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# BMJ Open

## A Multilevel Ecological Analysis of the Predictors of Spanking Across 65 Countries

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## A Multilevel Ecological Analysis of the Predictors of Spanking Across 65 Countries

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## Abstract

**Objective:** Ending violence against children is critical to promote the health and socioemotional development of children across the globe. To this end, the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) have called for the abolishment of spanking, which is the most pervasive form of physical violence against children worldwide. This study used an ecological perspective to examine micro- and macro-level predictors of parental spanking across 65 countries.

**Participants:** Data came from the fourth and fifth rounds of the UNICEF Multiple Indicator Cluster Surveys, which were administered between 2009-2017 (N = 613,861 households). We examined the predictors of spanking using multilevel logistic regression analysis.

**Results:** Micro-level factors (i.e., those observed at the familial level) were stronger predictors of spanking in comparison to macro-level factors (i.e., those observed at the community and country level). Caregiver belief that children need physical punishment in order to be raised properly was the largest risk factor for spanking (OR = 2.55,  $p < .001$ ). Older child age, the child being female, the head of the household having a secondary education or higher, and higher household wealth score were protective factors against spanking, while a higher number of people living in the household was a risk factor for spanking. Living in an urban community was the only macro-level factor associated with spanking.

**Conclusions:** Intervention at the micro level and macro level are important to reduce violence against children across the globe.

*Keywords:* violence; spanking; international; ecological systems; family

### Article Summary

#### Strengths and Limitations of This Study

- This is the largest study on the predictors of spanking to date.
- Data utilized in this study are representative of the populations living within each sample cluster.
- Multilevel modeling accounted for between-country and within-country variation in spanking.
- This study uses cross-sectional data; therefore, causal inferences cannot be made.
- This study does not examine mechanisms linking micro- and macro-level predictors to spanking.

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**Competing Interests:** The authors have no competing interests to report.

**Data sharing:** Data are publicly available from <https://mics.unicef.org/surveys>.

## Introduction

Ending violence against children is a global public health priority. The United Nations Convention of the Rights of the Child (UNCRC) and the United Nations Sustainable Development Goals (SDGs) have established that eliminating all forms of violence against children is necessary in order to promote health and wellbeing across the lifespan (1, 2). One of the most common forms of violence against children is spanking, defined as physically hitting a child on the bottom with a bare hand to punish misbehavior (3, 4). Worldwide, more than 1 in 4 caregivers view physical punishment as a necessary part of child rearing, and nearly two in three children experience physical punishment in the home (5, 6). Spanking harms human dignity and is a violation of children's rights (1), with rigorous evidence showing that spanking impairs children's social, emotional, and behavioral functioning (7).

As such, there is a global effort to ban spanking in all settings including the home (8). Sixty countries to date have implemented legal bans on forms of parental punishment that utilize violence, including spanking (9). Professional organizations such as the United Nations Children's Fund (5), the World Health Organization (10), and the American Academy of Pediatrics (11) have called for the end of spanking. Bans have been associated with lower levels of community violence and can increase public willingness to report violence against children (12, 13). Further, researchers have called for the global implementation of evidence-based interventions that reduce the use of parental spanking (8). However, to inform these global efforts, it is necessary to examine the role of risk and protective factors for spanking across cultures.

The ecological systems model (14) suggests that multiple factors at the individual, microsystem, and macrosystem levels influence caregiver utilization of spanking. The

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3 microsystem refers to the immediate environment in which the child is raised (e.g., child and  
4 family functioning), whereas the macrosystem refers to the broader context (e.g., culture and  
5 policies) that may influence parent-child interactions. At the micro-level, boys, preschool-aged  
6 children, children living with many members in the household, and children who have caregivers  
7 who believe spanking is appropriate are at higher risk of physical and psychological abuse (3,  
8 15). Children living in households with higher economic security and higher educational  
9 attainment tend to be at lower risk of abuse and harsh forms of punishment (16, 17, 18).

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19 At the macro-level, community violence, gender inequality, and higher unemployment  
20 rates have all been shown to increase the likelihood of child abuse (6, 19, 20, 21). However,  
21 global studies on the predictors of spanking are sparse, with most studies including spanking as  
22 part of a larger physical punishment scale (3) or predicting spanking among a smaller sample of  
23 countries (see 21, which examines predictors of spanking across 24 countries). This study aims  
24 to provide a global examination of the micro- and macro-level predictors of spanking across 65  
25 countries, the majority of which are low- and middle-income countries (LMICs). The micro- and  
26 macro- level predictors examined in the current study were informed by prior research (16-21)  
27 showing a broad range of factors are associated with risk of punishment and abuse; we are aware  
28 of no prior studies to date that examine all of these risk factors using a large sample of 613,861  
29 households in 65 LMICs.  
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## 44 **Method**

### 45 **Patient and Public Involvement**

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49 Data came from the UNICEF Multiple Indicator Cluster Surveys (MICS). Since 1995,  
50 UNICEF has been administering MICS in over 100 LMICs to examine overall health and  
51 wellbeing, especially among women and children. MICS data is used to improve the lives of  
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3 individuals who are most vulnerable by informing policy decisions, informing program  
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5 intervention, tracking changes in indicators related to Millennium Development Goals (MDGs),  
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7 and influencing the public opinion on the state of women and children's health on a global level.  
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10 UNICEF uses multi-stage cluster sampling, wherein households are randomly chosen within  
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12 clusters. The surveys are comparable across countries and representative of the population living  
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14 within each sampling area, making these surveys useful for informing and shaping policies. All  
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16 participants provided informed consent prior to completing the surveys. Further details about the  
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18 data can be found on the MICS website (<https://mics.unicef.org/about>). We examine two of the  
19  
20 more recent surveys, specifically the fourth (MICS4) and fifth (MICS5) rounds, which were  
21  
22 conducted between 2009 and 2013, and between 2012 and 2017, respectively. Data are publicly  
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24 available and de-identified and did not require IRB approval.  
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## 28 **Participants**

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30 Within each household selected within a sampling area, a trained fieldworker  
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32 administered a household questionnaire in-person with the head of household; if the head of  
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34 household was unavailable, then the head of household's partner or another adult residing in the  
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36 household was interviewed. Using a random number table, the fieldworker randomly chose a  
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38 child (between the ages of 2 and 17 for MICS4, and 1-17 for MICS5) within the household to be  
39  
40 the focal child for the interview. Questions about discipline strategies, including spanking, were  
41  
42 not asked if the focal child were between the ages of 15-17. Our sample included survey  
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44 responses from households within 65 countries that had publicly released data as of July 2020  
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48 (see Table 1).  
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## 50 **Measures**



