Growth Plans, under "the investing in our people" pillar. We as a people must not only improve the lives of the present generation but also our future generations.

I must thank and appreciate my Honourable Minister, Senator Udoma Udo Udoma for his visionary leadership and support for the right of the Nigerian Child, I congratulate the Federal Ministry of Women Affairs and Social Development for the collaboration on this project, I also congratulate my team in the Ministry of Budget and National Planning for providing the technical support in coordinating stakeholder engagement in the analysis of the economic burden of VAC. I appreciate in no small measures the technical and financial support of UNICEF, especially the Child Protection Section for this achievement. There is no better legacy than evidences that will spur the policy makers to action thereby bringing hope and fulfillment of life potentials of our children who are most vulnerable in the society. I wish to finally acknowledge the support of other MDAs both at Federal and State, Development Partners, academicians and NGOs in the development of this report.

I am, therefore, delighted to present the findings of the Estimate of the Economic Burden on Violence Against Children to the Nigerian people. I urge all National and Sub-national Governments in Nigeria to consider the impact of VAC on the economy of their state and take the necessary steps recommended herein to mitigate the future loss of economic and human capital.



Olajide S. Odewale
Permanent Secretary
Ministry of Budget and National Planning
March 2019

Acknowledgements

The Economic Burden of Violence against Children in Nigeria is the first assessment to estimate the economic cost of violence against children (VAC) in Nigeria. Following the 2015 Presidential Year of Action to End Violence Against Children, the President launched the national Roadmap for Ending Violence Against Children in 2016. The Roadmap identified a number of multi-sectoral priority actions, among which was the need for an increase in preventive child protection services. As a result, Nigeria was declared a Global Pathfinding country in recognition of its commitment to end violence against children, including a commitment to increase investment in child protection.

With research led by the Government of Nigeria, in close collaboration with UNICEF, the report provides ample evidence and economic justification for the need to prioritize child protection services. Focusing on the adverse impact of VAC on health, education and productivity, the report demonstrates the cost of inaction and ends with a call to action to eliminate any form of violence against children.

The conduct of the economic burden analysis would not have been possible without the generous support and financial assistance of the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), through USAID, and the EU-funded programme "Women, Peace and Security," implemented by UN Women, in partnership with the Federal Ministry of Women Affairs and Social Development and UNICEF.

The Federal Ministry of Women Affairs and Social Development, under the strong leadership of the Ministers Aisha Jummai Alhassan and Jajija Aisha Abubakar, jointly with the Ministry of Budget and National Planning with Minister Udoma Udo Udoma, coordinated the multi-stakeholder effort, facilitating and supporting activities at the federal level and providing technical oversight of state-level activities. This includes the special support of the Permanent Secretary, Ifeoma N. Anagbogu, from the Federal Ministry of Women Affairs and Social Development, and Permanent Secretary of Budget and National Planning, Olajide S. Odewale.

As the leading agency on the national VAC study, the National Population Commission, led by former Chairman Eze Duruiheoma, provided essential authorization for the use of data

and further technical support by Sylvanus Unogu. Victor Atuchukwu from the US Center for Disease Control and Prevention, under the leadership of Country Director Mahesh Swaminathan, is gratefully acknowledged for the joint analysis of NVAC data.

The Cross-River State Ministry of Women Affairs, led by Commissioner Stella Oreme Odey, the Gombe State Ministry of Women Affairs, led by Commissioner Rabi Daniel, the Lagos State Ministry of Youth and Social Development, led by Commissioner Agboola Dabiri, and the Plateau State Ministry of Women and Social Development, led by Commissioner Anna Musa Izam, directed and coordinated all activities in their respective states. We are particularly indebted to all relevant Federal and State Government Ministries and Agencies, mentioned here and elsewhere in the report, which collaborated toward the completion and validation of this report across all relevant sectors, including education, health, justice and judiciary, social welfare and statistics, public order and safety, human rights protection and promotion, and general population services.

Special recognition for their contributions to implementation and facilitation of activities goes to the Social Development Department within the Ministry of Budget and National Planning, headed by Director Elizabeth Egharevba, at the start of the initiative and more recently by Director Kayode Obasa and Director Nike Abdulraheem, as well as Assistant Director Grace Obi-Ukpabi and her team, comprised of Jimoh Monsur and Mumeen Bolakale. Likewise, the Child Development Department within the Ministry of Women Affairs and Social Development, headed by Director Jummai Mohammed, and the team, including Benson A. Linus, Peter Uchenna, Okpewuru Egbe, Christiana Oliko and Blessing Anunike, as well as Kagior Godwin from the Department of Finance and Accounts, greatly contributed to data collection at the federal level and to the report review and the validation workshops. The Child Rights Information Bureau of the Ministry of Information and Culture, headed until recently by Ibiba Bello and currently by Olumide Osayinpeju, and its staff, Temitoye Falayi and Daniel Nwagwu, provided invaluable technical assistance in the coordination of federal activities and financial reporting.

Particular appreciation goes to the authors of this report, Xiang Ming Fang and Obinna Onwujekwe, for undertaking this study and working determinedly to ensure the production of a solid, reliable output of highest quality.

Finally, I would like to recognize the efforts of the UNICEF Nigeria Child Protection Section, headed by Milen Kidane, who coordinated the consolidation of this important report. Rocio Aznar Daban, Marialaura Ena and Juliane Koenig provided technical assistance,

monitoring and coordination of the research and related activities. Special recognition of UNICEF Nigeria staff for their specific individual contributions to the finalization of the report goes to: Amandine Bollinger, Denis Onoise, Enrique Delamónica, Ladi Alabi, Maryam Enyiazu, Nkiru Maduechesi, Olasunbo Odebode, Phydelia Abbas and Sharon Oladiji. It is my sincere aspiration that the many institutions and individuals, who collaborated on this key piece of research will continue to advocate for improved and expanded provision of child protection services for the benefit of all children in Nigeria.

Mohamed Malick Fall
Representative, UNICEF Nigeria
March 2019

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Abbreviations

CDC	Centers for Disease Control and Prevention.
DALY	Disability-Adjusted Life Year
GBD	Global Burden of Disease
GDP	Gross Domestic Product
FMOE	Federal Ministry of Education
FMOH	Federal Ministry of Health
MNP&B	Ministry of National Planning and Budget
NPOPC	National Population Commission
NVACS	Nigeria Violence Against Children Survey
OR	Odds Ratio
PAF	Population Attributable Fraction
RR	Relative Risk
UNICEF	United Nations Children's Fund
WHO	World Health Organization

List of Key Terms and 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): 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).

