The Exposure of Children with and without Disabilities to Violent Parental Discipline: Cross-sectional surveys in 17 middle- and low-income countries

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Abstract

Background

Children with disabilities in high-income countries are more likely than their peers to be exposed to violence. To date, only two studies have reported nationally robust data on the association between child disabilities and exposure to violent parental discipline.

Objective

To estimate prevalence rates and adjusted rate ratios of exposure to violent parental discipline among children with and without disabilities in middle- and low-income countries.

Participants and Setting

Nationally representative samples involving a total of 206,147 children aged 2-14 from 17 countries.

Methods

Secondary analysis of data collected in UNICEF's Multiple Indicator Cluster Surveys.

Results

Children with disabilities were at significantly greater risk of exposure than children without disabilities to all eight forms of violent parental discipline and the total number of forms they were exposed to. For what could be considered the most abusive form of violent discipline (beating a child up 'as hard as one could') they were 71% more likely to have been exposed in the previous month than other children (age and gender adjusted prevalence rate ratio = 1.71 (95%CI 1.64-1.78), p<0.001). Children with functioning difficulties related to poorer mental health or cognitive functioning were at significantly greater risk of exposure to violent parental discipline. In contrast, children with impairments related to

sensory functioning, mobility and expressive communication were at no greater risk of exposure than children without disabilities.

Conclusions

Children with disabilities are at greater risk of exposure to all forms of violent parental discipline than children without disabilities in middle- and low-income countries.

Introduction

Exposure to violence in childhood is common (Cuartas et al., 2019; Devries et al., 2017; Hillis, Mercy, Amobi, & Kress, 2016). For example, it has been estimated that a minimum of half of all children have been exposed to violence in the previous year (Hillis et al., 2016) and over 60% of young children in low- and middle income countries have been exposed to aggressive physical and psychological discipline in the previous year (Cuartas et al., 2019). There is strong evidence to suggest that exposure to violence in childhood can have determinantal effects of child health and wellbeing (Black et al., 2016; Devlin, Wight, & Fenton, 2018; Fry et al., 2018; Gardner, Thomas, & Erskine, 2019; Gershoff, 2002; Gershoff & Grogan-Kaylor, 2016; Hughes et al., 2017; Paul & Eckenrode, 2015; Shonkoff, 2016; Yingying, D'Arcy, Shuai, & Xiangfei, 2019).

The first and most frequent exposure of many children to violence is through the use of violent parental discipline (UNICEF, 2014). Given the evidence that parental disciplinary methods based on physical punishment or psychological aggression have detrimental effects on child development (Devlin et al., 2018; Gershoff, 2002; Gershoff & Grogan-Kaylor, 2016; Paul & Eckenrode, 2015; Rose, Roman, Mwaba, & Ismail, 2018), UNICEF and other bodies have consistently advocated for the promotion of non-violent disciplinary methods and the elimination of parental disciplinary methods based on physical punishment or psychological aggression (UNICEF, 2014, 2017a). These objectives are fully consistent with the *UN Convention on the Rights of the Child* and the UNs' *Sustainable Development Goals* and by May 2020, 59 countries had enacted laws to prohibit all physical punishment of children, including in the child's home (https://endcorporalpunishment.org/countdown/).

Children with disabilities are more likely than their non-disabled peers to be exposed to physical violence, sexual violence and emotional abuse (Beatriz, Salhi, Griffith, & Molnar, 2018; Christoffersen, 2019 online; Jones et al., 2012; Van Horne et al., 2018). However, there is a dearth of robust information on the prevalence or risk of exposure to violence among children with/without disabilities living in low- or middle-income countries. For example, in a relatively recent WHO commissioned systematic review and meta-analysis of the exposure of children with disabilities to violence none of the included studies were undertaken in low- or middle-income countries (Jones et al., 2012). The few studies from middle- and low-income countries that have used sampling frames that are likely to be representative of regions within countries or specific cities have reported that children with disabilities are at increased risk of exposure to: violence in Hong Kong (Chan, Lo, & Ip, 2018); emotional violence, but not physical violence, in Uganda (Wandera et al., 2017); psychological violence and neglect, but not physical or sexual violence, in the State of Pernambuco, Brazil (dos Santos, Pitangui, Bendo, Paiva, & da Silva, 2017); and parental corporal punishment in the city of Alexandria, Egypt (Youssef, Attia, & Kamel, 1998). In addition, a UNICEF report on child disability in 15 middle- and low-income countries participating in Round 3 of their Multiple Indicator Cluster Surveys (MICS3) reported that children with disabilities were significantly more likely to be exposed to severe physical discipline in seven countries and significantly less likely to be exposed in two. The report concluded that these '*preliminary results warrant further investigation of the relationship between child discipline and disability*' (UNICEF & University of Wisconsin, 2008).

We are aware of only two published studies that have presented nationally representative data from a middle- or low-income country on the exposure of children with/without disabilities to violent parental discipline. First, Hendricks and colleagues also used data from

MICS3 to examine the association between child disability associated with four broad impairment groups (cognitive, language, sensory, motor) and exposure to different forms of parental discipline in 17 middle- and low-income countries (Hendricks, Lansford, Deater-Deckard, & Bornstein, 2014). With regard to violent parental discipline they reported that: (1) children with cognitive or language disabilities were significantly less likely than their peers to be exposed to either psychological aggression (e.g., being shouted at) or less severe physical violence (e.g., spanked), but were significantly more likely than their peers to be exposed to more severe physical violence (e.g., hit on the head); (2) children with sensory or motor disabilities were significantly more likely than their peers to be exposed to psychological aggression and more severe physical violence (but no more likely to be exposed to less severe physical violence). No analyses were reported for children with disabilities as a group.

