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RESEARCH ARTICLE/ARAŞTIRMA MAKALESİ

Child rights and structural abuse by income level: A global comparative analysis based on World Bank classification

Berna Eren[1] **Fatih Demir**[2]

[1]MD, PhD; Assistant Prof., Acıbadem Mehmet Ali Aydınlar University, Faculty of Health Sciences, Health Management Department, İstanbul, Türkiye, e-mail: berna.eren@acibadem.edu.tr

[2]MSc, SZAOMICS Biotechnology Research and Development, İstanbul, Türkiye, e-mail: demirrfati@gmail.com

Abstract

The objective of this cross-sectional study is to examine structural forms of child abuse and child rights violations that restrict access to education, health, identity, and protection across countries/economies classified by income level according to the World Bank. Country-level quantitative data from the open databases of the World Bank and UNICEF were used. Countries were categorized in four groups by the World Bank's income classification. Indicators related to legal identity, education, health, social protection and labour were selected based on their conceptual relevance and global availability. Data from 2014-2023 were aggregated for 216 countries/economies and analyzed using descriptive statistics and one-way analysis of variance (ANOVA) to identify disparities across income groups. The findings reveal stark inequalities in child rights and well-being outcomes, with children in low and lower-middle income countries/economies facing significant disadvantages. Birth registration was nearly universal in high income countries/economies but averaged only 52.5% in low income settings. Similarly, primary school enrolment and completion rates, as well as immunization coverage for measles, were substantially lower in low income countries/economies, reflecting systemic barriers beyond economic factors. The adolescent fertility rate in low income countries/economies was almost six times that of high income countries/economies. Infant mortality and under-five mortality rates were more than eight and eleven times higher, respectively, in low income countries/economies compared to high income counterparts, underscoring profound survival inequities. Child labour and violent discipline were significantly more prevalent in low and lower-middle income groups; however, violent discipline persisted even in high income contexts, suggesting the influence of cultural and systemic norms. In conclusion, income inequality is a structural determinant of child rights violations and perpetuates structural child abuse. Access to basic rights such as education, identity, healthy living and protection from abuse are severely violated in low income countries/economies. Policy makers and international support mechanisms must frame these disparities not only as neglect but also as institutionalized abuse, and develop child rights-based policies by taking income inequality into account.

Keywords: Child Rights, Structural Abuse, Child Abuse and Neglect, Income, Income Inequality

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Corresponding Author/ Sorumlu Yazar:
Berna Eren
E-mail: berna.eren@acibadem.edu.tr

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1. INTRODUCTION

Child abuse refers to any violent or threatening act towards children under the age of 18, be it physical, emotional, sexual abuse, neglect, negligence or exploitation (Healthdirect Australia, n.d.; Daley et al., 2025; World Health Organization [WHO], 2024b; Centers for Disease Control and Prevention [CDC], 2024.; Government of the Netherlands, n.d.). Although it may not always be intentional, it is often carried out by anyone in a position of trust, responsibility or power, such as a parent, family member, or caregiver, and results in actual or potential harm to a child's development, health, survival, or dignity (Government of the Netherlands, n.d.; Daley et al., 2025; CDC, 2024; WHO, 2024b).

Child abuse is a global problem affecting children across all regions and backgrounds (WHO, 2024b) despite its variations by country and definition (Brown et al., 2023). Recent data from international organizations, such as The United Nations Children's Fund (UNICEF) and WHO, highlight the alarming scale and multifaceted nature of this issue. Global estimates reveal that approximately 1.6 billion children, 400 million of whom are under the age of five, are subjected to violent discipline at home, encompassing physical punishment and/or psychological aggression at the hands of parents and caregivers. An estimated 650 million women and girls and between 410 to 530 million men and boys have been subjected to sexual violence during childhood. Over 40,000 child homicides annually are due to violence; while the risk is higher among boys and escalates in late adolescence. Despite these staggering figures, child abuse remains underreported and inadequately documented in many regions due to societal stigma, lack of awareness, and insufficient data collection mechanisms (WHO, 2024b; UNICEF, 2024d).

Children who have been severely abused or neglected often face grave life-long consequences, including significant developmental challenges, including learning difficulties, low self-esteem, depression, and an increased risk of engaging in risky behaviours or self-harm. Witnessing violence can cause similar distress, and children growing up in violent environments may internalize such behaviour, perpetuating cycles of abuse. In addition to social, emotional and mental health problems, child abuse also hinders countries' economic and social development (Daley et al., 2025; WHO, 2024b; UNICEF, 2024d)

The most prevalent form of child abuse is neglect. It is defined as the failure to meet the basic physical and emotional needs and/or rights of a child and to provide adequate care, protection and essential services (Brown et al., 2023; Kobulsky et al., 2020; Daley et al., 2025; Proctor & Dubowitz, 2014; CDC, 2024). Neglect is a major health and social problem globally, although its extent and form vary (Proctor & Dubowitz, 2014; Kobulsky et al., 2020). As outlined by Howarth (2007), the six main types of neglect are medical, nutritional, emotional, educational, physical neglect and lack of guidance and supervision. Although most studies do not cover all aspects of neglect, Stoltenborgh et al. (2013), in their meta-analysis, estimated the global prevalence as 16% for physical neglect and 18% for emotional neglect with no evident gender differences.

Child abuse and neglect (CAN) are often shaped and sustained by structural abuse, conceptualized as a specific manifestation of structural violence. Introduced by Johan Galtung in 1969, structural violence describes harm embedded in the broader social, political, and economic organization of the society. It operates without a direct perpetrator, producing systemic inequities such as poverty, racism, or gender discrimination, which result in enduring disparities in access to resources, opportunities, and rights (Galtung, 1969; Rodriguez-Gómez & Russell, 2021; Burton et al., 2021).