Sexual Violence[1]: Sexual violence is defined as including all forms of sexual abuse and sexual exploitation of children. This encompasses a range of offences, including completed non-consensual sex acts (i.e., rape), attempted non-consensual sex acts, abusive sexual contact (i.e., unwanted touching), and non-contact sexual abuse (e.g., threatened sexual violence, exhibitionism, verbal sexual harassment). This also includes the inducement or coercion of a child to engage in any unlawful or psychologically harmful sexual activity; the exploitative use of children in prostitution or other unlawful sexual practices; and the exploitative use of children in pornographic performances and materials.In the Nigeria Violence Against Children Survey 2014 (NPOPC, UNICEF Nigeria and CDC, 2016), questions were posed on four types of sexual abuse and four types of sexual exploitation:

[1]Definitions of sexual violence (including sexual abuse and sexual exploitation), physical violence, and emotional violence) are from Nigeria Violence Against Children Survey 2014.

1. Sexual Abuse

Sexual abuse is defined as including:

- **Unwanted Sexual Touching:** if anyone, male or female, ever touched the respondent in a sexual way without their permission, but did not try and force the respondent to have sex of any kind

- **Attempted Unwanted Intercourse:** if anyone ever tried to make the respondent have sexual intercourse of any kind without their permission, but did not succeed

- **Physically Forced Intercourse:** if anyone ever physically forced the respondent to have sexual intercourse of any kind regardless of whether the respondent did or did not fight back

- **Pressured Intercourse:** if anyone ever pressured the respondent in a non-physical way, to have sexual intercourse of any kind when they did not want to and sex happened. When someone pressures someone else into sex, it could involve things like threats, harassment, and luring or tricking the other person into having sex.

2. Sexual Exploitation

If anyone ever gave the respondent money, food, gifts, or any favors to have sexual intercourse or perform any other sexual acts with them.

3. Non-contact Sexual Violence/Exploitation

- If anyone ever made the respondent upset by speaking to them in a sexual way or writing sexual things about them
- If anyone ever forced the respondent to watch sex photos or sex videos against their will
- If anyone ever forced the respondent to be in a sex photo or video against their will

4. Additional sexual violence-related definitions

Unwanted Completed Sex: A combination of physically forced and pressured sex as defined above.

Sexual Intercourse for Females: Includes someone penetrating a female's vagina or anus with their penis, hands, fingers, mouth, or other objects, or penetrating her mouth with their penis.

Sexual Intercourse for Males: Includes someone penetrating a male's anus with their penis, hands, fingers, mouth, or other objects, or penetrating his mouth with their penis; this can also include someone forcing the male's penis into their mouth, vagina, or anus.

Physical Violence: Physical acts of violence such as being slapped, pushed, punched, kicked, whipped, or beaten with an object, choked, smothered, tried to drown, burned, scalded intentionally, or injured or threatened with a weapon such as a knife or other weapon. The study looked at physical acts of violence perpetrated by intimate partners, parents or adult relatives or community members, including:

- If someone ever slapped or pushed the respondent (intimate partners only)
- If someone ever punched, kicked, whipped, or beat the respondent with an object
- If someone ever choked, smothered, tried to drown, or burned the respondent intentionally
- If someone ever used or threatened the respondent with a knife or other weapon

Emotional Violence: Emotional violence is defined as a pattern of verbal behavior over time or an isolated incident that is not developmentally appropriate and supportive and that has a high probability of damaging a child's mental health, or his/her physical, mental, spiritual, moral or social development. Emotional acts of violence such as being told you were not loved, someone wished you had never been born or being ridiculed or put down. Specifically, in this study, we examined emotional acts of violence perpetrated by parents or caregivers:

- If someone ever told the respondent that they were not loved, or did not deserve to be loved
- If someone ever said they wished the respondent had never been born or were dead
- If someone ever ridiculed the respondent or put them down (for example said that they were stupid or useless)

Executive Summary

Introduction

Information on the economic burden of violence against children in Nigeria and its budget implications are needed for planning, investment, and improving violence prevention aimed at children. The information is crucial to expand the Child Protection System in Nigeria in terms of design, agenda setting and for making adequate budgetary allocations for optimal system operations. Violence against children cut across all socio-demographic lines and it is associated with preventable suffering, including death, and poses significant adverse health, social, educational, and economic consequences for survivors and the general society. Estimates of the economic burden have been published for a few countries. However, Nigeria, lacks these estimates, which are needed to help different stakeholders to build a compelling case about the scope and severity of the issue, so it can be prioritized.

The Federal Government of Nigeria, led by the National Population Commission, carried out the first comprehensive and nationally representative survey on violence against children (NVACS) in 2014. The NVACS was designed to produce national-level estimates of experiences of childhood physical, sexual, and emotional violence. Using data from the NVACS, this report estimated the economic burden of violence against children to Nigerian society through its impacts on selected health and education outcomes. The economic burden estimate included the monetary value of disability and death due to violence against children, as well as reductions in adult earnings attributable to violence against children.

This is the first study to estimate the economic burden of aspects of violence against children in Nigeria, a common occurrence in the lives of many Nigerian children. Childhood violence is strongly associated with poor physical and mental health, and educational attainment in Nigeria, which are vital components of a country's economic growth and development.

Study methodology

The data that from the 2014 Nigerian Violence Against Children Survey (NVACS) was analysed to produce the evidence. The NVACS was a cross-sectional household survey of 969 females and 1,387 males aged 18-24 years in Nigeria. The data was analysed to provide evidence of the health and educational outcomes due to VAC and to ultimately provide the magnitude of economic/monetary costs/losses due to VAC. The health outcomes and health risk behaviors that were examined in the data analysis included mental distress, STIs (including HIV), self-harm, drug

use, smoking, problem drinking, and perpetration of interpersonal violence. These outcomes were selected based on the data availability in NVACS and allowing matching the outcomes with the available Global Burden of Disease categories.

Computing the economic burden of violence against children

Four steps were taken to estimate the economic burden of violence against children in Nigeria for selected health outcomes:

Step One - The national lifetime prevalence rates by sex and major type of childhood violence (physical violence, emotional violence and sexual abuse prior to age 18) was estimated.

Step Two - Statistical analysis using a type of multiple regression analysis, which was the generalized linear models with Poisson-distributed errors was used to estimate the associations (relative risk) by sex between different types of childhood violence (physical violence, emotional violence and sexual abuse) and the related health consequences and health risk behaviors.

Step Three - Based on analysis from steps 1 and 2 (the prevalence by major type of violence and the relative risks of outcomes due to violence against children), the level of different health consequences and health risk behaviours for different population groups, which is also known as the population attributable fractions (PAFs) that are linked to violence against children were estimated.

Step Four - Cost the economic burden of violence against children for various health outcomes based on the PAFs calculated during step three. All PAFs were multiplied by an index that is constructed from the numbers of lives lost due to VAC plus the numbers of life years lived with disability due to VAC. This index is known as the disability-adjusted life year (DALY). It was used to measure for specific health outcomes or health risk behaviors to estimate DALYs lost from health outcomes and health risk behaviors attributable to childhood violence. Using a method that has been used by the World Health Organisation (WHO) DALY losses were converted into monetary value by assuming that one DALY is equal to the country's per-capita GDP.