In addition to the Hendricks et al. study, a study, based on the Mexican implementation of UNICEF's MICS, which piloted a new measure of child disabilities developed by the Washington Group on Disability Statistics for UNICEF and which was subsequently included in the current round of MICS (MICS6), among 16,617 children, reported no difference between children with/without disabilities regarding exposure to 'violent discipline'; a measure used in MICS for reporting of exposure to any of eight forms of discipline that involved either psychological aggression or physical violence in the last month (de Castro, Hubert, Strand, Prado, & Braverman, 2017). The omission of data from middle- and low-income countries is clearly problematic given that the prevalence of some common forms of violence, including violent parental discipline, are more common in the world's poorer countries (Cuartas et al., 2019).

The aims of the present study were to estimate: (1) prevalence rates for exposure to violent parental discipline among children with and without disabilities in a range of middle- and low-income countries; (2) relative risk of exposure when adjusted for child and contextual characteristics; (3) relative risk of exposure associated with specific functional difficulties associated with disabilities. In addition, we sought to (4) assess the independent strength of association between risk of exposure to violent parental discipline among children with disabilities and country HDI and the enactment of laws prohibiting the use of violent parental discipline in the home.

Method

We undertook secondary analysis of nationally representative data collected in Round 6 (2017-) of UNICEF's MICS (UNICEF, 2015). Following approval by UNICEF, MICS data were downloaded from http://mics.unicef.org/. MICS contains several questionnaire modules. Data used in the present paper were extracted from the household module, the module applied to all children under five living in the household and the module applied to a randomly selected child age 5-17 living in the household (Khan & Hancioglu, 2019). All countries used cluster sampling methods to derive samples representative of the national population of mothers and young children. Specific details of the sampling procedure used in each country are available at http://mics.unicef.org/. At the end of the download period (1 May, 2020), nationally representative survey data (containing disabilities and violent parental discipline data for children aged 2-14) were available for 17 countries (4 upper-middle, 8 lower-middle and 5 low-income countries).

Violent Parental Discipline

The Child Discipline module in MICS, adapted from the Parent-Child Conflict Tactics Scale (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998), was applied to children aged 2-14. Respondents were told, "*All adults use certain methods to teach children the right behavior or address a behavior problem. I will read various methods that are used, and I want you to tell me whether you or anyone else in your household has used each method with (child's name) in the last month.*" The respondents then answered No (0) or Yes (1) to whether they or any other adults in their household had used each of eight forms of aggressive or violent discipline.

1. *'shouted, yelled or screamed at child'*

2. *'called child dumb, lazy or another name'*

3. *'shook child'*

4. *'spanked, hit or slapped child on bottom with bare hand'*

5. *'hit or slapped child on the hand, arm or leg'*

6. *'hit child on the bottom or elsewhere with belt, brush, stick, etc.'*

7. *'hit or slapped child on the face, head or ears'*

8. *'beat child up as hard as one could'*

MICS reporting definitions include an overall measure of 'violent discipline' defined as exposure to any of the eight separate forms of parental discipline. In addition, we investigated the viability of creating an overall Index of Exposure to violent discipline based on the report of number of types of violent parental discipline the child had been exposed in the previous month. In pooled analyses across countries the Index demonstrated acceptable levels of internal consistency (Chronbach's alpha = 0.72). Within-country levels of internal

consistency ranged from 0.60 to 0.79. Data on individual measures were missing for 0.1% of children. Data on 'violent discipline' and the Index of Exposure were missing for 0.5% of children.

Disabilities

In Round 6 of MICS two new modules (one for 2-4-year-old children, the other for 5-17-year-old children) were introduced to identify children with disabilities. Child disability had been measured in MICS2-4 by an optional module including the Ten Questions Screen (TQS) (Durkin et al., 1994). However, this measure was dropped by UNICEF following MICS4 due to concerns about: (1) the over-identification of disability associated with the functional domains included in the (TQS); (2) the omission of items related to key functional domains such as mental health and psychosocial functioning; (3) the TQS's inability to determine severity of disability; (4) the inapplicability of the TQS to older children; and (5) the lack of cognitive testing of TQS items (Loeb et al., 2018).

The new modules, developed by the Washington Group on Disability Statistics (WGDS: http://www.washingtongroup-disability.com/), are based on informant report of child difficulties in nine different functional domains for children aged 2-4 (seeing, hearing, walking, fine motor, understanding, being understood, learning, playing, controlling behavior) and 14 domains for children 5-17 (seeing, hearing, walking, self-care, being understood inside the household, being understood outside the household, learning, remembering, focusing, accepting change, making friends, anxiety, depression, controlling behavior). Four response options were available for all domains other than the anxiety, depression and behavior domain ([1] *no difficulty*, [2] *some difficulty*, [3] *a lot of difficulty*, [4] *cannot do at all*). The controlling behavior domain had five response options

([1] '*not at all*', [2] '*less*', [3] '*the same*', [4] '*more*' or {5] '*a lot more*') as did the anxiety and depression domains ([1] '*daily*', [2] '*weekly*', [3] '*monthly*', [4] '*a few times a year*', [5] '*never*').