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3 **Spanking.** Spanking was measured through a modified version of the Parent-Child  
4 Conflict Tactics Scale (22), which asked the respondent whether they or anyone else in the  
5 household had “spanked, hit, or slapped [the focal child] on the bottom with a bare hand” in the  
6 past month (0=*no*, 1=*yes*).  
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12 **Microsystem Predictors.** Child age was continuous and measured in years; a linear and  
13 squared term were included because the relationship between child age and spanking has been  
14 shown to be curvilinear in prior literature (15). Child sex was dichotomously coded (0=*male*,  
15 1=*female*). The educational attainment of the head of the household was categorical (1=*none*  
16 [comparison category], 2=*primary*, 3=*secondary-plus*). The number of household members was  
17 continuous and capped at 50. Whether the respondent believed that a child needs physical  
18 punishment in order to be raised properly was dichotomously coded (0=*no*, 1=*yes*). Household  
19 wealth score was standardized within each country and modeled as a categorical variable to  
20 reflect quintiles (1=*poorest* [comparison], 2=*second poorest*, 3=*middle*, 4=*second richest*,  
21 5=*richest*). To account for head-of-household characteristics, we also included head-of-  
22 household sex (0=*female*, 1=*male*) and whether the head of household was the focal child’s  
23 biological parent (0=*no*, 1=*yes*).  
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40 **Macrosystem Predictors.** Macro-level predictors were measured at the same year for  
41 each of the MICS surveys. Homicide rate was continuous and measured per 100,000 inhabitants  
42 (23). Unemployment rate was also continuous (24). Human development was continuous and  
43 measured with the Human Development Index (2). Gender inequality was continuous and  
44 measured with the Gender Inequality Index (2). Whether the household lived in an urban or rural  
45 community was dichotomously coded (0=*rural*, 1=*urban*). To account for the timing of data  
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3 collection, we also included the MICS round, which was dichotomously coded (0=*round 4*,  
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5 1=*round 5*).  
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### 7 **Analytic Strategy**

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10 All analyses were conducted in Stata version 15.1 (25). We limited our analytic sample to  
11 household respondents who had no missing data on our outcome variable, leaving a final sample  
12 size of 613,861 households across 65 countries. We then screened for missing data on our  
13 predictor variables. In general, missing data were few, ranging from 0-5% on most variables. The  
14 greatest amount of missing data was found on gender inequality, which had 14% missing data  
15 (i.e., missing from 9 countries). We also scanned for outliers and instances of multicollinearity,  
16 neither of which were found. We ran two-level models, with individuals nested within countries  
17 to account for the fact that observations from different families within the same country were  
18 likely to be correlated (26). Additionally, because research has demonstrated that the relationship  
19 between child age and likelihood of spanking is non-linear (i.e., the likelihood of being spanked  
20 is highest between child ages 3 and 5), we included the quadratic term for children's age as a  
21 predictor in the model. Child age was grand mean centered to promote interpretability.  
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37 To determine which microsystem and macrosystem predictors were significantly  
38 associated with spanking, we estimated multilevel logistic regression models, which provided  
39 odds ratio (OR) coefficients. In multilevel logistic models, Stata handles missing data using  
40 listwise deletion, which means that if a variable contained missing data, the corresponding rows  
41 of data were excluded. We first ran a model that only examined microsystem predictors of  
42 spanking (Model 1), which included child age, child sex, head-of-household sex, head-of-  
43 household relation to the child, number of household members, head-of-household educational  
44 attainment, attitudes toward physical punishment, and household wealth score. We then  
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introduced macro-level predictors into the model (Model 2), which included homicide rate, HDI score, unemployment rate, urban vs. rural community, gender inequality, and MICS round.

## Results

Table 1 presents the number of participants within each country. Table 2 presents study descriptive statistics. Approximately 37% of respondents indicated that the focal child was spanked within the past month, and approximately 31% of respondents believed that children need physical punishment in order to be raised properly. The average age of focal children was 7.20 (SD = 3.98) and slightly over half were male (51%). The majority of household questionnaire respondents were male (81%) and were the focal child's biological parent (75%). On average, there were 6 members of the household (SD = 2.90). The majority of families lived in a rural community (58%).

### Multilevel Logistic Regression Models

We ran an unconditional model, where the mean of spanking was estimated, accounting for clustering within countries. We then estimated the intra-class correlation coefficient (ICC), which revealed that 10% of the variation in spanking could be explained by country. Results from multilevel logistic regression models can be found in Table 3. In Model 1 (microsystem predictors only), nearly all microsystem predictors were associated with spanking. Model 2 provides estimates of microsystem and macrosystem predictors estimated together. A number of variables were risk factors of spanking. Each additional person in the household was associated with a 3% increase in the odds of the focal child being spanked (OR = 1.03, 95% CI = [1.02, 1.03]). Compared to the household respondent having no education, the household respondent having primary education was associated with an 4% increase in the odds of the focal child being spanked (OR = 1.04, 95% CI = [1.03, 1.06]). The household respondent being the biological

parent was associated with a 24% increase in the odds of the focal child being spanked (OR = 1.24, 95% CI = [1.22, 1.26]). The household respondent believing that a child needs physical punishment in order to be raised properly was associated with a 155% increase in the odds of the focal child being spanked (OR = 2.55, 95% CI = [2.51, 2.58]).

Other microsystem variables were protective factors against spanking. Compared to the household respondent having no education, the household respondent having a secondary education or higher was associated with a 7% decrease in the odds of the focal child being spanked (OR = 0.93, 95% CI = [0.92, 0.95]). A one-year increase in children's age was associated with a 7% decrease in the odds of the focal child being spanked (OR = 0.93, 95% CI = [0.93, 0.93]). The focal child being female was associated with a 14% decrease in the odds of the focal child being spanked (OR = 0.86, 95% CI = [0.85, 0.87]). The head of the household being male also associated with a 13% decrease in the focal child being spanked (OR = 0.87, 95% CI = [0.86, 0.89]). Compared to being in the poorest household wealth quintile, being in the 2nd richest (OR = 0.98, 95% CI = [0.96, 1.00]) or richest (OR = 0.88, 95% CI = [0.86, 0.90]) quintile was associated with a decrease in the odds of the focal child being spanked. In terms of macrosystem variables, the community of the household was a risk factor of spanking, as living in an urban community was associated with a 10% increase in the odds of the focal child being spanked (OR = 1.10, 95% CI = [1.08, 1.12]). Additionally, compared to the fourth round of MICS data collection, the fifth round was associated with a decreased odds of the focal child being spanked (OR = 0.82, 95% CI = [0.80, 0.85]), suggesting that spanking may be declining globally over time.