Reductions in earnings attributable to violence against children

In addition to health outcomes and health risk behaviors, the marginal effects of childhood violence on children's educational attainment were examined (whether the respondent obtained secondary or higher education). Combined with data on the annual income difference by educational attainment, the average productivity loss per victim of childhood violence was calculated by multiplying the marginal effects of childhood violence on educational attainment by the income difference with different levels of educational attainment.

The prevalence data from the NVACS and labor force statistics from the World Bank were used to compute the total annual productivity loss attributable to childhood violence in Nigeria in 2014. This was done by multiplying the loss of earnings per victim of childhood violence by the number of lifetime childhood violence victims in the labor force.

Results

Prevalence of violence against children

About half of Nigerian children reported some form of physical violence prior to age 18 years by an intimate partner, parent, adult relative, or community member. Roughly one-fifth of Nigerian children reported emotional abuse while growing up: 17 percent of females and 20 percent of males aged 18 to 24 years reported emotional violence by a parent, caregiver or other adult relative prior to age 18 years. About 25 percent of females and 11 percent of males aged 18 to 24 reported some form of sexual abuse prior to age 18 years. The violence against children have negative effects on immediate and later health, educational and ultimately productive status of the victim, their households, communities and the country.

Gender differences in the links between childhood violence and health consequences

(1) Childhood physical violence: For females, 30.8 percent of STDs, 10.9 percent of depressive disorders, and 45.3 percent of perpetrated interpersonal violence were attributable to childhood physical violence. Other health outcomes were not significantly associated with childhood physical violence. In contrast for males, 32.5 percent of drug use, 10.8 percent of alcohol use, 18.6 percent of STDs, 16.6 percent of depressive disorders and 39.1 percent of interpersonal violence were attributable to childhood physical violence.

(2) Childhood emotional violence: For females, childhood emotional violence was not significantly associated with any health outcomes except for depressive disorders, contributing to 6.2 percent of depressive disorders. For males, 4.9 percent of smoking, 5.3 percent of alcohol use, 6.2 percent of depressive disorders and 9.1 percent of interpersonal violence were attributable to childhood emotional violence.

(3) Childhood sexual abuse; For females, childhood sexual abuse contributed to 30.4 percent of drug use, 31.1 percent of self-harm, 13.9 percent of STDs, 5.4 percent of depressive disorders and 19.0 percent of interpersonal violence for females. For males, childhood sexual abuse contributed 16.7 percent to self-harm and 7.5 percent to interpersonal violence.

Economic burden

The estimated economic value that Nigeria lost to some selected health consequences of violence against children in 2014 amounted to 849 billion Naira for females and 570 billion Naira for males. For specific types of childhood violence, the estimated economic value due to nonfatal physical violence was 1008 billion Naira (US$6.4 billion), emotional violence was 91 billion Naira US$0.6

billion) and sexual abuse was 307 billion Naira (US$ 1.9 billion). Overall, the cumulative economic value of health consequences that were lost due to resultant disabilities and or deaths due to violence against children totaled 1420 billion Naira (US$8.9 billion) in 2014, which represents 1.58 percent of the country's GDP.

In addition, the total loss of earnings attributable to childhood physical violence was 673 billion Naira; for emotional violence (155 billion Naira); and for sexual abuse, it was 139 billion Naira. The cumulative loss of earnings as a result of the productivity loss across different types of violence against children, was 967 billion Naira (US $6.1 billion), accounting for 1.07 percent of Nigeria's GDP. The loss to GDP from VAC in other countries as a percentage of the country/region's GDP are: 0.84% for the USA, 1.10% for Cambodia, 1.88% for Easter Asia and Pacific region, and 4.3% for South Africa.

Limitations of the analysis

The level of different health consequences and health risk behaviors for different population groups (population attributable fractions or PAFs) for individual risk factors often overlap and could add up to more than 100 percent, which may lead to overestimation of the economic burden. This is because many diseases/health risk behaviors are caused by multiple risk factors, and individual risk factors may interact in their impact on overall risk of disease or health risk behaviors.

The present study approximated fatal cases of childhood violence by only including violence-related deaths among children aged 0 to 14 years, as data on violence-related deaths for WHO member states were only available for the 0 to 14 year age group. Thus, the total incidence of fatal cases of childhood violence, as well as the economic burden of violence against children, may be underestimated. Also, childhood violence was assessed using only self-reports and thus subject to all possible biases and limitations inherent to this form of measurement, such as recall bias, social desirability, and reporting bias.

Also, many of the serious consequences of violence against children were not included because no such studies exist on Nigeria at the time of conducting this one. These consequences include: higher levels of healthcare utilization; costs related to the legal and justice system; special education costs; child welfare costs; and chronic diseases such as diabetes, heart disease and cancer.
Hence, considering all data limitations together, it is possible that this study under-estimate the burden of VAC. It underscores the need to steer resources to strengthening the knowledge base regarding the scale and consequences of violence against children on relevant public services at the national level.

Conclusion - a call to action

The findings provide a strong evidence-base for urgent prioritized development and funding of interventions by all stakeholders for the reduction of violence against children in Nigeria. This is the first study to estimate the economic burden of aspects of violence against children in Nigeria, and confirms the importance of prioritizing violence against children as a key social and economic concern for Nigeria's future.

Childhood violence is strongly associated with poor physical and mental health, and educational attainment in Nigeria, which are vital components of a country's economic growth and development. Childhood violence also affects females more adversely. All relevant stakeholders from government institutions at all levels, non-governmental organisations, development partners, community-based organisations, the mass media, communities and children, religious bodies should be made aware of the results of the study and collaborative ideas synthesized for finding solutions to the ever present problem.

Nigeria's future economic growth and development, may unfortunately, be compromised if sustained, committed support and resources to Nigeria's Child Protective Systems are not secured. These systems are essential in the identification and prevention of suspected cases involving violence against children as well as to ensure immediate access to health and protective services for victims when warranted.

Decision makers at all levels of government and in different relevant sectors of the economy, are urged to urgently develop and budget for interventions that will reduce the tremendous economic cost, as well as the human toll and lifelong impacts associated with violence against children. Such interventions should be always be highly prioritized when reviewing and making budget allocation decisions.

1. Introduction

Over a billion children are exposed to violence each and every year globally (Hillis et al., 2016). Violence against children exists in every country, amongst all population groups in the world; perpetrators do not target victims based on culture, class, education, income or ethnic origin. Nigeria is no exception.

Violence against children is associated with preventable suffering, significant adverse health, social, and economic consequences for survivors and the general society, including increased risk of delinquency, criminal and violent behaviors; disability from physical injury; reduced health-related quality of life; lower levels of education; impaired capacity of adults to generate income; and death (Corso et al., 2008; Fang et al., 2012; Gilbert et al., 2009; Fry et al., 2017; Felitti et al., 1998).

Health and education are the two major factors in human capital, which plays a significant role in the economic well-being of individuals, organizations and countries. Low level human capital can lead to reduced economic growth (Barro, 1991; Mankiw et al, 1991; Schutt, 2003;Todaro & Smith, 2014).