There are various risk factors and underlying contributing conditions for CAN, which can be classified as factors related to the child, the caregiver, the household environment, and the broader community. Certain factors such as being very young, born from unwanted or unplanned pregnancies, having disabilities or behavioural issues can increase a child's vulnerability to neglect and abuse. Parents or caregivers with a history of abuse, mental illness, substance use, poor impulse control, or unrealistic expectations

are more likely to harm children. Single-parent households, domestic violence, and the presence of unrelated adults in the home further raise risk. On a broader scale, community and societal conditions—such as poverty, social isolation, violence, lack of support services, and cultural norms endorsing harsh discipline—can create environments where abuse is more or less likely to be addressed effectively. Socioeconomic inequality and inadequate social, economic, health and education policies further exacerbate the problem (Daley et al., 2025; WHO, n.d.; CDC, 2024).

Experiencing individual and neighbourhood-level poverty is correlated with higher risk for child abuse, and specifically for neglect (Maguire-Jack & Font, 2017) more than other kinds of abuse (Bywaters et al., 2022), as shown by studies at the individual (Putnam-Hornstein & Needell, 2011); community (Kim & Drake, 2018; Maguire-Jack, 2014); and country (Kim & Drake, 2023) level. Although poverty alone is not a sufficient cause, it is deeply intertwined with other contributing factors (Bywaters et al., 2022). Children in families with low socioeconomic status experience CAN five times higher than those in higher socioeconomic status (CDC, 2024). Studies across various countries report lifetime neglect rates ranging from 9–55% in high income, 23–84% in upper-middle income, and 29–59% in lower-middle income countries (Kobulsky et al., 2020).

2. MATERIALS AND METHOD

The objective of this cross-sectional study is to comparatively analyze structural forms of child abuse and child rights violations that hinder access to education, health, legal identity, and protection from exploitation and violence across countries and economies classified by income level.

The study used The World Bank Group's (WBG) income classification as the independent variable in order to reflect the level of development of countries and economies. Based on the Gross National Income (GNI) per capita of the previous calendar year, WBG assigns countries and economies into four income groups: low income, lower-middle income, upper-middle income, and high income. The classification is updated annually on July 1, i.e. the start of the World Bank fiscal year. The classification for the 2025 fiscal year, which used GNI per capita for 2023, is shown in Table 1 (World Bank, n.d.; Metreau et al., 2024).

This classification allowed for the analysis of systemic disparities in CAN-related indicators across different levels of economic development.

In light of the global absence of standardized prevalence data on CAN, the study employed a set of publicly available proxy indicators as the dependent variables in order to provide a multidimensional perspective on child well-being. The indicators were selected based on their conceptual relevance to CAN, their global availability, and their prior use in child welfare research in order to reflect structural child abuse and rights violations. The indicators were drawn from the open global databases of the World Bank and UNICEF (WBG, 2025; UNICEF, 2025a), and were categorized as follows:

- Legal Identity:

○ Completeness of birth registration (%)

- Education and School Participation:

○ Children out of school (% of primary school age)

○ School enrolment, primary (% net)

○ Primary completion rate (% of relevant age group)

- Health:

Table 1. The income classification thresholds for the 2025 fiscal year

	Low Income	Lower-Middle Income	Upper-Middle Income	High Income
GNI per capita (for FY25), USD	≤1,145	1,146–4,515	4,516-14,005	>14,005

○ Infant mortality rate (per 1,000 live births)

○ Under-5 mortality rate (per 1,000 live births)

○ Immunization, DTP (% of children ages 12-23 months)

○ Immunization, measles (% of children ages 12-23 months)

○ Adolescent fertility rate (births per 1,000 women ages 15-19)

- Social Protection and Labour:

○ Child labour (%)

○ Violent discipline (%)

Where available, indicators were disaggregated by gender to capture differences between males and females in outcomes.

For each indicator, all available country-level quantitative data from the period 2014–2023 were extracted from the open databases of the WBG and UNICEF (WBG, 2025; UNICEF, 2025a). In order to address variation in data availability across years, a multi-year average strategy was applied: the mean value of all available data points within this period was calculated for each country/economy and indicator. This method has been shown to reduce the influence of extreme values and single-year shocks (e.g., due to conflict or pandemics), and is widely used in global monitoring studies.

This approach minimized the effect of outliers and single-year anomalies, and allowed for consistent cross-country comparisons. Countries with only one data point for a given indicator were retained to preserve geographic representation, while those with multiple years of data contributed a more stable estimate through averaging. Indicators with no data available for a country across the entire period were treated as missing and excluded from relevant analyses.

Data were analysed using IBM SPSS Statistics Version 23. Country-level average values were aggregated within income groups. Descriptive statistics (mean, median, standard deviation) were computed for each indicator. Categorical parameters were presented as frequencies and percentage values. The Kolmogorov–Smirnov test was used to assess whether the data followed a normal distribution. For group comparisons, one-way analysis of variance (ANOVA) was employed. The least significant difference (LSD) test was applied for post hoc comparisons when significant differences between the income group means were found. A p value less than 0.05 was considered statistically significant.

All data used in this study were obtained from publicly available, aggregate-level international databases. As no individual or sensitive data were used, institutional ethical approval was not required.

3. FINDINGS

Distribution of countries and economies by income groups

Of the 216 countries and economies that have been assigned to an income group, 39.4% were in high income and 12.0% were in low income group, with the rest almost equally distributed to lower-middle and upper-middle income groups (Table 2).