Initial validation of the new modules (undertaken in three low/middle income countries) estimated that using the cut-off recommended by the WGDS (primarily based on the child having at least '*a lot of difficulty*' in at least one domain) resulted in a prevalence of child disability that ranged from 1.1% in Serbia to 2.0% in Mexico among children aged 2-4 years, and from 3.2% in Samoa to 11.2% in Mexico among 5-17 year old children (Cappa et al., 2018). We used the cut-off recommended by the WGDS to define child disabilities and child disabilities associated with the specific functional limitations listed above. For all disability measures the reference group was children without disabilities. Disability data were missing for 0.9% of children.

Country Characteristics

Given the commonly reported association between child wellbeing and national wealth in low and middle income countries (World Health Organization, 2008), we used World Bank 2018 country classification as upper middle income, lower middle income and low income (World Bank, 2017c). These classifications are based on per capita Gross National Income adjusted for purchasing power parity (pcGNI; expressed as current US$ rates) using the World Bank's Atlas Method. We also downloaded 2018 Atlas Method pcGNI from the World Bank website in May 2020 (World Bank, 2017a, 2017b). We extracted Human Development Index (HDI) scores for each country from the Human Development Report 2019 (United Nations Development Programme, 2019). The composite HDI integrates three dimensions of human development: life expectancy at birth; mean years of schooling and expected years

of schooling; and gross national income per capita (Anand & Sen, 1994; United Nations Development Programme, 2016). We identified whether participating countries had enacted laws prohibiting the use of violent parental discipline in the home (https://endcorporalpunishment.org/countdown/).

Household Wealth

Household wealth is likely to be associated with both the prevalence of child disability (Cappa et al., 2018; Spencer, Blackburn, & Read, 2015) and variations in exposure to violent parental discipline (Atteraya, Ebrahim, & Gnawali, 2018; Beatriz & Salhi, 2019; van Ijzendoorn, Bakermans-Kranenburg, Coughlan, & Reijman, 2020). MICS data includes a within-country wealth index for each household. To construct the wealth index, principal components analysis is performed by using information on the ownership of consumer goods, dwelling characteristics, water and sanitation, and other characteristics that are related to the household's wealth, to generate weights for each item. Each household is assigned a wealth score based on the assets owned by that household weighted by factors scores. The wealth index is assumed to capture underlying long-term wealth through information on the household assets (Rutstein, 2008; Rutstein & Johnson, 2004). These data were collected in all countries. Data were missing for 0.1% of children.

Maternal Education

Level of maternal education is likely to be associated with both the prevalence of child disability (Cappa et al., 2018; Spencer et al., 2015) and variations in exposure to violent parental discipline (Atteraya et al., 2018; van Ijzendoorn et al., 2020). The highest level of education received by the child's mother was recorded using country-specific categories. We recoded these data into a three-category measure: (1) no education; (2) primary

education; (3) receipt of secondary or higher-level education. These data were collected in all countries. Data were missing for 0.1% of children.

Urban/Rural Location

Urban/rural location may be associated with both the prevalence of child disability (Cappa et al., 2018) and variations in exposure to violent parental discipline (Atteraya et al., 2018; Beatriz et al., 2018). Data were released with a within-country defined binary indicator of urban/rural location for each household. These data were collected in all countries, with no missing data.

Approach to Analysis

In the first stage of analysis, we used simple bivariate descriptive statistics to estimate the prevalence of exposure to each form of violent parental discipline (with 95% confidence intervals) for each country and an overall pooled estimate. In the second stage of analysis, we used multilevel modelling to investigate the extent to which risk of exposure to violent parental discipline varied within countries by child disability, child age, child gender, maternal education, household wealth and urban/rural location. Given the non-linear association between child age and violent parental discipline, child age was treated as a categorical variable in all analyses. In the third stage of analysis, we used multilevel modelling to investigate the extent to which risk of exposure to the three forms of violent parental discipline to which children with disabilities were at the greatest relative risk of exposure varied with the type of functional difficulty associated with the child's disabilities. In the final stage of analysis, we used linear regression to estimate the independent strength of association between the prevalence of violent parental discipline and country

HDI and the enactment of laws prohibiting the use of violent parental discipline in the home.

Prevalence analyses were undertaken using IBM SPSS v24 using the complex samples facility to take account of the clustering of observations by country and within country sampling clusters. Multilevel modelling of within-country associations was undertaken in Stata 16 using the xtmepoisson command to generate adjusted prevalence rate ratios (adjusted relative risk). Two versions of the adjusted prevalence rate ratios are reported: Model 1 adjusts for basic child demographics (age, gender); Model 2 also adjusts for differences in the child's living situation (household wealth, level of maternal education, urban/rural location). Adjusting for basic child demographics is important as disability is generally more common among boys and increases with child age, factors that are also associated with exposure to violent parental discipline (Beatriz & Salhi, 2019; van Ijzendoorn et al., 2020). Additionally adjusting for between group differences in living situation is important as (as noted above) indicators of living situation are also related to both the prevalence of disability and the prevalence of exposure to violent parental discipline. Reporting both models is important as Model 2 includes variables that are, at least in theory, amenable to social policy interventions. As such, the differences between Models 1 and 2 can provide information on the extent to which risk is associated with the more disadvantaged living circumstances of children with disabilities, rather than the presence of impairments per se.