In order to develop coherent interventions that can be used to tackle violence against children, it is necessary to understand the prevalence, manifestations, locations, demography, perpetrators, and impact of violence. Therefore, the Federal Government of Nigeria, led by the National Population Commission (and supported by UNICEF Nigeria and U.S. Centers for Disease Control and Prevention), carried out the first comprehensive and nationally representative survey on violence against children (VACS) in 2014, covering every State in Nigeria (NPOPC, UNICEF Nigeria and CDC, 2016). Nigeria is the first country in West Africa to undertake this Survey, and the 9th country globally.

The results of the 2014 Nigeria Violence Against Children Survey (NVACS) provided, for the first time, national estimates that describe the magnitude and nature of sexual, physical, and emotional violence experienced by girls and boys in Nigeria (NPOPC, UNICEF Nigeria and CDC, 2016). The findings from the 2014 NVACS indicate that violence against children is a serious problem in Nigeria:

- Over half of the children experience at least one form of violence before the age of 18 years.

- Approximately 6 out of every 10 children experience some form of violence.
    - Half of all children experience physical violence.

  - One in four girls and one in ten boys experience sexual violence, and one in six girls and one in five boys experience emotional violence.

- Violence is rarely an isolated incident.
  - The majority of children who experience physical, sexual or emotional violence in childhood do so on multiple occasions (over 70%).
  - Girls are significantly more likely to experience both sexual violence and physical violence than other combinations of violence.
  - Boys are significantly more likely to experience both physical and emotional violence, than other combinations of violence.

- Violence also starts at a young age.
  - Over half of children first experience physical violence between the ages of 6 and 11.
  - Approximately 1 in 10 children's first experience is under the age of 5.
  - A third of girls experience their first incident of sexual violence between 14 and 15, while almost a third of boys experience their first incident of sexual violence at 13 years and below.
  - Approximately half of children first experience emotional violence before the age of 12.

However, although the prevalence of violence against children is well understood, few estimates of the total economic burden exist for international settings.

Computing the burden of violence against children in economic terms, helps stakeholders to build a compelling case about the scope and severity of the issue, frames the problem within a relatable public health context so it can be prioritized. This is necessary for subsequent support and development of critical prevention services and interventions. Given the high prevalence and many negative short- and long-term consequences, the economic costs associated with the adverse impacts of violence against children is expected to be substantial.

The few countries for which estimates of the economic burden have been published are the United States (Fang et al., 2012), Australia (McCarthy et al., 2016), South Africa (Fang et al., 2017), and China (Fang et al., 2015b). For example, the average lifetime cost per victim of nonfatal child maltreatment is estimated to be $210,012 in the USA (Fang et al., 2012). For South Africa, the estimated economic value of violence against children was US$13.5 billion, accounting for 4.3% of South Africa's GDP in 2015 (Fang et al., 2017). In addition, the reduced earnings attributable to childhood physical violence and emotional violence in South Africa in 2015 were US$2.0 billion and US$750 million respectively (Fang et al., 2017).

This is the first study to estimate the economic burden of aspects of violence against children in Nigeria, a common occurrence in the lives of many Nigerian children. Such information is crucial to expand the Child Protection System in terms of design, prioritization by policy makers, and the capacity to allocate and oversee budgetary allocation for optimal system operations in Nigeria. Thus information on the economic burden of violence against children in Nigeria and its budget implications are needed for planning, coordination, investment, and improving violence prevention aimed at children.

2. Objectives

The aim of this study was to estimate the economic burden of violence against children to Nigerian society through its impacts on selected health and education outcomes.

The specific objectives were to:

1. Estimate the DALYs (an index that is constructed from the numbers of lives lost due to VAC plus the numbers of life years lived with disability due to VAC) lost due to violence against children-attributable physical and mental health outcomes and health-risk behaviors

2. Compute the economic burden of VAC by converting DALYs lost into money by assuming that one DALY is equal to the country's per capita GDP

3. Estimate the impacts of childhood violence on children's educational attainment

4. Compute the economic value of the reductions in future earnings attributable to violence against children

3. Methodology

The data that from the 2014 Nigerian Violence Against Children Survey (NVACS) was analysed to produce the evidence. The NVACS data collection included interviews with 1,766 girls and young women and 2,437 boys and young men after a multi-stage cluster sampling technique. Data from females and males aged 18-24 years provide prevalence estimates of the violence ever experienced in childhood, while data from 13-17 year olds estimate the prevalence of violence experienced in the 12 months prior to the survey. For further details please see the NVACS report (NPOPC, UNICEF Nigeria, and US CDC, 2016).

For analysis purposes, lifetime prevalence estimates of childhood violence were based on responses from participants aged 18 to 24 years reporting on their experiences prior to the age of 18 years. To avoid the possibility of diseases or health risk behaviors preceding childhood violence, the analyses on the violence against children – outcomes relationships were also based on data from females and males aged 18-24 years.

The study sample for the analysis of violence against children – outcomes relationships included 969 females and 1,387 males aged 18-24 years. A sensitivity analysis using the whole sample of participants aged 13-24 years was conducted to test the robustness of the associations between violence against children and health outcomes based on responses from participants aged 18-24 years. The magnitudes and significance of the associations between violence against children and health outcomes obtained from the full sample of participants aged 13-24 years are similar to those obtained from the sample of participants aged 18-24 years. All analyses were conducted using Stata SE version 12 (StataCorp., College Station, Texas).

3.1 Economic value lost to violence against children

Four (4) steps were taken to estimate the economic burden of violence against children in Nigeria for selected health outcomes:

1. Estimate the national prevalence of violence against children.
2. Conduct regression analyses to estimate violence against children – outcomes relationships.
3. Establish the population attributable fractions (PAFs) for specific outcomes and effects that are linked to violence against children.
4. Develop a costing model to estimate the economic burden of violence against children for various health outcomes based on the PAFs calculated during step three.

Step One: Estimate the National Prevalence of Violence Against Children

This step serves two purposes: (1) it provides data on the prevalence by major type of violence needed for the estimation of PAFs, and (2) helps double check whether the prevalence rates of childhood violence are consistent with the findings from the NVACS report (NPOPC, UNICEF Nigeria, and US CDC, 2016). In this step, lifetime prevalence before age 18 by sex and major type of violence against children (physical violence, emotional violence and sexual abuse) was estimated.

Childhood sexual abuse: Defined as including the following four forms of sexual abuse: unwanted sexual touching; attempted unwanted intercourse; physically forced intercourse; and pressured intercourse.

Childhood physical violence: Measured by asking respondents if an intimate partner, parent or adult relative, or community member had slapped, pushed or hit them with a fist, kicked, whipped or beaten them with an object, choked, smothered, tried to drown them, burned, used or threatened to use a gun, knife or other weapon.

Childhood emotional violence: Measured by asking respondents about such actions as being told that they were not loved, or did not deserve to be loved, someone saying that they wished the respondent had never been born or was dead, or being ridiculed or put down.

Note: Emotional violence by friends, peers or other community members, including teachers, was excluded from the prevalence estimate.