## Discussion

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3 Using an ecological perspective (14), this study examined micro- and macro-level  
4 predictors of spanking in 613,861 households across 65 LMICs. Organizations around the globe  
5 are calling for the elimination of violence against children, including the use of spanking (5, 11).  
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7 One strategy to reduce violence against children is to ban spanking at the country level (27, 28).  
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9 Other strategies include parenting education and intervention at the microsystem level (29). The  
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11 current study suggests that targeting interventions at both the microsystem and macrosystem is  
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13 necessary to reduce violence against children.  
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19 Specifically, the results of this study show that caregiver attitudes about physical  
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21 punishment are powerful predictors of spanking, echoing prior research using MICS data  
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23 showing that caregiver attitudes about spanking were a strong predictor of child abuse (3) as well  
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25 as U.S. studies showing similar associations (30, 31). In fact, caregiver attitudes toward  
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27 spanking are linked to violence against children over and above numerous contextual factors.  
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29 This suggests that in order to reduce violence against children worldwide, parenting  
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31 interventions are warranted.  
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35 Indeed, the United Nations has called attention to the need “to stop parents from using  
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37 violent or other cruel or degrading punishments through supportive and educational, not punitive,  
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39 interventions” (1). The WHO supports the Parenting for Lifelong Health (PLH) program, which  
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41 is currently being implemented in low-resource and LMIC settings (32). Another program is  
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43 Positive Discipline in Everyday Parenting (PDEP), a universal intervention that aims to change  
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45 parental attitudes toward physical punishment and change parental roles to one of collaboration  
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47 and mentorship as opposed to coercion and control (33). International studies suggest that PDEP  
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49 can reduce parental approval of physical punishment and improve child outcomes (34-36).  
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3 However, for both PLH and PDEP, there is a need for randomized controlled trials to establish  
4 rigorous evidence of effectiveness.  
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8 Results of this study indicate that macrosystem factors are also important targets for  
9 intervention, particularly in urban environments. Population density may contribute to the  
10 “spread” of social norms that support the use of physical punishment. In addition, families who  
11 live in urban communities in LMICs may have less access to the economic and social resources  
12 in their community (37), which puts them at risk for using violent forms of discipline.  
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14 Population-based public education campaigns that educate communities about the negative  
15 effects of spanking may be beneficial in dense urban areas (38-41). The Better Parenting  
16 Programme is a public education intervention to increase parental knowledge of child  
17 development. In Jordan, the Better Parenting Programme was associated with improved  
18 parenting knowledge, increased parental involvement, and increased utilization of explanations  
19 when disciplining children (42). Additionally, as societal violence, family violence, and violence  
20 against children are inextricably connected (43, 44), education campaigns against other forms of  
21 violence may indirectly reduce violent forms of punishment, such as spanking. For example, the  
22 Global 16 Days Campaign launched by the Center for Women’s Global Leadership is a public  
23 education campaign that has been used worldwide to end gender-based violence (GBV; 45).  
24  
25 Empirical findings suggest the Global 16 Days Campaign has effectively raised awareness about  
26 GBV on local, regional, and international levels, and has led to a multilevel mobilization of  
27 women’s organizations across the globe (46). Implementing bans on spanking may also be an  
28 effective macro-level intervention. Country-level spanking bans are associated with changes in  
29 parental attitudes toward spanking over time (47, 48).  
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### 53 **Strengths and Limitations**

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3 Study limitations should be considered when interpreting the results. Our study included  
4 data from 613,861 households in 65 LMICs with information gathered using representative  
5 sampling methods and standardized interview protocols, thus providing the most rigorous  
6 perspective to date on the predictors of spanking. Multilevel modeling accounted for between-  
7 country and within-country variation in spanking. However, the cross-sectional nature of the  
8 analyses restricts the interpretation of our results to associations that are not causal in nature. The  
9 analyses do not elucidate the mechanisms linking microsystem and macrosystem variables to  
10 spanking. For example, higher household wealth scores may reflect access to greater social and  
11 economic resources that decrease the likelihood of spanking (49). Empirical examination of  
12 these mechanisms is necessary. The variables in this study are based on self-report data, which  
13 are subject to self-presentation biases (50). Respondents may not be aware of all instances of  
14 spanking in the household, increasing the possibility of underreporting or misreport of spanking  
15 in the home.

## 32 **Conclusion**

33 Spanking is a global public health concern, as spanking is the most prevalent form of  
34 physical violence against children worldwide. Caregivers beliefs that physical punishment is  
35 necessary was most strongly associated with the likelihood of spanking. At the macro level,  
36 living in an urban community was associated with spanking. The results indicate that both micro-  
37 and macro-level interventions are likely necessary in order to reduce violence against children.  
38 Parenting programs such as the WHO PLH and PDEP program have been successfully  
39 implemented in LMICs. Country-level bans, educational campaigns, and campaigns against  
40 violence against women may also serve the broader goal of reducing violence against children.  
41 Country-specific cultural factors should be considered prior to intervention implementation.  
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### Author Contributions:

Kaitlin P. Ward, MSW was involved in study conceptualization, manuscript writing and editing, and completion of data analysis.

Andrew C. Grogan-Kaylor, PhD was involved in study conceptualization, manuscript writing and editing, and data analysis supervision.

Garrett T. Pace, MSW was involved in data collection, data cleaning, and manuscript writing and editing

Jorge Cuartas, MS was involved in data collection, data cleaning, and manuscript writing and editing

Shawna J. Lee, PhD was involved in manuscript writing and editing and data analysis supervision.