UNICEF's country-specific child-level weights were used to take account of biases in sampling frames and household and individual level non-response. For pooled analyses we recalibrated the country specific weights to take account of between country differences in the child sampling fraction based on UNICEF's 2018 estimates of the population of children

under the age of 18 years. Given the small amount of missing data, complete case analyses were undertaken.

Results

Information (including sample sizes and prevalence of disability) on the 17 surveys is presented in Table 1. Multilevel multivariate modelling indicated that, after adjusting for child age and gender, increased risk of child disability was independently associated with lower household wealth (adjusted Prevalence Rate Ratio (aPRR) for lowest wealth quintile with highest quintile as reference group = 1.45 (1.37-1.53), p<0.001), mothers not having secondary education (aPRR = 1.06 (1.02-1.10), p<0.01) and urban location (aPRR = 1.05 (1.02-1.09), p<0.01).

Prevalence and Adjusted Relative Risk

The overall prevalence of exposure of children with/without disabilities to each of the eight measures of violent parental discipline, UNICEF's composite measure of 'violent discipline' and the Index of Exposure are presented in Table 2. Country-level prevalence data is presented in Supplementary Table 1. Also presented in Table 2 are adjusted relative risk estimates for children with disabilities being exposed to the measures of violent parental discipline (children without disabilities being the reference group). For all measures, children with disabilities were at significantly greater risk of exposure than children without disabilities. However, effect sizes adjusted for child age and gender varied considerably from a 3% increase in risk of exposure to 'shouted, yelled or screamed at child' to a 71% increased risk of exposure for what could be considered the most severely abusive measure of violent parental discipline ('beat child up as hard as one could'). Overall, children with disabilities were on average exposed to 17% more forms of violent parental discipline than

children without disabilities of the same age and gender. In all within-country comparisons (Supplementary Table 1), the Index of Exposure was higher for children with disabilities when compared to those without disabilities. In all but two cases (Montenegro and The Gambia) these differences were statistically significant.

Multilevel multivariate modelling indicated that, after adjusting for child age, a statistically significant increased risk of exposure to violent parental discipline was evident among boys (all eight forms, aPRR range 1.02-1.17), children living in poor households (seven forms, aPRR range 1.11-1.51), children of mothers with only primary level education (seven forms, aPRR range 1.02-1.14) and children living in urban areas (six forms, aPRR range 1.02-1.08). Full details of these analyses are presented in Supplementary Table 2.

Adjusted Relative Risk for Specific Functional Impairments

Adjusted relative risk estimates are presented in Table 3 for the three forms of physical discipline to which children with disabilities were at the greatest relative risk of exposure and the Index of Exposure. In general, children with disabilities related to poorer mental health or cognitive functioning were at significantly greater risk of exposure to more severe violent parental discipline and multiple forms of violent parental discipline. For example, children with disabilities associated with poor control of behavior were nearly 2.5 times more likely to have been exposed in the previous month than children without disabilities to what could be considered the most severely abusive measure ('beat child up as hard as one could') and were on the average exposed to 27% more forms of violent parental discipline than children without disabilities. In contrast, children with disabilities related to sensory functioning, mobility and expressive communication were at no greater risk of exposure than children without disabilities.

Association with Country Characteristics

There was a statistically significant association between country HDI and country-level exposure rates for children with disabilities for just one measure of exposure to specific forms of violent parental discipline : 'hit child on the bottom or elsewhere with belt, brush, stick, etc.' (beta = -0.67, t=2.78, p<0.05). There was a non-significant trend between country HDI and country-level exposure rates for children with disabilities for 'beat child up as hard as one could' (beta = -0.58, t=2.07, p=0.057). In both instances prevalence rates increased as HDI decreased. In these regression models there was no association between countries having enacted laws prohibiting the use of violent parental discipline in the home and exposure rates for children with disabilities. There was no significant association between country HDI and the Index of Exposure.

Discussion

Our analyses of the circumstances of nationally representative samples involving a total of 206,147 children aged 2-14 from 17 countries indicated that: (1) for every measure of violent parental discipline children with disabilities were at significantly greater risk of exposure than children without disabilities; (2) the effect size was significantly greater for what could be considered the most severely abusive measure of violent parental discipline ('beat child up as hard as one could') than for other measures; and (3) children with functional difficulties related to poorer mental health or cognitive functioning were at significantly greater risk of exposure to more severe violent parental discipline and multiple forms of violent parental discipline than children with other impairments.

Our results advance knowledge in five important ways. First, to our knowledge this is only the second paper to present nationally representative data from multiple middle- and low-

income countries on the exposure of children with and without disabilities to violent parental discipline. We have broadly replicated the results reported by Hendricks et al (2014) a decade later, when more countries had outlawed corporal punishment and there was growing movement internationally to promote awareness of the harms of corporal punishment, while using a more refined measure of child disability and a more robust statistical approach to addressing the potentially biasing effects of pooling data across countries.