3.1. Completeness of birth registration (%)

This indicator refers to the percentage of children under age 5 whose births were registered, i.e. children whose birth certificate was seen by the interviewer or whose mother or caretaker says the birth has been registered during the

Table 2. The distribution of world economies by income group

	n	%
Low income	26	12.0
Lower-middle income	51	23.6
Upper-middle income	54	25.0
High income	85	39.4
Total	216	100.0

original data collection process (WBG, 2025). Across 148 countries/economies with data, the global average rate for the completeness of birth registration was 84.2%± 24.0% with slight variations between males and females (84.6%± 23.5% and 84.4%± 23.7% respectively, across 138 countries/economies providing gender-specific data). Low income countries/economies had the lowest average rate (52.5% ± 27.1%), while high income countries/economies had near-universal average rate (99.8% ± 1.0%). Completeness of birth registration improved progressively with income, showing statistically significant differences between all lower-income categories and high income countries/economies ($p<0.001$) (Table 3).

3.2. Children out of school (% of primary school age)

This indicator refers to "the percentage of primary-school-age children who are not enrolled in primary or secondary school" (WBG, 2025). The global average rate for out-of-school children across 184 countries/economies with data was 8.3%± 10.6% with higher rates for females than males (9.7% ± 11.3% and 9.2% ± 10.3% respectively across 168 countries/economies providing gender-specific data). Low income countries/economies exhibited the highest mean percentages (22.7% ± 16.2%), particularly for females (24.9% ± 17.6%), while high income countries/economies maintained consistently low rates (4.0% ± 5.9%). These trends

Table 3. Completeness of birth registration (%) by income group

Income Group	All $\bar{X}$ ± SD (n)	Males $\bar{X}$ ± SD (n)	Females $\bar{X}$ ± SD (n)
LI[a]	52.5 ± 27.1 (n=18)	55.6 ± 25.1 (n=18)	54.8 ± 24.8 (n=18)
LMI[b]	71.6 ± 25.6 (n=42)	71.6 ± 25.9 (n=41)	71.0 ± 25.9 (n=41)
UMI[c]	92.6 ± 12.1 (n=36)	94.8 ± 7.4 (n=29)	95.0 ± 7.5 (n=29)
HI[d]	99.8 ± 1.0 (n=52)	99.7 ± 1.7 (n=50)	99.7 ± 1.6 (n=50)
Total	84.2 ± 24.0 (n=148)	84.6 ± 23.5 (n=138)	84.4 ± 23.7 (n=138)
ANOVA	F = 42.973 (***)	F = 41.696 (***)	F = 43.613 (***)
Post-hoc test	b > a (***) c > a, b (***) d > a, b (***)	b > a (**) c > a, b (***) d > a, b (***)	b > a (**) c > a, b (***) d > a, b (***)

LI = Low income; LMI = Lower-Middle Income; UMI = Upper-Middle Income; HI = High Income
****p < 0.001; **p < 0.01*

Table 4. Children out-of-school (%) by income group

Income Group	All $\bar{X}$ ± SD (n)	Males $\bar{X}$ ± SD (n)	Females $\bar{X}$ ± SD (n)
LI[a]	22.7 ± 16.2 (n=21)	21.5 ± 15.6 (n=20)	24.9 ± 17.6 (n=20)
LMI[b]	9.9 ± 7.4 (n=45)	10.8 ± 7.3 (n=42)	11.3 ± 7.5 (n=42)
UMI[c]	6.7 ± 9.9 (n=49)	8.7 ± 10.2 (n=41)	8.3 ± 10.4 (n=41)
HI[d]	4.0 ± 5.9 (n=69)	4.7 ± 6.0 (n=65)	4.7 ± 6.2 (n=65)
Total	8.3 ± 10.6 (n=184)	9.2 ± 10.3 (n=168)	9.7 ± 11.3 (n=168)
ANOVA	F = 24.151 (***)	F = 18.352 (***)	F = 23.385 (***)
Post-hoc test	a > b, c, d (***) b > d (**)	a > b, c, d (***) b > d (**) c > d (*)	a > b, c, d (***) b > d (**)

LI = Low income; LMI = Lower-Middle Income; UMI = Upper-Middle Income; HI = High Income
****p < 0.001; **p < 0.01; *p < 0.05*

were statistically significant for all comparisons, especially between low and high income groups ($p<0.001$) (Table 4).

3.3. School enrolment, primary (% net)

This indicator refers to "the ratio of children of official school age who are enrolled in school for primary education to the population of the corresponding official school age" (WBG, 2025). The global average rate for net enrolment in primary education was 89.8% ± 11.2% across 164 countries/economies with data. Low income countries/economies showed low average rate for primary school enrolment (74.7% ± 19.7%) in comparison to high income countries/economies, where higher income correlated with higher enrolment rate (94.4% ± 4.9%), leading to statistically significant differences between all lower-income categories and high income countries/economies ($p<0.001$). Males had slightly higher primary school enrolment rates than females, 88.0% ± 11.9% and 86.0%± 16.2% respectively, across 123 countries/economies providing gender-specific data. While male enrolment is generally higher, female enrolment is notably lower in lower-middle income countries (81.7% ± 16.4%), underscoring persistent gender disparities in access (Table 5).