Step Two: Estimate Violence Against Children – Outcomes Relationships

Relative Risk (RR) was used to assess the violence against children – outcomes R\relationships. RR is the ratio of the probability of an event occurring (e.g., developing lung cancer) in an exposed group (e.g., smokers) to the probability of the event occurring in a comparison, non-exposed group (e.g., non-smokers). For example, the RR of cancer associated with smoking equal to 3 means that smokers would be three times as likely as non-smokers to develop lung cancer.

Multiple regression analyses using the generalized linear models with Poisson-distributed errors were used to analyze the relationships (represented by relative risk) between different types of childhood violence and the related health consequences and health risk behaviors, controlling for socio-demographic factors that have documented associations in literature on violence against children (Brown et al., 1998; Isaranurug et al., 2001; Oliver et al., 2006; Runyan et al., 2002; Sidebotham & Golding, 2001; Strass et al., 1998; Sumba & Bwibo, 1993). These socio-demographic factors included age, family wealth, household size, family structure (living with both biological parents or not), the respondent's marital status and witnessing violence in the home or community. The respondent's age was coded into six dummy variables: age 18, age 19, age 20, age 21, age 22, age 23, and age 24. Those aged 18 years old were set as the baseline reference age group.

In order to determine the independent contribution of each type of violence against children, the other two types of violence against children were included as covariates in the generalized linear models (Jirapramukpitak, Prince, and Harpham, 2005). The analysis was also used to assess the level of interactions between different types of violence against children.

The health outcomes and health risk behaviors examined in this analysis included occurrence of: mental distress, STIs (including HIV), self-harm, drug use, smoking, problem drinking, and perpetration of interpersonal violence. These outcomes were selected based on the data availability in NVACS. The measures used to define other outcomes of interest were described in Appendix A. The rates (in proportion forms) with 95% confidence intervals for all outcome variables including health outcomes and educational outcomes are presented in Appendix B. The RRs adjusted by socio-demographic factors were estimated by sex, major type of violence against children (physical violence, emotional violence and sexual abuse), and for each of the health outcomes included in this analysis.

Step Three: Calculate Population Attributable Fractions (PAFs)

To estimate the proportion of health consequences (e.g., self-harm) attributable to a risk factor (e.g., sexual abuse), we followed a method recommended by Greenland and Drescher (1993) for estimating PAFs for cross-sectional studies. This PAF estimation used two pieces of previously estimated data: the prevalence by major type of violence and the relative risks of outcomes, given exposure to violence against children. PAFs are scaled from 0.0-1.0, representing an estimated share from 0 percent to 100 percent responsible for the outcome. In this example, a PAF of 0.20 would suggest that 20 percent of self-harm is attributable to exposure to childhood sexual abuse. In other words, the future self-harm rate would decrease by 20% if we prevented all cases of childhood sexual abuse.

Step Four: Computing the economic burden of VAC

Following the work of the World Health Organization (WHO) (2001) and Brown (2008), two steps were used to estimate the economic costs of violence against children: (1) Estimate the disability-adjusted life years (DALYs) lost from deaths, diseases and health risk behaviors attributable to child maltreatment for each type of violence and for each gender; and (2) Convert the DALY loss into monetary value for each type of violence, assuming one DALY is equal to the country's per-capita GDP.

One DALY can be thought of as one lost year of 'healthy' life. DALYs are widely used in international health comparisons and therefore represent a common metric for calculating burden. DALYs add morbidity and mortality. Morbidity is defined in terms of years lived with 'disability' (YLD)—reduced health—and mortality in terms of years of life lost (YLL) relative to the expected life span. Disability weights, which represent the magnitude of health loss associated with specific health outcomes, are used to calculate years lived with disability (YLD) for these outcomes in a

given population (WHO, 2017). The weights are measured on a scale from 0 to 1, where 0 equals a state of full health and 1 equals death. For example, the disability weight of AIDS is 0.5. Imagine a person with AIDS with a remaining life expectancy of 20 years. The person has a disability-adjusted life expectancy of 10 years - or a loss of 10 years in disability-adjusted life expectancy. This is derived by multiplying 0.5 by life expectancy of 20 years to get 10 (0.5*20) years.

To estimate DALYs lost from health outcomes and health risk behaviors, the country-level estimates of cause-specific or risk-specific DALY data were obtained from the Global Burden of Disease Study 2015 (GBD 2015) (available from http:// ghdx.healthdata.org/gbd-results-tool). The GBD 2015 only provided the DALY loss due to specific diseases or risk factors for the year of 2010 and 2015. Linear interpolation[2] was used to estimate DALY loss due to specific diseases or risk factors in Nigeria in 2014. Data on violence-related deaths among children aged 0-14 in Nigeria in 2014 were available by gender from the GBD 2015 (available from http://ghdx.healthdata.org/gbd-results-tool). These data were used to approximate fatal cases of violence against children. The DALY loss associated with these fatal cases was also available from the GBD 2015.

Some health outcomes and health risk behaviors (suicidal ideation, suicidal behavior, and moderate injuries resulting from interpersonal violence) for which data were available in the NVACS were excluded from the analysis because they had no corresponding GBD cause or risk factor categories. Some of these exclusions may underestimate the burden, making this a conservative approach. DALYs lost to health outcomes associated with violence against children by sex were presented in Appendix C.
A method employed by WHO (2001) and Brown (2008) was used to convert DALY losses into a monetary value. This method assumes that one DALY is equal to the country's per-capita GDP. In other words, it is assumed that one year lost due to either disability or mortality is one year lost from the productive capacity of a country's economy and can therefore, on average, be approximated by the per capita GDP. This is termed the 'human capital' approach to valuing DALYs. Some argue that this may over-count costs, as productivity may not be lost completely from disability, while others have argued it may under-count costs, as the value of quality of life is not reflected in GDP.

Data on population, 2014 GDP, and 2014 GDP per capita for Nigeria were obtained from the World Bank (available from http://databank.wordbank.org/ data/reports.aspx?source=world-development-indicators). After merging the DALY loss, GDP and GDP per capita into a single database by health outcome and type of childhood violence, the economic value of DALYs lost due to each type of childhood violence from a specific health outcome or health risk behavior was calculated by multiplying the estimated DALY loss in 2014 by the 2014 GDP per capita. In addition, the value of DALYs lost as a percentage of total GDP in 2014 was calculated for each type of childhood violence.

3.2 Computing reductions in earnings attributable to violence against children

The loss of earnings due to childhood violence per case was calculated by multiplying the marginal effects of childhood violence on educational attainment by the income difference with different levels of educational attainment. Data on income by educational attainment were not available from the website of National Bureau of Statistics in Nigeria or World Bank. We reviewed potentially useful datasets in Nigeria and found that the 2012 General Household Survey (GHS)–Panel data of Nigeria, which included a panel data of 5000 households and was designed to be representative at the national level as well as at the zonal (urban and rural) level (National Bureau of Statistics (NBS), 2013). Information on both education and wage were included in the 2012 GHS. Using the prevalence data from the NVACS and labor force statistics from the World Bank (available from http://databank. worldbank.org/data/reports.aspx?source=world-development-indicators) we estimated how many people in the labor force had sufferance of childhood violence in their lifetimes. The total annual productivity loss attributable to childhood violence in Nigeria in 2014 was estimated by multiplying the loss of adult earnings due to childhood violence per case by the number of lifetime childhood violence victims in the labor force.