The results are also consistent with research from high income countries which indicates that children with disabilities are at greater risk of exposure to violence than their non-disabled peers (Jones et al., 2012), and suggest that children with disabilities globally are at risk of compromised developmental outcomes as a result of increased rates of exposure to violent parental discipline (Devlin et al., 2018; Gershoff, 2002; Gershoff & Grogan-Kaylor, 2016; Paul & Eckenrode, 2015; Rose et al., 2018). They also underscore the importance of disaggregating data used to monitor progress toward the implementation of the Sustainable Development Goals by disability status to ensure that no children with disabilities are 'left behind' (UNICEF, 2017b, 2018). As noted in the UN's 2019 *Disability and Development Report* 'the lack of data and research on the situation of persons with disabilities severely constrains the international community from monitoring the situation of children, youths and adults with disabilities. Countries should focus on establishing indicators on which data can be collected and disseminated regularly to assess the situation of persons with disabilities and the challenges they face (such as lack of accessibility), including disability-specific indicators to capture progress in implementing policies and programmes aimed at their inclusion' (United Nations Department of Economic and Social Affairs, 2019).

Second, our results add to the growing literature on the association between type of impairment or functional difficulties and inequitable variation in risk of exposure to violence among people with disabilities. This literature generally suggests that people with disabilities with impairments/functional difficulties associated with mental health, behavioural regulation or intellectual functioning are at greater risk of exposure to violence than people with disabilities with impairments/functional difficulties associated with sensory or physical impairments (Christoffersen, 2019 online; Hughes et al., 2012; Jones et al., 2012; United Nations Department of Economic and Social Affairs, 2019). Our results are the first to indicate that this broad pattern is also evident among children with disabilities in middle- and low-income countries.

Third, previous studies in this area (e.g., de Castro et al., 2017; Hendricks et al., 2014; UNICEF & University of Wisconsin, 2008) have failed to take account of the effects of potential confounding variables when making comparisons between children with and without disabilities. Particularly important is to control for the potential confounding effects of between-group differences in child demographics (e.g., higher rates of disability among boys) and family socio-economic position (e.g., higher rates of disability among poorer children). By using appropriate adjustment for these effects, we can be confident that any between-group differences in exposure to violence cannot be simply attributed to difference in the age, gender or the family circumstances of children with disabilities.

Fourth, our results add to the wider literature on risk factors associated with exposure to violent parental discipline in middle- and low-income countries by indicating that living in urban areas was a risk factor after controlling for the effects of household wealth and maternal education. While such an effect has been reported in the US (Beatriz et al., 2018),

this (to our knowledge) is the first time it has been reported in middle- and low-income countries.

Finally, our results call into question the utility of the overall measure of exposure to any violent parental discipline used by UNICEF in MICS reporting and in previous research (e.g., de Castro et al., 2017). This measure produced an estimation of elevated risk (3%) that was significantly lower than the estimates for all but one of the eight specific measures of violent parental discipline. As such, it appears unfit for purpose in monitoring inequities in exposure to violent parental discipline. While the Index of Exposure proved more sensitive to the situation of children with disabilities, overreliance on summary measures can mask important details of the situation of specific groups of children. For example, while our results indicated that children with functional impairments associated with learning, self-care and fine motor control were less likely than their non-disabled peers to be exposed to multiple forms of violent parental discipline, they were significantly more likely than their peers to be exposed to what may be considered the most abusive form of violent parental discipline; 'beat the child up as hard as one could'.

The results of our study need to be considered in light of three main limitations. First, while developed from a well validated US-based measure of parental discipline, the psychometric properties of the MICS child discipline module are unknown when applied in middle- and low-income countries. For example, disciplinary practices may be underreported in MICS if the single respondent was unaware of the use of violent disciplinary practices by other adults in the household or if the respondent chose not to reveal the use of violent discipline due to its low social desirability in specific cultures. In addition, there may be some variation in the meaning of the module items across participating countries. Second, the

identification of child disability in national health and social surveys is a complex process that runs the risk of under-identification of child disability in poorer households/communities (Loeb et al., 2018). Recent research has suggested that this may be the case with the new MICS child disability module, at least with regard to functional limitations in learning (Emerson & Llewellyn, 2020 online). Finally, the data used are cross-sectional and, as such, cannot be used to determine causal pathways between child disability and exposure to violent parental discipline. Thus, for example, while it is clear that children with functional difficulties related to poorer mental health or cognitive functioning were at significantly greater risk of exposure to more severe violent parental discipline we cannot determine whether this association reflects these specific functional difficulties being a trigger for eliciting more severe violent parental discipline or is a consequence of exposure to more severe violent parental discipline.