3.4. Primary completion rate (% of relevant age group)

This indicator, also known as gross intake ratio to the last grade of primary education, refers to "the number of new entrants (enrolments minus repeaters) in the last grade of primary education, regardless of age, divided by the

Table 5. School enrolment, primary (% net) by income group

Income Group	All $\bar{X}$ ± SD (n)	Males $\bar{X}$ ± SD (n)	Females $\bar{X}$ ± SD (n)
LI[a]	74.7 ± 19.7 (n=17)	75.3 ± 19.1 (n=16)	71.2 ± 20.2 (n=16)
LMI[b]	87.0 ± 9.6 (n=39)	85.3 ± 9.6 (n=32)	81.7 ± 16.4 (n=32)
UMI[c]	91.3 ± 9.2 (n=45)	89.8 ± 10.4 (n=32)	89.8 ± 10.2 (n=32)
HI[d]	94.4 ± 4.9 (n=63)	93.4 ± 5.7 (n=43)	91.8 ± 14.2 (n=43)
Total	89.8 ± 11.2 (n=164)	88.0 ± 11.9 (n=123)	86.0 ± 16.2 (n=123)
ANOVA	F = 20.172 (***)	F = 12.711 (***)	F = 9.161 (***)
Post-hoc test	b > a (***) c > a (***), b (*) d > a, b (***)	b > a (*) c > a (***) d > a (***), b (**)	b > a (*) c > a (***), b (*) d > a (***), b (*)

LI = Low income; LMI = Lower-Middle Income; UMI = Upper-Middle Income; HI = High Income
****p < 0.001; **p < 0.01; *p < 0.05*

Table 6. Primary completion rate (% of relevant age group) by income group

Income Group	All $\bar{X}$ ± SD (n)	Males $\bar{X}$ ± SD (n)	Females $\bar{X}$ ± SD (n)
LI[a]	61.6 ± 15.0 (n=23)	65.3 ± 13.5 (n=22)	61.9 ± 13.7 (n=22)
LMI[b]	86.9 ± 14.3 (n=47)	86.4 ± 13.8 (n=47)	87.5 ± 15.3 (n=47)
UMI[c]	96.0 ± 10.9 (n=49)	95.5 ± 11.3 (n=48)	95.8 ± 10.7 (n=48)
HI[d]	98.5 ± 11.3 (n=63)	98.3 ± 10.8 (n=62)	98.6 ± 12.6 (n=62)
Total	90.2 ± 17.2 (n=182)	90.4 ± 16.0 (n=179)	90.4 ± 17.3 (n=179)
ANOVA	F = 53.658 (***)	F = 44.874 (***)	F = 46.670 (***)
Post-hoc test	b > a (***) c > a, b (***) d > a, b (***)	b > a (***) c > a, b (***) d > a, b (***)	b > a (***) c > a (***), b (*) d > a, b (***)

LI = Low income; LMI = Lower-Middle Income; UMI = Upper-Middle Income; HI = High Income
****p < 0.001; *p < 0.05*

population at the entrance age for the last grade of primary education" (WBG, 2025). The global average completion rate for primary education across 182 countries/economies with data was 90.2% ± 17.2%, with similar rates for males and females, i.e. 90.4% ± 16.0% and 90.4% ± 17.3% respectively, across 179 countries/economies providing gender-specific data. In terms of primary completion rates, children in low income countries trailed far behind (61.6% ± 15.0%) while upper-middle and high income countries demonstrated almost universal completion (96.0% ± 10.9% and 98.5% ± 11.3% respectively). These differences were statistically significant ($p<0.001$) (Table 6).

3.5. Infant mortality rate (per 1,000 live births)

This indicator refers to "the number of infants dying before reaching one year of age, per 1,000 live births in a given year (WBG, 2025). Globally, the average infant mortality rate (IMR) was 21.4% ± 20.1% across 195 countries/economies with available data. Low income countries/economies exhibited the highest rates (49.1% ± 23.0%) compared to high income countries/economies (5.8% ± 5.0%), with statistically significant differences between all lower income categories and high income countries/economies ($p<0.001$). Moreover, the rates for lower-middle income (31.5% ± 16.0%) and upper-middle income (17.0% ± 12.9%) groups also differed significantly from each other and from both low and high income groups. Males consistently had slightly higher mortality rates (23.4% ± 21.6%) than females (19.2% ± 18.1%) across all income levels, with gender specific patterns mirroring the overall trends. These results highlight the disproportionate burden of infant mortality in economically disadvantaged settings, where the compounded effects of inadequate healthcare, poor nutrition, and systemic poverty may also increase the risk of CAN through heightened caregiver stress and insufficient support structures (Table 7).

3.6. Under-5 mortality rate (per 1,000 live births)

This indicator refers to "the probability per 1,000 that a newborn baby will die before reaching age five, if subject to age-specific mortality rates of the specified year" (WBG, 2025). The global average under-5 mortality rate (U5MR) was 28.6% ± 31.0% across 195 countries/economies. Low income countries/economies recorded the highest rates (77.7% ± 38.6%) compared to high income countries/economies (6.8% ± 5.5%), with statistically significant differences between all lower income categories and high income countries ($p<0.001$). Rates in lower-middle income (41.2% ± 24.9%) and upper-middle income (18.9% ± 13.9%) countries/economies also differed significantly from each other and from both low and high income groups. Males had slightly higher mortality rates than females, 30.8% ± 32.8% and 26.3% ± 29.2% respectively, across all income levels, reflecting a consistent gender pattern. The findings underscore that poverty, fragile health systems, and limited disease control efforts not only elevate mortality