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Table 1. *Countries included in analytic sample (N = 65 countries, 613,861 households).*

Country	N	% of analytic sample
Afghanistan	11,544	1.88
Algeria	16,788	2.73
Argentina	11,768	1.92
Bangladesh	38,717	6.31
Barbados	886	0.14
Belarus	3,334	0.54
Belize	5,478	0.89
Benin	9,681	1.58
Bosnia and Herzegovina	3,409	0.56
Cameroon	5,981	0.97
Central Africa Republic	8,165	1.33
Chad	12,265	2.00
Costa Rica	3,040	0.50
Côte d'Ivoire	7,455	1.21
Democratic Republic of the Congo	8,778	1.43
Dominican Republic	18,946	3.09
El Salvador	8,146	1.33
Eswatini	5,935	0.97
Ghana	8,846	1.44
Guinea	6,136	1.00
Guinea Bissau	5,158	0.84
Guyana	3,112	0.51
Indonesia	3,767	0.61
Iraq	27,906	4.55
Jamaica	2,647	0.43
Kazakhstan	14,253	2.32
Kenya	2,540	0.41
Kosovo	2,879	0.47
Kyrgyzstan	4,244	0.69
Laos	14,469	2.36
Macedonia	2,274	0.37
Madagascar (South)	2,345	0.38
Malawi	19,268	3.14
Mali	2,228	0.36
Mauritania	16,357	2.66
Mexico	7,557	1.23
Moldova	3,119	0.51
Mongolia	17,128	2.79
Montenegro	1,989	0.32
Nepal	12,239	1.99
Nigeria	41,858	6.82
Pakistan	58,318	9.50
Palestine refugees in Lebanon	2,525	0.41

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3	Panama	6,313	1.03
4	Paraguay	4,651	0.76
5	Republic of the Congo	7,860	1.28
6	Sao Tome and Principe	2,175	0.35
7	Senegal (Dakar City)	3,177	0.52
8	Serbia	8,282	1.35
9	Sierra Leone	9,166	1.49
10	Somalia	7,982	1.30
11	St. Lucia	587	0.10
12	State of Palestine	16,552	2.70
13	Sudan	11,272	1.84
14	Suriname	3,769	0.61
15	Thailand	18,863	3.07
16	The Gambia	6,220	1.01
17	Togo	4,482	0.73
18	Trinidad and Tobago	1,990	0.32
19	Tunisia	4,077	0.66
20	Turkmenistan	3,449	0.56
21	Ukraine	4,371	0.71
22	Uruguay	2,037	0.33
23	Vietnam	11,599	1.89
24	Zimbabwe	11,509	1.87
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Table 2. *Descriptive statistics of study variables.*

Variable	M	SD	Min	Max	N	%
Child age (months)	7.20	3.98	1	14		
Household members	5.93	2.90	1	50		
HDI	0.60	0.12	0.36	0.82		
Gender inequality	0.48	0.14	0.15	0.71		
Homicide rate	8.04	8.77	0.20	64.20		
MICS round 5					348,777	56.82
Child is female					312,685	49.06
HH is male					496,940	80.95
Urban community					268,944	42.18
HH is biological parent					460,778	75.06
HH Education						
None					174,366	28.53
Primary					194,079	31.76
Secondary-plus					243,722	39.71
Wealth quintile						
Poorest					146,583	23.88
2 <sup>nd</sup> poorest					129,842	21.15
Middle					119,729	19.50
2 <sup>nd</sup> richest					112,045	18.25
Richest					105,662	17.21
Children need PP					187,861	31.23
Child was spanked					226,006	36.82

*Note:* number of children in a household was capped at 10, and number of household members was capped at 50. HH = household survey respondent, usually the head of household; HDI = human development index; PP = physical punishment

Table 3. Results from Multilevel Logistic Regression Analyses Examining Predictors of Spanking

	Model 1				Model 2			
	OR	SE	LCI	UCI	OR	SE	LCI	UCI
Child age	0.94***	.00	.94	.94	0.93***	.00	0.93	0.93
Child age (quadratic)	0.99***	.00	.99	.99	0.99***	.00	0.99	0.99
Child is female	0.87***	.00	.86	.88	0.86***	.01	0.85	0.87
HH is male	0.87***	.01	.86	.89	0.87***	.01	0.86	0.89
HH is biological parent	1.23***	.01	1.21	1.25	1.24***	.01	1.22	1.26
HH members	1.03***	.00	1.02	1.03	1.03***	.00	1.02	1.03
HH Education								
Primary	1.08***	.01	1.06	1.10	1.04***	.01	1.03	1.06
Secondary+	0.97**	.01	.95	.99	0.93***	.01	0.92	0.95
Wealth quintile								
2 <sup>nd</sup> poorest	1.02	.01	1.00	1.03	1.00	.01	0.98	1.01
Middle	1.03***	.01	1.02	1.05	0.99	.01	0.97	1.01
2 <sup>nd</sup> richest	1.03**	.01	1.01	1.05	0.98*	.01	0.96	1.00
Richest	0.94***	.01	0.92	0.96	0.88***	.01	0.86	0.90
Children need PP	2.49***	.02	2.46	2.53	2.55***	.02	2.51	2.58
Homicide rate					1.00	.01	0.99	1.01
HDI					0.29	.30	0.04	2.17
Unemployment rate					1.01	.01	0.98	1.03
Urban community					1.10***	.01	1.08	1.12
Gender inequality					0.93	.86	0.15	5.68
MICS round 5					0.82***	.01	0.80	0.85

Note: Comparison variable for Education is “none,” comparison variable for wealth quintile is “poorest.” HH = household survey respondent, usually the head of household; HDI = human development index; PP = physical punishment; LCI = lower bound of 95% confidence interval; UCI = upper bound of 95% confidence interval.

Model 1: N = 598,835 households, 65 countries. AIC: 717034.1, BIC: 717203.6.

Model 2: N = 502,519 households, 55 countries. AIC: 594766.0, BIC: 594999.6.

The 10 countries missing from Model 2 are: Barbados, Eswatini, Guinea, Kosovo, Madagascar (south), Nigeria, Somalia, Somalia, State of Palestine, Sudan, and Trinidad/Tobago.

# BMJ Open

## A Multilevel Ecological Analysis of the Predictors of Spanking Across 65 Countries

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<b>Primary Subject Heading</b>:	Public health
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## A Multilevel Ecological Analysis of the Predictors of Spanking Across 65 Countries

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## Abstract

**Objective:** Ending violence against children is critical to promote the health and socioemotional development of children across the globe. To this end, the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) have called for the abolishment of spanking, which is the most pervasive form of physical violence against children worldwide. This study used an ecological perspective to examine micro- and macro-level predictors of parental spanking across 65 countries.

**Participants:** Data came from the fourth and fifth rounds of the UNICEF Multiple Indicator Cluster Surveys, which were administered between 2009-2017 (N = 613,861 households). We examined the predictors of spanking using multilevel logistic regression analysis.