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Table 1: Survey Details and Prevalence of Child Disabilities by Country						
	Year of survey	pcGNI (2018)	HDI (2018)	Laws against use of violent parental discipline in the home	Sample size	% of children with disabilities
Upper Middle-Income Countries						
Montenegro	2018/19	$8,430	0.816	Yes	1,558	5.9%
Suriname	2018	$5,210	0.724	No	5,686	12.2%
Iraq	2018	$5,040	0.689	No	22,319	17.0%
Georgia	2018	$4,450	0.786	Yes	4,506	8.5%
Lower Middle-Income Countries						
Mongolia	2018	$3,660	0.735	Yes	9,932	6.2%
Tunisia	2018	$3,500	0.739	Yes	5,906	20.7%
Kiribati	2018/19	$3,140	0.623	No	3,155	20.9%
Ghana	2017/18	$2,130	0.596	No	12,644	18.6%
Zimbabwe	2018/19	$1,790	0.563	No	9,463	8.5%
Bangladesh	2019	$1,750	0.614	No	44,403	8.3%
Lesotho	2018	$1,390	0.518	No	5,926	8.3%
Kyrgyz Republic	2018	$1,220	0.674	No	5,335	7.7%
Low Income Countries						
The Gambia	2018	$710	0.466	No	10,841	8.8%
Togo	2017	$660	0.513	Yes	6,988	18.0%
Madagascar	2018	$510	0.521	No	17,115	13.7%
DR Congo	2017/18	$490	0.459	No	24,337	16.0%
Sierra Leone	2017	$490	0.438	No	16,033	19.9%
Note: Sample sizes are unweighted and only include children for who valid data on disability status are available.						

Violent parental discipline	Prevalence		Adjusted risk	
	With disabilities	*Without disabilities*	*Model 1*	*Model 2*
Psychological Aggression				
Shouted, yelled or screamed at child	81.5% (79.3-83.4)	78.7% (77.1-80.3)	1.03*** (1.01-1.05)	1.03*** (1.01-1.05)
Called child dumb, lazy or another name	50.6% (47.7-53.4)	35.2% (33.0-37.4)	1.23*** (1.20-1.26)	1.22*** (1.19-1.24)
Violent Physical Discipline				
Shook child	41.3% (37.9-44.7)	36.3% (33.4-39.2)	1.17*** (1.14-1.20)	1.16*** (1.13-1.19)
Hit or slapped child on the hand, arm or leg	44.1% (41.9-46.3)	38.0% (36.3-39.8)	1.16*** (1.14-1.19)	1.16*** (1.14-1.19)
Spanked, hit or slapped child on bottom with bare hand	50.8% (48.2-53.4)	42.8% (40.7-45.0)	1.16*** (1.13-1.19)	1.16*** (1.13-1.19)
More Severe Violent Physical Discipline				
Hit child on the bottom or elsewhere with belt, brush, stick, etc.	31.3% (28.9-33.9)	21.5% (19.9-23.1)	1.29*** (1.26-1.33)	1.29*** (1.25-1.32)
Hit or slapped child on the face, head or ears	32.5% (30.0-35.2)	25.8% (23.8-27.8)	1.31*** (1.27-1.34)	1.30*** (1.26-1.33)
Beat child up as hard as one could	11.7% (10.1-13.5)	5.8% (5.1-6.6)	1.71*** (1.64-1.78)	1.69*** (1.62-1.76)
Overall violent discipline	**90.5% (89.2-91.6)**	**87.4% (86.4-88.4)**	**1.03*** (1.01-1.04)**	**1.03*** (1.01-1.04)**
Index of Exposure (mean, standard error)	**3.44 (0.03)**	**2.84 (0.02)**	**1.17*** (1.16-1.18)**	**1.16*** (1.15-1.17)**

Table 2: Overall prevalence of aggressive or violent child discipline targeted at 2-14 year old children with and without disabilities in 17 middle- and low-income countries

Model 1 adjusted for child age and gender; Model 2 additionally adjusted for maternal education, household wealth, rural/urban location
Non-disabled children are the reference group.

Type of severe functional difficulty	Age group	*'Beat child up as hard as one could'*	*'Hit child on the bottom or elsewhere with belt, brush, stick, etc.'*	*'Hit or slapped child on the face, head or ears'*	**Index of Exposure**
Controlling behavior	2-14	2.34*** (2.18-2.51)	1.47*** (1.41-1.54)	1.41*** (1.33-1.49)	1.27*** (1.25-1.29)
Anxiety	5-14	1.42*** (1.33-1.51)	1.23*** (1.19-1.29)	1.34*** (1.28-1.39)	1.17*** (1.15-1.18)
Depression	5-14	1.47*** (1.37-1.59)	1.18*** (1.11-1.24)	1.36*** (1.29-1.44)	1.16*** (1.14-1.17)
Dealing with change	5-14	1.92*** (1.76-2.09)	1.23*** (1.16-1.31)	1.20*** (1.12-1.29)	1.15*** (1.13-1.17)
Remembering	5-14	1.51*** (1.33-1.71)	1.16*** (1.07-1.25)	1.08 (0.99-1.19)	1.07*** (1.04-1.10)
Concentrating	5-14	1.49*** (1.27-1.74)	1.21*** (1.10-1.33)	1.13* (1.011.26)	1.05** (1.02-1.08)
Seeing	2-14	1.18 (0.90-1.54)	1.12 (0.97-1.28)	1.04 (0.89-1.23)	1.00 (0.96-1.04)
Walking 100m	5-14	1.34*** (1.17-1.54)	1.06 (0.96-1.16)	1.05 (0.95-1.17)	0.98 (0.96-1.01)
Learning	2-14	1.38*** (1.25-1.52)	1.06 (0.99-1.12)	1.01 (0.94-1.09)	0.98* (0.96-1.00)
Self-care	5-14	1.43*** (1.22-1.68)	1.03 (0.92-1.14)	1.01 (0.90-1.13)	0.96* (0.93-0.99)
Walking 500m	5-14	1.05 (0.94-1.18)	0.97 (0.90-1.04)	0.99 (0.92-1.07)	0.95*** (0.93-0.97)
Making friends	5-14	1.19 (0.98-1.46)	1.03 (0.91-1.17)	1.10 (0.97-1.25)	0.92*** (0.88-0.96)
Hearing	2-14	1.21 (0.92-1.59)	0.95 (0.81-1.12)	0.84 (0.69-1.01)	0.87*** (0.83-0.92)
Being understood (outside)	5-14	1.13 (0.88-1.45)	0.84* (0.71-1.00)	0.93 (0.79-1.09)	0.85*** (0.81-0.89)
Being understood	2-4	1.02 (0.80-1.31)	0.85* (0.74-0.97)	0.86 (0.74-1.01)	0.82*** (0.78-0.85)
Being understood (in home)	5-14	1.23 (0.93-1.62)	0.84 (0.70-1.01)	0.88 (0.73-1.06)	0.81*** (0.76-0.85)
Understanding others	2-4	1.20 (0.92-1.57)	0.91 (0.78-1.07)	0.95 (0.80-1.12)	0.79*** (0.76-0.83)
Fine motor	2-4	1.66** (1.18-2.34)	0.89 (0.69-1.14)	0.66** (0.50-0.87)	0.75*** (0.69-0.80)