Table 7. Infant mortality rates by income group

Income Group	All Mean ± SD	Males Mean ± SD	Females Mean ± SD
LI[a]	49.1 ± 23.0 (n=26)	55.4 ± 22.2 (n=26)	46.0 ± 20.2 (n=26)
LMI[b]	31.5 ± 16.0 (n=51)	34.6 ± 17.5 (n=51)	28.3 ± 14.3 (n=51)
UMI[c]	17.0 ± 12.9 (n=54)	17.5 ± 12.0 (n=54)	14.3 ± 9.7 (n=54)
HI[d]	5.8 ± 5.0 (n=64)	6.6 ± 5.8 (n=64)	5.3 ± 4.5 (n=64)
Total	21.4 ± 20.1 (n=195)	23.4 ± 21.6 (n=195)	19.2 ± 18.1 (n=195)
ANOVA	F = 79.190 (***)	F = 90.114 (***)	F = 86.984 (***)
Post-hoc test	a > b, c, d (***) b > c, d (***) c > d (***)	a > b, c, d (***) b > c, d (***) c > d (***)	a > b, c, d (***) b > c, d (***) c > d (***)

LI = Low income; LMI = Lower-Middle Income; UMI = Upper-Middle Income; HI = High Income
****p < 0.001*

risk, but also create environments where CAN is more likely to occur, further threatening survival and well-being in vulnerable populations (Table 8).

3.7. Immunization (% of children ages 12-23 months)

Two indicators are used to assess the immunization status of children. 'Immunization for DTP' refers to "the percentage of children aged 12-23 months who received DTP vaccinations before 12 months or at any time before the original data collection process", and 'Immunization for measles' refers to "the percentage of children aged 12-23 months who received the measles vaccination before 12 months or at any time before the original data collection process" (WBG, 2025).

The global average immunization rate for DTP is 91.7% ± 63.0% across 148 countries/economies, while immunization rate for measles is 86.2% ± 13.4% across 138 countries/economies. The average immunization rates for DTP showed considerable variability across income groups, with notably full coverage observed in lower-middle income countries/economies (100.1% ± 121.4%); however, these differences were not statistically significant ($p>0.05$). In contrast, measles immunization coverage was significantly higher in high income (94.3% ± 3.4%) and upper-middle income (87.6% ± 11.8%) countries/economies, showing statistically significant differences between all lower-income

Table 8. Under 5 mortality rates by income group

Income Group	All Mean ± SD	Males Mean ± SD	Females Mean ± SD
LI[a]	77.7 ± 38.6 (n=26)	82.7 ± 39.3 (n=26)	72.5 ± 37.9 (n=26)
LMI[b]	41.2 ± 24.9 (n=51)	44.6 ± 26.5 (n=51)	37.6 ± 23.2 (n=51)
UMI[c]	18.9 ± 13.9 (n=54)	20.6 ± 15.1 (n=54)	17.1 ± 12.6 (n=54)
HI[d]	6.8 ± 5.5 (n=64)	7.4 ± 6.0 (n=64)	6.2 ± 5.0 (n=64)
Total	28.6 ± 31.0 (n=195)	30.8 ± 32.8 (n=195)	26.3 ± 29.2 (n=195)
ANOVA	F = 84.408 (***)	F = 87.210 (***)	F = 80.921 (***)
Post-hoc test	a > b, c, d (***) b > c, d (***) c > d (***)	a > b, c, d (***) b > c, d (***) c > d (***)	a > b, c, d (***) b > c, d (***) c > d (***)

LI = Low income; LMI = Lower-Middle Income; UMI = Upper-Middle Income; HI = High Income
****p < 0.001*

Table 9. Immunization rates by income group

Income Group	DPT $\bar{X}$ ± SD (n)	Measles $\bar{X}$ ± SD (n)
LI[a]	74.4 ± 16.1 (n=26)	72.3 ± 15.8 (n=26)
LMI[b]	100.1 ± 121.4 (n=51)	82.0 ± 14.1 (n=51)
UMI[c]	88.4 ± 9.5 (n=54)	87.6 ± 11.8 (n=53)
HI[d]	94.8 ± 3.5 (n=62)	94.3 ± 3.4 (n=62)
Total	91.7 ± 63.0 (n=148)	86.2 ± 13.4 (n=138)
ANOVA	F = 1.056 (****)	F = 26.377 (***)
Post-hoc test	-	b > a (***) c > a (***), b (*) d > a, b (***), c (*)

DPT differences were not significant *(p = .369); only Measles is included in ANOVA/post hoc.*
LI = Low income; LMI = Lower-Middle Income; UMI = Upper-Middle Income; HI = High Income
****p < 0.001; *p < 0.05; ****p>0.05*

categories and high income countries ($p<0.001$), and also highlighting persistent disparities in public health infrastructure capacity (Table 9).

3.8. Adolescent fertility rate (births per 1,000 women ages 15-19)

This indicator refers to "the number of births per 1,000 women aged 15-19" (WBG, 2025). Globally, the average adolescent fertility rate stood at 43.7% ± 39.1%; however, substantial disparities existed across income groups. Low income countries/economies exhibited rates nearly six times higher than those of high income countries/economies (99.0% ± 42.5% and 16.9% ± 17.1% respectively). These differences were highly significant ($p<0.001$) and underscored a strong association between poverty, limited access to education, and adverse reproductive health outcomes (Table 10).