**Results:** Micro-level factors (i.e., those observed at the familial level) were stronger predictors of spanking in comparison to macro-level factors (i.e., those observed at the community and country level). Caregiver belief that children need physical punishment in order to be raised properly was the largest risk factor for spanking (OR = 2.55,  $p < .001$ ). Older child age, the child being female, the head of the household having a secondary education or higher, and higher household wealth were protective factors against spanking, while a higher number of people living in the household was a risk factor for spanking. Living in an urban community was the only macro-level factor associated with spanking.

**Conclusions:** Intervention at the micro level and macro level are important to reduce violence against children across the globe.

*Keywords:* violence; spanking; international; ecological systems; family

## Article Summary

### Strengths and Limitations of This Study

- This is the largest study on the predictors of spanking to date.
- Data utilized in this study are representative of the populations living within each sample cluster.
- Multilevel modeling accounted for between-country and within-country variation in spanking.
- This study uses cross-sectional data; therefore, causal inferences cannot be made.
- This study does not examine *mechanisms* linking micro- and macro-level predictors to spanking.

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**Competing Interests:** The authors have no competing interests to report.

**Data sharing:** Data are publicly available from <https://mics.unicef.org/surveys>.

## Introduction

Ending violence against children is a global public health priority. The United Nations Convention of the Rights of the Child (UNCRC) and the United Nations Sustainable Development Goals (SDGs) have established that eliminating all forms of violence against children is necessary in order to promote health and wellbeing across the lifespan (1, 2). One of the most common forms of violence against children is spanking, defined as physically hitting a child on the bottom with a bare hand (3, 4). Worldwide, more than 1 in 4 caregivers view physical punishment as a necessary part of child rearing, and nearly two in three children experience physical punishment in the home (5, 6). Spanking harms human dignity and is a violation of children's rights (1,7), with rigorous evidence showing that spanking impairs children's social, emotional, and behavioral functioning (8-11).

As such, there is a global effort to ban spanking in all settings including the home (12). Sixty-two countries to date have implemented legal bans on forms of parental punishment that utilize violence, including spanking (13). Professional organizations such as the United Nations Children's Fund (UNICEF) (8), the World Health Organization (WHO) (14), and the American Academy of Pediatrics (AAP) (15) have called for the end of spanking. Bans have been associated with lower levels of community violence and can increase public awareness regarding violence against children (16, 17). Further, researchers have called for the global implementation of evidence-based interventions that reduce the use of parental spanking (12). However, to inform these global efforts, it is necessary to examine the role of risk and protective factors for spanking across cultures.

The ecological systems model (18) suggests that multiple factors at the individual, microsystem, and macrosystem levels influence caregiver utilization of spanking. The

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3 microsystem refers to the immediate environment in which the child is raised (e.g., child and  
4 family functioning), whereas the macrosystem refers to the broader context (e.g., culture and  
5 policies) that may influence parent-child interactions. At the micro-level, boys, preschool-aged  
6 children, children living with many members in the household, and children who have caregivers  
7 who believe spanking is appropriate are at higher risk of physical and psychological abuse (3,  
8 19). Children living in households with higher economic security and higher educational  
9 attainment tend to be at lower risk of abuse and harsh forms of punishment (20-22).

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At the macro-level, community violence, gender inequality, and higher unemployment rates have all been shown to increase the likelihood of child abuse (6, 23-25). However, global studies on the predictors of spanking are sparse, with most studies including spanking as part of a larger physical punishment scale (3) or predicting spanking among a smaller sample of countries (see 25, which examines predictors of spanking across 24 countries). This study aims to provide a global examination of the micro- and macro-level predictors of spanking across 65 countries, the majority of which are low- and middle-income countries (LMICs). The micro- and macro-level predictors examined in the current study were informed by prior research (20-25) showing a broad range of factors are associated with risk of punishment and abuse; we are aware of no prior studies that examine all of these risk factors on a comparable global scale.

## Method

### Patient and Public Involvement

Data came from the UNICEF Multiple Indicator Cluster Surveys (MICS). Since 1995, UNICEF has been administering MICS in over 100 LMICs to examine overall health and wellbeing, especially among women and children. MICS data is used to improve the lives of individuals who are most vulnerable by informing policy decisions, informing program



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3 intervention, tracking changes in indicators related to Millennium Development Goals (MDGs),  
4 and influencing the public opinion on the state of women and children's health on a global level.  
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6 UNICEF uses multi-stage cluster sampling, wherein households are randomly chosen within  
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8 clusters. The surveys are comparable across countries and representative of the population living  
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10 within each sampling area, making these surveys useful for informing and shaping policies. All  
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12 participants provided informed consent prior to completing the surveys. Further details about the  
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14 data can be found on the MICS website (<https://mics.unicef.org/about>). We examine two of the  
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16 more recent surveys, specifically the fourth (MICS4) and fifth (MICS5) rounds, which were  
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18 conducted between 2009 and 2013, and between 2012 and 2017, respectively. The University of  
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20 Michigan Institutional Review Board deemed our analysis of these data, which are publicly  
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22 available and de-identified, exempt from oversight.  
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## 28 **Participants**

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30 Within each household selected within a sampling area, a trained fieldworker  
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32 administered a household questionnaire in-person with the head of household; if the head of  
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34 household was unavailable, then the head of household's partner or another adult residing in the  
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36 household was interviewed. Using a random number table, the fieldworker randomly chose a  
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38 child (between the ages of 2 and 17 for MICS4, and 1-17 for MICS5) within the household to be  
39  
40 the focal child for the interview. Questions about discipline strategies, including spanking, were  
41  
42 not asked if the focal child were between the ages of 15-17. Our sample included survey  
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44 responses from households within 65 countries that had publicly released data as of July 2020  
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46 (see Table 1).  
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## 50 **Measures**