[2]In mathematics, linear interpolation is a method of curve fitting using linear polynomials to construct new data points within the range of a discrete set of known data points.

4. Results

4.1 Prevalence of physical violence, emotional violence and sexual abuse

Table 1 shows that about half of Nigerian children reported some form of physical violence prior to age 18 years by an intimate partner, parent or adult relative, or community member. Roughly one-fifth of Nigerian children are emotionally abused while growing up: 17 percent of females and 20 percent of males aged 18 to 24 years reported emotional violence by a parent, caregiver or other adult relative prior to age 18 years. About 25 percent of females and 11 percent of males aged 18 to 24 years reported some form of sexual abuse prior to age 18 years. The prevalence estimates are consistent with the findings from the NVACS report (NPOPC, UNICEF Nigeria, and US CDC, 2016).

Table 1: The prevalence of violence against children experienced prior to age 18, as reported by 18-24 year olds

	Females (N=969)		Males (N=138 7)	
	%	95% CI	%	95% CI
Childhood physical violence	49.7	44.8 -54.6	52.3	48.2 -56.3
Childhood emotional violence	17.0	13.6 -20.4	20.3	17.1 -23.5
Childhood sexual abuse	24.8	21.0 -28.7	10.8	8.7 -13.0

Table 2 shows that gender differences exist in the links between childhood violence and health consequences. For males, 32.5 percent of drug use, 10.8 percent of alcohol use, 18.6 percent of STDs, 16.6 percent of depressive disorders and 39.1 percent of interpersonal violence were attributable to childhood physical violence. In contrast, for females, 30.8 percent of STDs, 10.9 percent of depressive disorders, and 45.3 percent of interpersonal violence were attributable to childhood physical violence. Other health outcomes were not significantly associated with childhood physical violence.

For females, childhood emotional violence was only significantly with depressive disorders, contributing to 6.2 percent of depressive disorders. For males, 4.9 percent of smoking, 5.3 percent of alcohol use, 6.2 percent of depressive disorders and 9.1 percent of interpersonal violence were attributable to childhood emotional violence.

Childhood sexual abuse contributed to 30.4 percent of drug use, 31.1 percent of self-harm, 13.9 percent of STDs, 5.4 percent of depressive disorders and 19.0 percent of interpersonal violence for females. For males, childhood sexual abuse contributed 16.7 percent to self-harm and 7.5 percent to interpersonal violence.

Table 2: Population attributable fractions for health outcomes associated with violence against children by sex

	Health outcome						
	Alcohol use	Drug use	Smoking	Mental disorders	Interpersonal violence	Self—harm	STDs (including HIV)
Females							
Childhood physical violence	—	—	—	10.90%	45.26%	—	30.75%
Childhood emotional violence	—	—	—	6.17%	—	—	—
Childhood sexual abuse	—	30.37%	—	5.44%	18.98%	31.08%	13.88%
Males							
Childhood physical violence	10.80%	32.53%	—	16.56%	39.06%	—	18.64%
Childhood emotional violence	5.31%	—	4.88%	6.24%	9.07%	—	—
Childhood sexual abuse	—	—	—	—	7.49%	16.73%	—

Note: See Appendix A for definition of health outcomes.

4.2 Economic loss due to physical violence, emotional violence and sexual abuse amongst males and females

Table 3 presents the number of DALYs (lives lived with disability + lives lost due to death) lost from violence-related deaths, selected health outcomes and risk behaviors. An estimated 1,034,771 DALYs lost were attributable to childhood physical violence, 53,690 DALYs lost were attributable to childhood emotional violence and 562,017 DALYs lost were attributable to childhood sexual abuse. Combining the DALYs lost from violence-related deaths with those from health outcomes and health risk behaviors, the total number of DALYs Nigeria lost to violence against children in 2014 was 1,650,478 for females and 1,100,823 for males.

Table 3: Estimates of DALYs lost because of violence against children by sex

	# of deaths due to violence against children	DALYs lost to death	DALYs lost to health consequences							Total
			Alcohol use	Drug use	Smoking	Mental disorders	Interpersonal violence	Self—harm	STDs (including HIV)	
Females										
Childhood physical violence			—	—	—	94926	4061	—	935785	1034771
Childhood emotional violence			—	—	—	53690	—	—	—	53690
Childhood sexual abuse			—	70237	—	47402	1703	20118	422557	562017
TOTAL	150	12402	—	70237	—	196018	5763	20118	1358342	1650478
Males										
Childhood physical violence			120477	157419	—	104144	21745	—	535043	938827
Childhood emotional violence			59198	—	20425	39224	5050	—	—	123897
Childhood sexual abuse			—	—	—	—	4167	33932	—	38099
TOTAL	192	15658	179675	157419	20425	143368	30962	33932	535043	1100823

Table 4 shows that the amounts that Nigeria lost to the selected health consequences of violence against children (including both fatal and nonfatal) in 2014 amounted to 849 billion NGN for females and 570 billion NGN for males. Overall, the estimated economic value of these lost DALYs attributable to nonfatal physical violence, emotional violence and sexual abuse was 1008, 91, and 307 billion NGN respectively (US$6.4 billion, 0.6 billion, and 1.9 billion, respectively). The cumulative (summative) economic value of DALY loss for victims across different types of violence (including both fatal and nonfatal reports) in Nigeria totaled 1420 billion NGN (US$8.9 billion) in 2014, which represents 1.58 percent of the country's GDP.

Table 4: Estimated economic value of DALYs lost to violence against children in 2014 by sex and as a percentage of gross domestic product (GDP)

	Economic value of DALYs lost from deaths (NGN)	Economic value of DALYs lost from health outcomes (NGN)							Aggregate Costs	
		Alcohol use	Drug use	Smoking	Mental disorders	Interpersonal violence	Self—harm	STDs (including HIV)	NGN	% GDP
Females										
Childhood physical violence		—	—	—	48488671119	2074211237	—	478003921348	528566803704	0.59%
Childhood emotional violence		—	—	—	27425066385	—	—	—	27425066385	0.03%
Childhood sexual abuse		—	35877564418	—	24213120361	869743965	10276397858	215844555447	287081382048	0.32%
TOTAL	6334935467	—	35877564418	—	100126857865	2943955201	10276397858	693848476796	849408187604	0.94%
Males										
Childhood physical violence		61540212301	80410367994	—	53197071112	11107486471	—	273302827933	479557965810	0.53%
Childhood emotional violence		30238868767	—	10433115142	20035843376	2579568304	—	—	63287395588	0.07%
Childhood sexual abuse		—	—	—	—	2128723088	17332418241	—	19461141329	0.02%
TOTAL	7998272521	91779081067	80410367994	10433115142	73232914488	15815777863	17332418241	273302827933	570304775249	0.63%
National										
Childhood physical violence		61540212301	80410367994	—	101685742231	13181697707	—	751306749281	1008124769514	1.12%
Childhood emotional violence		30238868767	—	10433115142	47460909761	2579568304	—	—	90712461974	0.10%
Childhood sexual abuse		—	35877564418	—	24213120361	2998467053	27608816099	215844555447	306542523377	0.34%
TOTAL	14333207988	91779081067	116287932412	10433115142	173359772353	18759733064	27608816099	967151304728	1419712962853	1.58%