3.9. Child labour (%)

This indicator refers to "the percentage of children aged 5–17 years who are involved in child labour at the moment of the original data collection process. A child is considered to be involved in child labour if: (a) children aged 5–11 years who did at least one hour of economic activity and/or more than 21 hours of unpaid household services, (b) children aged 12–14 years who did at least 14 hours of economic activity and/or more than 21 hours of unpaid household services, (c) children aged 15–17 years who did at least 43 hours of economic activity during the reference week" (UNICEF, 2025a). Across 99 countries/economies with data, the global average for the prevalence of child labour was 14.1% ± 11.0% with similar rates for males and females, i.e. 14.7% ± 11.4%. The prevalence of child labour sharply declined with increasing income (25.1% ± 10.9% in low income and 4.4% ± 1.9% in high income countries/economies). All pairwise differences between income groups (except upper-middle vs. high income) were statistically significant ($p<0.001$), with girls and

Table 10. Adolescent fertility rates by income group

Income Group	$\bar{X}$ ± SD (n)	ANOVA	Post-hoc test
LI[a]	99.0 ± 42.5 (n=26)	F = 67.391 (***)	a > b, c, d (***) b > c, d (***) c > d (***)
LMI[b]	63.4 ± 33.8 (n=51)		
UMI[c]	40.5 ± 28.1 (n=54)		
HI[d]	16.9 ± 17.1 (n=85)		
Total	43.7 ± 39.1 (n=216)		

LI = Low income; LMI = Lower-Middle Income; UMI = Upper-Middle Income; HI = High Income
****p < 0.001*

Table 11. Child labour rates by income group

Income Group	All $\bar{X}$ ± SD (n)	Males $\bar{X}$ ± SD (n)	Females $\bar{X}$ ± SD (n)
LI[a]	25.1 ± 10.9 (n=21)	25.0 ± 11.7 (n=21)	25.1 ± 10.2 (n=21)
LMI[b]	16.0 ± 9.1 (n=40)	16.7 ± 10.0 (n=40)	15.1 ± 8.5 (n=40)
UMI[c]	6.5 ± 5.9 (n=31)	7.2 ± 7.0 (n=31)	5.6 ± 4.8 (n=31)
HI[d]	4.4 ± 1.9 (n=7)	5.5 ± 2.4 (n=7)	3.1 ± 1.7 (n=7)
Total	14.1 ± 11.0 (n=99)	14.7 ± 11.4 (n=99)	14.7 ± 11.4 (n=99)
ANOVA	F = 24.483 (***)	F = 18.319 (***)	F = 31.730 (***)
Post-hoc test	a > b, c, d (***) b > c (***)	a-> b (**), c, d (***) b > c (***)	a > b, c, d (***) b > c (***)

LI = Low income; LMI = Lower-Middle Income; UMI = Upper-Middle Income; HI = High Income
****p < 0.001; **p < 0.01*

boys equally affected in low income contexts (Table 11).

3.10. Violent discipline (%)

This indicator refers to "the percentage of children aged 1–14 years who experience any violent discipline (psychological aggression and/or physical punishment) in the past month before the original data collection process" (UNICEF, 2025a). The global average rate for violent discipline was 72.9% ± 13.8% across 99 countries/economies with data, with slightly higher rates for males than females (74.5% ± 13.2% and 71.5% ± 14.5% respectively across 98 countries/economies providing gender-specific data). The violent discipline rates remained alarmingly high in low and lower-middle income countries/economies (82.5% ± 8.8% and 77.6% ± 11.2% respectively), particularly among boys. Rates declined with income, but remained present even in upper-middle and high income contexts, suggesting cultural and systemic challenges beyond economic conditions. The differences between income groups were statistically significant ($p<0.001$) (Table 12).

4. DISCUSSION

The findings of this study highlight substantial disparities in child well-being indicators across different income groups, and that children in low and lower-middle income countries/economies face greater disadvantages compared to their peers in upper-middle and high income countries/economies.

Birth registration, a fundamental right as recognized in the United Nations (UN) Convention on the Rights of the Child (CRC), which states that "the child shall be registered immediately after birth and shall have the right from birth to a name, the right to a nationality" (UN, 1989), is defined as the official and permanent recording of a child's birth with a government authority and provides the legal recognition of her/his existence. It is the prerequisite to obtaining a birth certificate, a personal document issued by the State as the legal proof of identity. It also enables the enjoyment of other rights and benefits such as access to education, health care and other essential services, and protection from abuse, discrimination, and exploitation (UNICEF, n.d.a; Apland et al., 2014; Miller, 2007). Birth registration also provides accurate data regarding the population, so that governments can allocate resources accordingly meeting the needs assessed (UNICEF, 2024a).

We found that the global average rate for the completeness of birth registration between 2014 and 2022 was 84.2%. A recent publication by UNICEF reveals that the global birth registration rates increased from 75% to 77% between 2019 and 2024; however, an estimated 150 million children under the age of 5, i.e. 2 in 10 children, remain unregistered, and are therefore at risk of excluded from essential services and protection. Among the many factors that hinder birth registration - such as parental lack of awareness and marginalization based on ethnicity, religion or gender- poverty, often in conjunction with

Table 12. Violent discipline rates by income group

Income Group	All Mean ± SD	Males Mean ± SD	Females Mean ± SD
LI[a]	82.5 ± 8.8 (n=20)	83.2 ± 8.4 (n=20)	81.9 ± 9.2 (n=20)
LMI[b]	77.6 ± 11.2 (n=36)	78.7 ± 10.6 (n=36)	76.4 ± 11.8 (n=36)
UMI[c]	64.8 ± 13.3 (n=35)	67.0 ± 13.2 (n=35)	62.5 ± 13.5 (n=35)
HI[d]	63.2 ± 12.4 (n=8)	65.9 ± 13.2 (n=7)	60.8 ± 13.8 (n=7)
Total	72.9 ± 13.8 (n=99)	74.5 ± 13.2 (n=98)	71.5 ± 14.5 (n=98)
ANOVA	F = 13.936 (***)	F = 11.890 (***)	F = 15.080 (***)
Post-hoc test	a > c, d (***) b > c (***), d (*)	a > c (***), d (**) b > c (***), d (*)	a > c, d (***) b > c (***), d (*)

LI = Low income; LMI = Lower-Middle Income; UMI = Upper-Middle Income; HI = High Income
****p < 0.001; *p < 0.05; ****p>0.05*

these factors, is recognized prevalent limiting access to registration services (UNICEF, 2024a). The findings of our study also demonstrated a strong positive association between birth registration rates and income levels, revealing statistically significant differences between all lower income categories and high income countries/economies.