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3       **Spanking.** Spanking was measured through a modified version of the Parent-Child  
4 Conflict Tactics Scale (26), which asked the respondent whether they or anyone else in the  
5 household had “spanked, hit, or slapped [the focal child] on the bottom with a bare hand” in the  
6 past month (0=*no*, 1=*yes*).  
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11       **Microsystem Predictors.** Child age was continuous and measured in years; a linear and  
12 squared term were included because the relationship between child age and spanking has been  
13 shown to be curvilinear in prior literature (19). Child sex was dichotomously coded (0=*male*,  
14 1=*female*). The educational attainment of the head of the household was categorical (1=*none*  
15 [comparison category], 2=*primary*, 3=*secondary-plus*). The number of household members was  
16 continuous and capped at 50. Whether the respondent believed that a child needs physical  
17 punishment in order to be raised properly was dichotomously coded (0=*no*, 1=*yes*). The  
18 household wealth score was standardized within each country and modeled as a categorical  
19 variable to reflect quintiles (1=*poorest* [comparison], 2=*second poorest*, 3=*middle*, 4=*second*  
20 *richest*, 5=*richest*). To account for head-of-household characteristics, we also included head-of-  
21 household sex (0=*female*, 1=*male*) and whether the head of household was the focal child’s  
22 biological parent (0=*no*, 1=*yes*).  
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40       **Macrosystem Predictors.** Macro-level predictors were measured at the same year for  
41 each of the MICS surveys. The homicide rate was continuous and measured per 100,000  
42 inhabitants (27). The unemployment rate was also continuous (28). Human development was  
43 continuous and measured with the Human Development Index (2). Gender inequality was  
44 continuous and measured with the Gender Inequality Index (2). Whether the household lived in  
45 an urban or rural community was dichotomously coded (0=*rural*, 1=*urban*). To account for the  
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3 timing of data collection, we also included the MICS round, which was dichotomously coded  
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5 (0=*round 4*, 1=*round 5*).  
6

### 7 8 **Analytic Strategy** 9

10 All analyses were conducted in Stata version 15.1 (29). We limited our analytic sample to  
11 household respondents who had no missing data on our outcome variable, leaving a final sample  
12 size of 613,861 households across 65 countries. We then screened for missing data on our  
13 predictor variables. In general, missing data were few, ranging from 0-5% on most variables. The  
14 greatest amount of missing data was found on gender inequality, which had 14% missing data.  
15 We also scanned for outliers and instances of multicollinearity, neither of which were found. We  
16 ran two-level models, with individuals nested within countries to account for the fact that  
17 observations from different families within the same country were likely to be correlated (30).  
18 Additionally, because research has demonstrated that the relationship between child age and  
19 likelihood of spanking is non-linear (i.e., the likelihood of being spanked is highest between  
20 child ages 3 and 5), we included the quadratic term for children's age as a predictor in the model.  
21 Child age was grand mean centered to promote interpretability.  
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37 To determine which microsystem and macrosystem predictors were significantly  
38 associated with spanking, we estimated multilevel logistic regression models, which provided  
39 odds ratio (OR) coefficients. In multilevel logistic models, Stata, the statistical software which  
40 we employed for this analysis, handles missing data using listwise deletion, which means that if  
41 a variable contained missing data, the corresponding rows of data were excluded. We first ran a  
42 model that only examined microsystem predictors of spanking (Model 1), which included child  
43 age, child sex, head-of-household sex, head-of-household relation to the child, number of  
44 household members, head-of-household educational attainment, attitudes toward physical  
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3 punishment, and household wealth quintile. We then introduced macro-level predictors into the  
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5 model (Model 2). At the country-level, these predictors included homicide rate, HDI score,  
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7 unemployment rate, and gender inequality. Ten countries did not have data on one or more of  
8  
9 these predictors; thus, Model 2 only includes 55 countries. At the community-level we included  
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11 an indicator for whether the household was in an urban or rural community. We also included an  
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13 indicator for MICS round to account for the timing of the survey.  
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## 16 17 **Results**

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19 Table 1 presents the number of participants within each country. Table 2 presents study  
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21 descriptive statistics. Approximately 37% of respondents indicated that the focal child was  
22  
23 spanked within the past month, and approximately 31% of respondents believed that children  
24  
25 need physical punishment in order to be raised properly. The average age of focal children was  
26  
27 7.20 years (SD = 3.98) and slightly over half were male (51%). Most household questionnaire  
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29 respondents were male (81%) and were the focal child's biological parent (75%). On average,  
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31 there were 6 members of the household (SD = 2.90). The majority of families lived in a rural  
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33 community (58%).  
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## 36 37 **Multilevel Logistic Regression Models**

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39 We ran an unconditional model, where the mean of spanking was estimated, accounting  
40  
41 for clustering within countries. We then estimated the intra-class correlation coefficient (ICC),  
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43 which revealed that 10% of the variation in spanking could be explained by country. Results  
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45 from multilevel logistic regression models can be found in Table 3. In Model 1 (microsystem  
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47 predictors only), nearly all microsystem predictors were associated with spanking. Model 2  
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49 provides estimates of microsystem and macrosystem predictors estimated together. A number of  
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51 variables were risk factors of spanking. Each additional person in the household was associated  
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3 with a 3% increase in the odds of the focal child being spanked (OR = 1.03, 95% CI = [1.02,  
4 1.03]). Compared to the household respondent having no education, the household respondent  
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6 having primary education was associated with an 4% increase in the odds of the focal child being  
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8 spanked (OR = 1.04, 95% CI = [1.03, 1.06]). The household respondent being the biological  
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10 parent was associated with a 24% increase in the odds of the focal child being spanked (OR =  
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12 1.24, 95% CI = [1.22, 1.26]). The household respondent believing that a child needs physical  
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14 punishment in order to be raised properly was associated with a 155% increase in the odds of the  
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16 focal child being spanked (OR = 2.55, 95% CI = [2.51, 2.58]).  
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22 Other microsystem variables were protective factors against spanking. Compared to the  
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24 household respondent having no education, the household respondent having a secondary  
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26 education or higher was associated with a 7% decrease in the odds of the focal child being  
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28 spanked (OR = 0.93, 95% CI = [0.92, 0.95]). A one-year increase in children's age was associated  
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30 with a 7% decrease in the odds of the focal child being spanked (OR = 0.93, 95% CI = [0.93,  
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32 0.93]). The focal child being female was associated with a 14% decrease in the odds of the focal  
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34 child being spanked (OR = 0.86, 95% CI = [0.85, 0.87]). The head of the household being male  
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36 also associated with a 13% decrease in the focal child being spanked (OR = 0.87, 95% CI =  
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38 [0.86, 0.89]). Compared to being in the poorest household wealth quintile, being in the 2nd  
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40 richest (OR = 0.98, 95% CI = [0.96, 1.00]) or richest (OR = 0.88, 95% CI = [0.86, 0.90]) quintile  
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42 was associated with a decrease in the odds of the focal child being spanked. In terms of  
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44 macrosystem variables, the community of the household was a risk factor of spanking, as living  
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46 in an urban community was associated with a 10% increase in the odds of the focal child being  
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48 spanked (OR = 1.10, 95% CI = [1.08, 1.12]). Additionally, compared to the fourth round of  
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50 MICS data collection, the fifth round was associated with a decrease in the odds of the focal  
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3 child being spanked (OR = 0.82, 95% CI = [0.80, 0.85]), perhaps due to the inclusion of 1-year-  
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5 olds during round 5, differences between countries across rounds (only 7 countries participated  
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7 in both rounds), and that the prevalence of spanking may be declining globally over time.  
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## 10 **Discussion**