Table 3: Association between Specific Functional Difficulties and Adjusted Risk of Exposure to Abusive Physical Discipline

Playing	2-4	1.19 (0.86-1.65)	0.84 (0.68-1.04)	0.64*** (0.50-0.82)	0.71*** (0.67-0.76)
Walking	2-4	1.43 (0.97-2.12)	0.81 (0.61-1.06)	0.76* (0.58-1.00)	0.71*** (0.66-0.77)
Note: non-disabled children are the reference group. Risk adjusted for child age and gender, maternal education, household wealth, rural/urban location					

Country	Disabilities	'Shouted, yelled or screamed at child'	'Called child dumb, lazy or another name'	'Shook child'	'Hit or slapped child on the hand, arm or leg'	'Spanked, hit or slapped child on bottom with bare hand'	'Hit child on the bottom or elsewhere with belt, brush, stick, etc.'	'Hit or slapped child on the face, head or ears'	'Beat child up as hard as one could'	Index of Exposure
Supplementary Table 1: Prevalence of Exposure to Violent Parental Discipline in Previous Month Among Children with/without Disabilities										
Montenegro	Yes	68.7%	23.4%	22.9%	7.6%	16.1%	9.6%	5.0%	3.3%	1.55
	No	64.0%	13.8%	15.4%	5.6%	18.2%	8.1%	4.7%	0.3%	1.28
Suriname	Yes	86.5%	31.0%	24.6%	38.8%	48.8%	21.7%	12.3%	0.4%	2.62
	No	82.8%	17.2%	22.4%	38.6%	51.5%	17.3%	7.5%	1.1%	2.39
Iraq	Yes	82.6%	52.5%	40.3%	48.8%	38.7%	16.5%	38.8%	10.9%	3.29
	No	78.3%	35.9%	33.3%	39.3%	31.5%	8.7%	30.1%	4.2%	2.61
Georgia	Yes	72.8%	44.4%	14.9%	11.2%	25.0%	1.5%	12.3%	1.0%	1.81
	No	62.2%	29.5%	15.5%	5.1%	20.2%	0.9%	3.9%	0.3%	1.38
Mongolia	Yes	45.3%	19.8%	10.0%	14.7%	17.3%	4.1%	5.4%	3.8%	1.21
	No	38.0%	14.1%	9.4%	8.8%	16.3%	2.3%	4.2%	1.2%	0.94
Tunisia	Yes	88.6%	45.9%	41.9%	52.1%	61.8%	25.7%	30.5%	17.7%	3.64
	No	83.9%	27.2%	34.5%	41.1%	55.9%	15.5%	18.0%	7.8%	2.84
Kiribati	Yes	84.1%	67.5%	16.3%	71.9%	75.1%	65.8%	18.8%	22.7%	4.23
	No	80.6%	59.7%	17.6%	68.8%	74.3%	52.7%	14.2%	15.7%	3.83
Ghana	Yes	86.9%	55.0%	30.8%	46.2%	53.8%	50.7%	14.7%	14.3%	3.53
	No	87.9%	41.3%	26.8%	40.2%	53.4%	43.7%	10.0%	8.9%	3.12
Zimbabwe	Yes	56.8%	39.5%	18.0%	18.1%	10.0%	36.1%	9.0%	5.1%	1.93
	No	48.4%	25.8%	12.5%	13.9%	7.0%	30.5%	4.4%	1.9%	1.44
Bangladesh	Yes	86.6%	42.0%	30.6%	41.9%	46.2%	26.4%	37.8%	10.4%	3.22
	No	85.4%	27.6%	31.2%	37.8%	37.4%	16.5%	28.2%	4.7%	2.39
Lesotho	Yes	63.3%	21.7%	24.6%	37.8%	28.3%	32.5%	11.1%	0.9%	2.21
	No	56.5%	12.9%	16.0%	33.0%	25.9%	31.5%	6.2%	1.0%	1.83
Kyrgyz Republic	Yes	76.7%	44.4%	32.2%	16.5%	31.9%	7.2%	9.5%	4.2%	2.23
	No	68.8%	32.4%	24.1%	12.2%	34.8%	3.1%	4.5%	1.0%	1.81
The Gambia	Yes	79.8%	51.2%	36.8%	43.7%	47.1%	38.9%	10.9%	17.7%	3.26
	No	78.0%	39.5%	24.3%	45.9%	50.5%	44.8%	9.4%	9.9%	3.02