CAN is often associated with how children function at school. Children who experience or have a history of CAN have compromised educational status and poorer educational outcomes compared to their peers. CAN affects the cognitive and language skills, as well as emotion regulation abilities of children, which lead to lower scores, particularly in mathematics and verbal tests, negative classroom behaviours, higher rates of absenteeism and more school suspensions. Victims of CAN show poor academic performance, and are faced with increased risk of short- and long-term academic failure, reduced school completions and school dropout. Out of school children are considered to become an at-risk group, and are more likely to be involved in child labour, in addition to alcohol and substance use and mental health problems (Zhang et al., 2025; Smith, 2025; Danbi, 2021; Armfield et al., 2020; Hagborg et al., 2018; McGuire and Jackson, 2018; Romano et al., 2015).

Our study found the global average rates to be 8.3% (n=184) for out-of-school children; 89.8% (n=164) for net enrolment in primary education; and 90.2% (n=182) for primary education completion. The latest report by the United Nations Educational, Scientific and Cultural Organization (UNESCO) acknowledges that globally there are 251 million children who are out of school; and the out-of-school rate is 33% in low income, 19% in lower-middle income, 8% in upper-middle income and 3% in high income countries (UNESCO, 2024). Our findings showed similar results: 22.7% in low income, 9.9% in lower-middle income, 6.7% in upper-middle income and 4.0% in high income countries/economies. The average rates for out-of-school children decreased sharply with higher income levels, revealing statistically significant differences between low and high income groups. The above-mentioned report also states that the completion rates in primary education have increased from 85% to 88% between 2015 and 2023 (UNESCO, 2024); however, the rates are found to be much lower, just over 50.0%, in low income countries (UN Department of Economic and Social Affairs [UN DESA], 2023). Similarly, our findings showed that upper-middle and high income countries demonstrated almost full completion rates with over 95.0%, while low income countries lagged behind with 61.6%, leading to statistically significant differences between income groups.

Infant mortality is a key component of under-five mortality, and both serve as measures of child survival, reflecting underlying social, economic and environmental conditions (United Nations Inter-Agency Group for Child Mortality Estimation [UN IGME], 2025). Ending preventable deaths of newborns and children under five years of age is a target of the Sustainable Development Goals (SDG) (UN DESA, n.d.). Despite being largely preventable, an estimated 4.8 million children under five died in 2023, largely due to inequities in health care, nutrition, protection, and socio-economic status, highlighting persistent disparities in survival chances (UN IGME, 2025). Studies reveal a significant inverse relationship between income and child mortality, with disadvantaged socio-economic status indicating higher rates of adverse outcomes, including maltreatment-related hospitalization and death (Sanhueza et al., 2024; Chen et al., 2023; O'Hare et al., 2013; Collison et al., 2007). Our findings revealed that global average IMR was 21.4% and U5MR was 28.6% across 195 countries/economies. Both IMR and U5MR displayed a strong and consistent inverse relationship with income levels. Low income countries/economies exhibited significantly higher mortality rates than all other income groups, with rates in lower-middle and upper-middle income countries/economies also differing significantly from each other and from high income countries/economies.

Immunization is a key public health strategy and a fundamental element of primary health care. It is considered the safest and most cost-effective method in the prevention and control of infectious diseases and outbreaks, averting 3.5 to 5 million

deaths annually (WHO, n.d.; UNICEF, 2024b). The DTP vaccine is administered to children to provide immunization against diphtheria, tetanus, and pertussis. A primary three-dose DTP series is recommended, with the first dose administered as early as 6 weeks of age, and completed by 6 months of age, and a booster is required at 1-6 years of age. Two doses of measles vaccine should be administered to children, with the first routine dose given at age 9 months, and a second routine dose given between 15-18 months (WHO, 2012). The first dose of DTP serves as an indicator of access to immunization services, while the third dose reflects the effectiveness of a country's routine child immunization program. Measles vaccination coverage, due to the high transmissibility of the virus, exposes the gaps of population immunity and is often referred to as a "canary in the coalmine". As such, measles vaccine coverage is used to monitor the overall protection status of the population (WHO, n.d.; UNICEF, 2024b). There is evidence that children with presumed or confirmed CAN often have unmet primary healthcare needs, including immunization. Poverty and limited access to healthcare further complicate these disparities (Stockwell et al., 2008).

Latest data from WHO and UNICEF point out that global number of zero-dose children, i.e. children missing out on any vaccination, is 14.5 million as of 2023. The coverage of the third dose of DTP vaccine was 84%, and the coverage of the first dose of measles vaccine was 83%, both of which have declined from the pre-pandemic rate of 86% (WHO, 2024c; UNICEF, 2024b). Our study found that the average immunization rate for DTP was 91.7% across 148 countries/economies, and the average immunization rate for measles was 86.2% across 138 countries/economies - both of which exceed the figures reported by WHO and UNICEF. The average immunization rates for DTP and measles increased with income levels. Notably, lower-middle income countries/economies achieved a 100% DTP immunization rate. While no statistically significant differences were observed between income groups regarding DTP immunization, there were significant differences in measles immunization rates between all lower income and high income countries/economies.