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12 Using an ecological perspective (18), this study examined micro- and macro-level  
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14 predictors of spanking in 613,861 households across 65 LMICs. Organizations around the globe  
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16 are calling for the elimination of violence against children, including the use of spanking (5, 15).  
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18 One strategy to reduce violence against children is to ban spanking at the country level (31, 32).  
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20 Other strategies include parenting education and intervention at the microsystem level (33). The  
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22 current study suggests that targeting interventions at both the microsystem and macrosystem is  
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24 necessary to reduce violence against children.  
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29 Specifically, the results of this study show that caregiver attitudes about physical  
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31 punishment are powerful predictors of spanking, echoing prior research using MICS data  
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33 showing that caregiver attitudes about spanking were a strong predictor of child abuse (3) as well  
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35 as U.S. studies showing similar associations (34, 35). In fact, caregiver attitudes toward  
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37 spanking are linked to violence against children over and above numerous contextual factors.  
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39 This suggests that in order to reduce violence against children worldwide, parenting  
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41 interventions are warranted.  
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46 Indeed, the United Nations has called attention to the need “to stop parents from using  
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48 violent or other cruel or degrading punishments through supportive and educational, not punitive,  
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50 interventions” (1). The WHO supports the Parenting for Lifelong Health (PLH) program, which  
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52 is currently being implemented in low-resource and LMIC settings (36). Another program is  
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54 Positive Discipline in Everyday Parenting (PDEP), a universal intervention that aims to change  
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3 parental attitudes toward physical punishment and change parental roles to one of collaboration  
4 and mentorship as opposed to coercion and control (37). International studies suggest that PDEP  
5 can reduce parental approval of physical punishment and improve child outcomes (38-40).  
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8 However, for both PLH and PDEP, there is a need for randomized controlled trials to establish  
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10 rigorous evidence of effectiveness.  
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15 Results of this study indicate that macrosystem factors are also important targets for  
16 intervention, particularly in urban environments. Population density may contribute to the  
17 “spread” of social norms that support the use of physical punishment. In addition, families who  
18 live in urban communities in LMICs may have less access to the economic and social resources  
19 in their community (41), which puts them at risk for using violent forms of discipline.  
20  
21 Population-based public education campaigns that educate communities about the negative  
22 effects of spanking may be beneficial in dense urban areas (42-45). The Better Parenting  
23 Programme is a public education intervention to increase parental knowledge of child  
24 development. In Jordan, the Better Parenting Programme was associated with improved  
25 parenting knowledge, increased parental involvement, and increased utilization of explanations  
26 when disciplining children (46). Additionally, as societal violence, family violence, and violence  
27 against children are inextricably connected (47, 48), education campaigns against other forms of  
28 violence may indirectly reduce violent forms of punishment, such as spanking. For example, the  
29 Global 16 Days Campaign launched by the Center for Women’s Global Leadership is a public  
30 education campaign that has been used worldwide to end gender-based violence (GBV; 49).  
31  
32 Empirical findings suggest the Global 16 Days Campaign has effectively raised awareness about  
33 GBV on local, regional, and international levels, and has led to a multilevel mobilization of  
34 women’s organizations across the globe (50). Implementing bans on spanking may also be an  
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3 effective macro-level intervention. Country-level spanking bans are associated with changes in  
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5 parental attitudes toward spanking over time (51, 52).  
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### 7 **Strengths and Limitations**

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10 Study limitations should be considered when interpreting the results. Our study included  
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12 data from 613,861 households in 65 LMICs with information gathered using representative  
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14 sampling methods and standardized interview protocols, thus providing the most global  
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16 perspective to date on the predictors of spanking. Multilevel modeling accounted for between-  
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18 country and within-country variation in spanking. However, the cross-sectional nature of the  
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20 analyses restricts the interpretation of our results to associations that are not causal. Our large  
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22 sample size likely resulted in sufficient statistical power to detect smaller associations; thus, p-  
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24 values should not be the only criterion used to decipher meaningful effects—the size of the odds  
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26 ratios, standard errors, and confidence intervals should also be considered. When considering an  
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28 outcome such as spanking, which is a violation of human rights and consistently associated with  
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30 poorer future outcomes (1, 8), even small associations—especially when multiplied across large  
31  
32 numbers of children and families—could help to inform more holistic approaches to ending  
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34 violence against children. The analyses do not elucidate the mechanisms linking microsystem  
35  
36 and macrosystem variables to spanking. For example, higher household wealth may reflect  
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38 access to greater social and economic resources that decrease the likelihood of spanking (53).  
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40 Indeed, the directionality of the relationship between the middle and second-richest household  
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42 wealth quintile and spanking switched after macro-level predictors were accounted for in the  
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44 model, revealing that these associations may be dependent on other factors. Empirical  
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46 examination of these mechanisms is necessary. The variables in this study are based on self-  
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48 report data, which are subject to self-presentation bias (54). Respondents may not be aware of all  
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instances of spanking in the household, increasing the possibility of underreporting or misreport of spanking in the home.

## Conclusion

Spanking is a global public health concern, as spanking is the most prevalent form of physical violence against children worldwide. Caregivers' beliefs that physical punishment is necessary was most strongly associated with the likelihood of spanking. At the macro level, living in an urban community was associated with spanking. The results indicate that both micro- and macro-level interventions are likely necessary in order to reduce violence against children. Parenting programs such as the WHO PLH and PDEP program have been successfully implemented in LMICs. Country-level bans, educational campaigns, and campaigns against violence against women may also serve the broader goal of reducing violence against children. Country-specific cultural factors should be considered prior to intervention implementation.

## Author Contributions:

Kaitlin P. Ward, MSW was involved in study conceptualization, manuscript writing and editing, and completion of data analysis.

Andrew C. Grogan-Kaylor, PhD was involved in study conceptualization, manuscript writing and editing, and data analysis supervision.