Togo	Yes	86.7%	54.9%	38.7%	36.9%	52.3%	44.8%	25.7%	12.0%	3.53
	No	84.6%	46.7%	29.2%	35.9%	53.7%	29.7%	17.6%	7.5%	3.15
Madagascar	Yes	79.7%	42.6%	19.2%	45.5%	41.8%	31.7%	11.6%	7.0%	2.79
	No	77.5%	31.6%	17.6%	43.9%	38.7%	23.2%	7.5%	2.7%	2.43
DR Congo	Yes	78.0%	57.6%	61.2%	46.1%	63.4%	33.0%	43.7%	12.3%	3.96
	No	74.9%	46.3%	59.8%	42.6%	58.4%	24.0%	39.6%	7.6%	3.54
Sierra Leone	Yes	82.1%	47.3%	29.2%	42.7%	48.5%	39.1%	14.5%	23.6%	3.27
	No	78.3%	36.7%	27.9%	38.2%	42.5%	29.1%	12.1%	19.1%	2.84

Supplementary Table 2: Multilevel multivariate association between child gender, household wealth, level of maternal education, urban/rural status and exposure to violent child discipline									
Variables	*'Shouted, yelled or screamed at child'*	*'Called child dumb, lazy or another name'*	*'Shook child'*	*'Hit or slapped child on the hand, arm or leg'*	*'Spanked, hit or slapped child on bottom with bare hand'*	*'Hit child on the bottom or elsewhere with belt, brush, stick, etc.'*	*'Hit or slapped child on the face, head or ears'*	*'Beat child up as hard as one could'*	**Index of Exposure**
Child gender									
Boy	1.02*** (1.01-1.03)	1.05*** (1.04-1.07)	1.06*** (1.04-1.08)	1.07*** (1.06-1.09)	1.09*** (1.07-1.10)	1.16*** (1.13-1.18)	1.13** (1.11-1.15)	1.17*** (1.13-1.22)	1.07*** (1.06-1.07)
Girl	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Household wealth quintile									
1 (poorest)	1.00 (0.99-1.02)	1.34*** (1.30-1.39)	1.22*** (1.18-1.26)	1.11*** (1.08-1.14)	1.16*** (1.13-1.19)	1.18*** (1.13-1.22)	1.26*** (1.21-1.31)	1.51*** (1.40-1.62)	1.14*** (1.13-1.16)
2	1.02 (1.00-1.04)	1.32*** (1.28-1.37)	1.20*** (1.16-1.24)	1.11*** (1.08-1.14)	1.15*** (1.12-1.19)	1.14*** (1.10-1.19)	1.22*** (1.17-1.27)	1.33*** (1.24-1.43)	1.13*** (1.12-1.15)
3	1.03** (1.01-1.05)	1.27*** (1.23-1.31)	1.17*** (1.13-1.20)	1.10*** (1.07-1.13)	1.13*** (1.10-1.16)	1.13*** (1.09-1.18)	1.15*** (1.11-1.20)	1.28*** (1.19-1.37)	1.12*** (1.11-1.13)
4	1.01 (0.99-1.03)	1.17*** (1.14-1.21)	1.10*** (1.06-1.13)	1.06*** (1.03-1.09)	1.09*** (1.06-1.11)	1.09*** (1.05-1.13)	1.16*** (1.12-1.21)	1.17*** (1.09-1.25)	1.07*** (1.06-1.09)
5 (wealthiest)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Highest level of maternal education									
None/pre-primary	0.98* (0.97-1.00)	1.02 (1.00-1.04)	1.00 (0.98-1.03)	0.94*** (0.92-0.96)	0.98* (0.96-1.10)	1.01 (0.98-1.03)	1.07*** (1.04-1.11)	1.16*** (1.11-1.22)	0.99 (0.99-1.00)
Primary	1.01 (0.99-1.02)	1.07*** (1.05-1.09)	1.02* (1.00-1.05)	1.03** (1.01-1.04)	1.03** (1.01-1.05)	1.08*** (1.06-1.11)	1.08*** (1.05-1.10)	1.14*** (1.09-1.20)	1.04*** (1.03-1.04
Secondary	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Urban/rural location									
Urban	1.01 (0.99-1.02)	1.02* (1.00-1.04)	1.04*** (1.02-1.07)	1.06*** (1.04-1.07)	1.08*** (1.06-1.09)	1.06*** (1.04-1.09)	1.07*** (1.04-1.10)	1.03 (0.98-1.08)	1.04*** (1.03-1.05)

Rural	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Notes: Models also adjusted for child age (treated as a categorical in single year age groups)									