4.3 Reduced Earnings

The marginal effect of childhood physical violence on whether the respondent obtained secondary or higher education was significant for females (-13.6 percent), though not for males. This indicates that experiencing childhood physical violence decreases a female child's likelihood of obtaining secondary or higher education by 13.6 percent. Childhood emotional violence and sexual abuse were not significantly associated with whether the respondent obtained secondary or higher education for females. For males, experiencing childhood emotional violence and sexual abuse decreased a male child's likelihood of obtaining secondary or higher education by 5.8 percent and 9.9 percent, respectively.

The loss of earnings per female victim of childhood physical violence in 2014 was 29344 NGN. The loss of earnings per male victim of childhood emotional violence and sexual abuse in 2014 was 15994 NGN and 27078 NGN. The cumulative loss of earnings as a result of the productivity loss across different types of violence against children, was 967 billion NGN (US $6.1 billion), accounting for 1.07 percent of Nigeria's GDP.

5. Study Limitations

As with any research study, limitations should be noted. They include (1) PAFs may be sensitive to small changes in underlying parameters (prevalence and relative risks (RR)), and the implications can be significant when multiplied by an aggregate outcome and PAFs for individual risk factors often overlap and could add up to more than 100 percent, which may lead to overestimation of the economic burden; (2) the results rest squarely on the quality of the NVACS where childhood violence was assessed using only self-reports and thus subject to all possible biases and limitations inherent to this form of measurement, such as recall bias, social desirability, and reporting bias; (3) not all available childhood violence consequences had matching GBD outcomes and for those that did, some were limited by the definitions and levels of aggregation used in the GBD categories; (4) RRs from the cross-sectional studies could over-or underestimate causal relationships; (5) Due to data being unavailable, many serious consequences of violence against children, including higher levels of healthcare utilization, could not be included in the analysis; (6) Some costs that were excluded from this analysis include costs related to the legal and justice system, special education costs, child welfare costs, and chronic diseases such as diabetes, heart disease and cancer; (7). Some outcomes from the NVACS (such as suicidal ideation, suicidal behaviors and injuries resulting from interpersonal violence) were excluded from this analysis because no DALY data were available and the exclusion of these outcomes may significantly underestimate the economic burden of childhood violence; (8) violence-related deaths for 15- to 18-year-olds were not included for the estimation of DALYs lost from fatal cases of childhood violence; (9) Suicide deaths among children were excluded from the estimation, hence, the total incidence of fatal cases of childhood violence, as well as the economic burden of violence against children, may be underestimated; (10). Since the data used for this analysis came from a household survey, the experiences of children living outside of family care (e.g., street children, children living in orphanages, nomadic children, children living with disabilities) were not included; and (11). While 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.

6. Conclusion

This is the first study to estimate the economic burden of aspects of violence against children in Nigeria, and confirms the importance of prioritizing violence against children as a key social and economic concern for Nigeria's future. Despite its limitations, this study adds important new results on the economic burden of violence against children and strengthens the knowledge base on the prevention of violence against children in Nigeria. This study reveals that the economic burden of violence against children to the Nigerian society through its impacts on selected health and education outcomes is substantial, and signifies recognition that reducing children's vulnerability will positively and directly impact Nigeria's economic and social well-being and development.

The findings provide a strong evidence-base for urgent prioritized development and funding of interventions by all stakeholders for the reduction of violence against children in Nigeria. This is the first study to estimate the economic burden of aspects of violence against children in Nigeria, a common occurrence in the lives of many Nigerian children. About half of all Nigerian children experience some form of physical violence prior to age 18, and roughly one-fifth of Nigerian children are emotionally abused by a parent, caregiver or adult relative while growing up. About 25 percent of female children and 11 percent of male children reported some form of sexual abuse prior to age of 18 years.

This study confirms the importance of prioritizing violence against children as a key social and economic concern for Nigeria's future. More work is needed in the Nigerian national child protection system to ensure that every child and young person who has experienced violence has access to the best possible care and support, and that perpetrators are held accountable for their actions.

The analysis of the economic costs shows that violence against children carries a considerable burden in Nigeria. The economic burden estimate for Nigeria is within the range of international estimates (see Appendix E). The associations of childhood violence with poor physical and mental health and health risk behaviors are substantial in Nigeria and consistent with international evidence. The adverse consequences of childhood violence affect not only children as individuals but, by extension, families, communities and societies.

Nigeria's future economic growth and development, may unfortunately, be compromised if sustained, committed support and resources to Nigeria's Child Protective Systems are not secured. These systems are essential in the identification and prevention of suspected cases involving violence against children as well as to ensure immediate access to health and protective services for victims when warranted.

7. Recommendations – A Call To Action

Childhood violence is strongly associated with poor physical and mental health, and educational attainment in Nigeria, which are vital components of a country's economic growth and development. Childhood violence also affects females more adversely. All relevant stakeholders from government institutions at all levels, non-governmental organisations, development partners, community-based organisations, the mass media, communities and children, religious bodies should be made aware of the results of the study and collaborative ideas synthesized for finding solutions to the ever present problem.

Decision makers at all levels of government and in different relevant sectors of the economy, are urged to urgently develop and budget for interventions that will reduce the existing the tremendous economic cost, as well as the human toll and lifelong impacts associated with violence against children. Such interventions should be always be highly prioritized when reviewing and making budget allocation decisions.

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Appendix A: Measures used to define outcomes

Outcome	Measures	Categorization
Drug use	1. In the past 30 days, have you used drugs such as marijuana, pills, codeine, cocaine, or sniffed any chemical such as petrol or glue?	1=Yes 0=No
Smoking	1. During the past 30 days, did you smoke cigarettes daily, occasionally, or not at all?	1=daily or occasionally 0=not at all
Alcohol use	1. In the past 30 days, on how many days did you drink alcohol to the point that you became drunk?	1=one day or above 0=none
Self-harm	1. Have you ever intentionally hurt yourself in any way?	1=Yes 0=No
STDs (including HIV)	1. Have you ever been diagnosed with a sexually transmitted infection? 2. Have you ever had a genital sore or ulcer?	1=Yes to any one of the two questions 0=No
Mental disorders	During the past 30 days, how often did you feel the following ways, all the time, most of the time, some of the time, a little of the time, or none of the time? (Read categories below) 1. Nervous? 2. Hopeless? 3. Restless? 4. So sad that nothing could cheer you up? 5. That everything was an effort? 6. Worthless? For female respondents: 1. Have you ever done any of the following to a current or previous boyfriend, romantic partner/husband? A. punched, kicked, whipped, or beat them? B. choked, suffocated, tried to drown, or intentionally burn them? C. used or threatened to use a knife, gun or other weapon against them?	The responses range from “none of the time” coded 0 to “all of the time” coded 4. The six items (K6) are summed to yield a number between 0 and 24. Acut-point of K6 ≥ 5 for moderate and serious mental illness (YES).