Garrett T. Pace, MSW was involved in data collection, data cleaning, and manuscript writing and editing

Jorge Cuartas, MS was involved in data collection, data cleaning, and manuscript writing and editing

Shawna J. Lee, PhD was involved in manuscript writing and editing and data analysis supervision.

**Ethics Approval:** Our analysis was deemed exempt from the University of Michigan Institutional Review Board (HUM00191904).

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Table 1. *Countries included in analytic sample (N = 65 countries, 613,861 households).*

Country	N	% of analytic sample
Afghanistan	11,544	1.88
Algeria	16,788	2.73
Argentina	11,768	1.92
Bangladesh	38,717	6.31
Barbados	886	0.14
Belarus	3,334	0.54
Belize	5,478	0.89
Benin	9,681	1.58
Bosnia and Herzegovina	3,409	0.56
Cameroon	5,981	0.97
Central Africa Republic	8,165	1.33
Chad	12,265	2.00
Costa Rica	3,040	0.50
Côte d'Ivoire	7,455	1.21
Democratic Republic of the Congo	8,778	1.43
Dominican Republic	18,946	3.09
El Salvador	8,146	1.33
Eswatini	5,935	0.97
Ghana	8,846	1.44
Guinea	6,136	1.00
Guinea Bissau	5,158	0.84
Guyana	3,112	0.51
Indonesia	3,767	0.61
Iraq	27,906	4.55
Jamaica	2,647	0.43
Kazakhstan	14,253	2.32
Kenya	2,540	0.41
Kosovo	2,879	0.47
Kyrgyzstan	4,244	0.69
Laos	14,469	2.36
Macedonia	2,274	0.37
Madagascar (South)	2,345	0.38
Malawi	19,268	3.14
Mali	2,228	0.36
Mauritania	16,357	2.66
Mexico	7,557	1.23
Moldova	3,119	0.51
Mongolia	17,128	2.79
Montenegro	1,989	0.32
Nepal	12,239	1.99
Nigeria	41,858	6.82
Pakistan	58,318	9.50
Palestine refugees in Lebanon	2,525	0.41

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Panama	6,313	1.03
Paraguay	4,651	0.76
Republic of the Congo	7,860	1.28
Sao Tome and Principe	2,175	0.35
Senegal (Dakar City)	3,177	0.52
Serbia	8,282	1.35
Sierra Leone	9,166	1.49
Somalia	7,982	1.30
St. Lucia	587	0.10
State of Palestine	16,552	2.70
Sudan	11,272	1.84
Suriname	3,769	0.61
Thailand	18,863	3.07
The Gambia	6,220	1.01
Togo	4,482	0.73
Trinidad and Tobago	1,990	0.32
Tunisia	4,077	0.66
Turkmenistan	3,449	0.56
Ukraine	4,371	0.71
Uruguay	2,037	0.33
Vietnam	11,599	1.89
Zimbabwe	11,509	1.87

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Table 2. *Descriptive statistics of study variables (N = 613,861 households).*

Variable	M	SD	Min	Max	N	%
Child age (years)	7.20	3.98	1	14		
Household members	5.93	2.90	1	50		
HDI	0.60	0.12	0.36	0.82		
Gender inequality	0.48	0.14	0.15	0.71		
Homicide rate	8.04	8.77	0.20	64.20		
MICS round 5					348,777	56.82
Child is female					312,685	49.06
HH is male					496,940	80.95
Urban community					268,944	42.18
HH is biological parent					460,778	75.06
HH Education						
None					174,366	28.53
Primary					194,079	31.76
Secondary-plus					243,722	39.71
Wealth quintile						
Poorest					146,583	23.88
2 <sup>nd</sup> poorest					129,842	21.15
Middle					119,729	19.50
2 <sup>nd</sup> richest					112,045	18.25
Richest					105,662	17.21
Children need PP					187,861	31.23
Child was spanked					226,006	36.82

*Note:* number of children in a household was capped at 10, and number of household members was capped at 50. HH = household survey respondent, usually the head of household; HDI = human development index; PP = physical punishment

Table 3. Results from Multilevel Logistic Regression Analyses Examining Predictors of Spanking

	Model 1				Model 2			
	OR	SE	LCI	UCI	OR	SE	LCI	UCI
Child age	0.940***	.001	.939	.941	0.935***	.001	0.933	0.936
Child age (quadratic)	0.986***	.000	.986	.986	0.985***	.000	0.985	0.986
Child is female	0.868***	.005	.859	.878	0.858***	.005	0.847	0.868
HH is male	0.871***	.007	.858	.885	0.874***	.010	0.860	0.889
HH is biological parent	1.229***	.009	1.212	1.247	1.242***	.001	1.223	1.261
HH members	1.026***	.001	1.024	1.029	1.027***	.00	1.024	1.029
HH Education								
Primary	1.079***	.009	1.062	1.096	1.044***	.009	1.026	1.062
Secondary+	0.972**	.009	.955	.989	0.935***	.009	0.917	0.953
Wealth quintile								
2 <sup>nd</sup> poorest	1.015	.009	0.998	1.032	1.001	.009	0.983	1.020
Middle	1.035***	.009	1.017	1.053	0.992	.010	0.973	1.012
2 <sup>nd</sup> richest	1.027**	.010	1.009	1.046	0.976*	.010	0.955	0.996
Richest	0.943***	.009	0.925	0.962	0.878***	.011	0.857	0.899
Children need PP	2.494***	.016	2.462	2.525	2.549***	.018	2.513	2.585
Homicide rate					1.000	.007	0.986	1.014
HDI					0.288	.297	0.038	2.169
Unemployment rate					1.006	.011	0.984	1.028
Urban community					1.101***	.009	1.084	1.118
Gender inequality					0.932	.860	0.153	5.684
MICS round 5					0.821***	.013	0.795	0.847

Note: Comparison variable for Education is “none,” comparison variable for wealth quintile is “poorest.” HH = household survey respondent, usually the head of household; HDI = human development index; PP = physical punishment; LCI = lower bound of 95% confidence interval; UCI = upper bound of 95% confidence interval.

Model 1: N = 598,835 households, 65 countries. AIC: 717034.1, BIC: 717203.6.

Model 2: N = 502,519 households, 55 countries. AIC: 594766.0, BIC: 594999.6.

The 10 countries missing from Model 2 are: Barbados, Eswatini, Guinea, Kosovo, Madagascar (south), Nigeria, Somalia, State of Palestine, Sudan, and Trinidad/Tobago.