Perpetration of interpersonal violence	2. Have you ever done any of the following to someone who is not a current or previous boyfriend, romantic partner/husband： A. punched, kicked, whipped, or beat them? B. choked, suffocated, tried to drown, or intentionally burn them? C. used or threatened to use a knife, gun or other weapon against them? 3. Have you ever done any of the following: A. forced a current or previous partner/husband at the time to have sex with you when they did not want to? B. forced someone who was not your husband or partner at the time to have sex with you when they did not want to? For male respondents: 1. Have you ever done any of the following to a current or previous girlfriend, romantic partner/wife? A. punched, kicked, whipped, or beat them? B. choked, suffocated, tried to drown, or intentionally burn them? C. used or threatened to use a knife, gun or other weapon against them? 2. Have you ever done any of the following to someone who is not a current or previous girlfriend, romantic partner/wife： A. punched, kicked, whipped, or beat them? B. choked, suffocated, tried to drown, or intentionally burn them? C. used or threatened to use a knife, gun or other weapon against them? 3. Have you ever done any of the following: A. forced a current or previous partner/husband at the time to have sex with you when they did not want to? B. forced someone who was not your husband or partner at the time to have sex with you when they did not want to?	1=Yes to any one of the three questions 0=No

Source: All questions are from the female or male questionnaire of Nigeria Violence Against Children Survey.

Appendix B: Descriptive statistics for health and education outcomes

	Females (N=969)		Males (N=1387)	
	%	95% CI	%	95% CI
Health outcomes				
Alcohol use	15.2	12.3-18.6	31.5	28.3-34.9
Drug use	0.2	0.1-0.6	3.9	2.8-5.4
Smoking	4.5	3.1-6.7	18.6	15.8-21.7
Mental disorders	34.4	30.4-38.6	30.7	27.0-34.6
Interpersonal violence	13.5	10.7-16.9	20.1	17.0-23.6
Self-harm	5.7	4.2-7.8	7.1	5.5-9.1
STDs (including HIV)	10.8	8.7-13.3	5.1	3.9-6.7
Educational outcomes secondary or higher education	64.0	57.6-69.9	75.7	69.4-81.1

Ap pendix C: DALYs lost to health outcomes associated with violence against children by sex in 2014

	Health outcome						
	Alcohol use	Drug use	Smoking	Mental disorders	Interpersonal violence	Self-harm	STDs (including HIV)
Females	342130	231263	111319	870731	8971	64723	3043329
Males	1115664	483853	418564	628749	55677	202817	2870399

Appendix D: Relative Risks(RRs) for health outcomes associated with violence against children by sex

	Health Outcome						
	Alcohol use	Drug use	Smoking	Mental disorders	Interpersonal violence	Self-harm	STDs (including HIV)
	RR (95%CI))	RR (95%CI))	RR (95%CI))	RR (95%CI))	RR (95%CI))	RR (95%CI))	RR (95%CI))
Females							
Childhood physical violence	-	-	-	1.18^{+} (0.95,1.48)	2.52*** (1.43,4.46)	-	1.85*** (1.17,2.94)
Childhood emotional violence	-	-	-	1.41*** (1.11,1.80)	-	-	-
Childhood sexual abuse	-	2.62^{+} (0.64,10.81)	-	1.22* (0.98,1.51)	1.85*** (1.25,2.73)	2.73*** (1.42,5.26)	1.59** (1.03,2.46)
Males							
Childhood physical violence	1.22* (0.96,1.54)	1.75* (0.96,3.21)	-	1.37*** (1.08,1.73)	2.13*** (1.49,3.04)	-	1.43^{+} (0.84,2.43)
Childhood emotional violence	1.27** (1.02,1.59)	-	1.29^{+} (0.95,1.74)	1.33** (1.07,1.65)	1.40*** (1.09,1.79)	-	-
Childhood sexual abuse	-	-	-	-	1.62*** (1.14,2.29)	2.67*** (1.49,4.81)	-

*** p<0.01; ** p<0.05; * p<0.10; + p<0.20.

Appendix E: Economic burden of violence against children by country/region

Study	Countries included	Outcomes/costs included	Types of violence measured	Total cost of violence	Cost of violence as % of GDP
Fang et al. (2017)	South Africa	Health and behavioural outcomes (alcohol abuse, drug abuse, sexually transmitted diseases (STDs), HIV, interpersonal violence, self-harm, serious mental illness, depression and anxiety), fatal cases	Violence against children including: physical violence, sexual violence, emotional violence, and neglect	US $13.5 billion (2015)	4.3%
Fang et al. (2015)	East Asia and Pacific region (Indonesia, Thailand, Brunei, Darussalam, Japan, Singapore, Cambodia, China, Cook Islands, Fiji, Kiribati, Lao PDR, Malaysia, Republic of Marshall Islands, Micronesia, Mongolia, Nauru, Niue, Palau, Papua New Guinea, Philippines, Republic of Korea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, Viet Nam)	Illicit drug use, early smoking initiation, problem drinking, early sex, teenage pregnancy, self-harm, stomach pain, mental disorder	Violence against children including: physical abuse, sexual abuse, emotional abuse, neglect, and witnessing parental violence	US $206 billion (2012)	2.0%
Fang et al. (2015)	China	Mental disorder (depression and anxiety), current smoker, problem drinking, illicit drug use, self-harm	Violence against children including: physical abuse, emotional abuse, and sexual abuse	US $101 billion (2013)	1.7%
Fang (2015)	Cambodia	Health consequences (mental distress, intimate partner violence perpetration, self-harm, smoking, problem drinking, sexually transmitted infections, moderate injuries resulting from interpersonal violence) and productivity losses (as measured by educational attainment)	Violence against children including: physical violence, emotional violence, and sexual violence	US $251.3 Million (2013)	1.65%
Fang et al. (2012)	The United States	health care costs (short- and long-term, including physical and mental health), productivity losses, child welfare costs, criminal justice costs, and special education costs	Nonfatal child maltreatment and fatal child maltreatment	US $124 billion(2008)	0.84%
McCarthy et al. (2016)	Australia	Health system costs, special education, criminal justice costs, supported accommodation and public housing costs, child protection system, Productivity losses, Deadweight losses, Indirect and direct impacts on lifespan and quality of life	Violence against children including: physical abuse, sexual abuse, emotional abuse (including witnessing family violence) or neglect	US $26.7 billion(2012)	1.5%