Adolescent pregnancy is a substantial public health issue with well-established causes and profound socio-economic and health consequences. Rates of adolescent pregnancy are higher among individuals with lower levels of educational or economic status. Additionally, social and gender norms that value motherhood or enforce child marriages place girls at increased risk of unintended pregnancies (WHO, 2024a). CAN is recognized as a risk factor for, as well as a predictor of, adolescent pregnancy in addition to poverty as a confounding factor. Victims of CAN, regardless of their gender, tend to engage in their first consensual sexual experience at a younger age, have a higher number of sexual partners, are more likely to participate in one-night stands, and are at higher risk of having sex under the influence in comparison to their peers. Studies indicate that female victims of CAN are twice as likely to experience adolescent pregnancy and childbirth (Russotti et al., 2023; Shusterman et al., 2021; Garwood et al., 2015; Negriff et al., 2015; Madigan et al., 2014; Noll and Shenk, 2013).

In 2019, 21 million pregnancies among adolescents aged 15-19 are estimated to occur in low and middle income countries, resulting in an estimated 12 million births. In 2023, about 13% of adolescents worldwide gave birth before the age of 18. The global adolescent birth rate among adolescents aged 15-19 declined from $64.5\%_0$ in 2000 to $41.3\%_0$ in 2023. However, progress has remained slower in East Asia and the Pacific, as well as in the Middle East and North Africa, while the highest rates persist in Sub-Saharan Africa and the lowest rates are observed in Europe and North America (UNFPA, 2025; WHO, 2024a; UNICEF, 2024c). The findings of our study showed that the global average adolescent fertility rate was 43.7%, with statistically significant differences between income groups, such that the rates in low income countries/economies were almost six times higher than those of high income group.

Child labour is defined as work that children are too young to perform or that is hazardous due to its nature or conditions. It may take the form of market-based labour, where children work in formal or informal sectors for wages, or do

unpaid work at home or in a family business. Child labour is recognized as a form of abuse in itself (International Labour Organization [ILO] and UNICEF, 2025; Ahad et al., 2024). Child labour arises from a combination of factors rather than one single factor. Poverty is the primary drive, alongside illiteracy, low family income, unemployment, and financial instability due to sudden illness or job loss of the parent(s) or caregiver(s). Children's young age, school dropout status, low wages and long working hours make them vulnerable, increasing their risk of abuse. Additionally, social and cultural norms and practices such as class difference, violent discipline, chaotic family environments and domestic violence contribute to child labour and CAN (Ahad et al., 2024; UNICEF, n.d.b). Child labour deprives children of their fundamental rights, including access to education, healthcare, entertainment and social interaction with family and peers. It undermines their dignity and potential, robbing them of their childhood and adversely affecting their physical, psychological, and cognitive development (ILO and UNICEF, 2025; Ahad et al., 2024).

Around 8% of world's children - 138 million - are in child labour. Of the 54 million children in hazardous work, 40% are under age 15, and 20% is under age 12. There are wide variations between regions (ILO and UNICEF, 2025; UNICEF, n.d.b). Child labour is most prevalent in low income countries with higher poverty levels, yet more than half of all child labour cases are found in middle income countries (Thévenon and Edmonds, 2019). Globally, 61% of the children are involved in child labour work in agriculture, mainly on family farms. Around 27% are involved in services such as domestic work, while 13% work in industries like mining, manufacturing, and construction. Although approximately two-thirds of working children attend school, child labour is closely linked to reduced school completion rates, higher drop-out rates and diminished educational opportunities (ILO and UNICEF, 2025; Thévenon and Edmonds, 2019; UNICEF, n.d.b). Our study found that the average child labour rate was 14.1% across 99 countries/economies, and with prevalence markedly declining as income levels rose. All pairwise differences between income groups were statistically significant except between upper-middle vs. high income groups.

Violent discipline is defined as "any physical punishment and/or psychological aggression" (UNICEF, 2018). As the most common form of violence against children within home, it has been linked with various factors, particularly low socioeconomic status. This is reflected in the high prevalence of reported physical aggression as a disciplinary method in low and middle income countries, where 75% of children aged 0 to 14 have been exposed to some form of violent discipline by their parents or caregiver(s) (Kang et al., 2023; Cuartas et al., 2019).

Approximately 1.6 billion children, i.e. two-thirds of all children, regularly experience violent discipline, including around 1.2 billion who experience corporal punishment at home by their caregivers. Nearly 400 million children under five are regularly exposed to physical punishment or psychological aggression at home. These patterns are reinforced by persistent harmful social norms, as over one in four mothers and primary caregivers believe that physical punishment is required in order to raise and educate children perfectly. Structural and economic determinants, including poverty, unemployment, and inequality, as well as individual characteristics of caregivers have been identified as risk factors for violent discipline (UNICEF, 2025b). The findings of our study showed that the global average prevalence of violent discipline was 72.9% across 99 countries/economies. Although the rates were particularly high in low and lower-middle income groups, violent discipline persisted in upper-middle and high income groups as well, and the differences between income groups were statistically significant.

5. CONCLUSION

This study demonstrates that structural forms of child abuse and child rights violations are deeply intertwined with both economic conditions and systemic cultural factors. While children in low and lower-middle income countries face the most severe disadvantages across key indicators-

such as birth registration, school enrolment, immunization, and protection from child labour or violent discipline- these issues are not confined to poorer regions. The persistence of violent discipline in upper-middle and high income contexts highlights that cultural norms and harmful practices continue to undermine child rights even where economic resources are greater.

The results call for multi-dimensional strategies at global, national, and local levels. Efforts must go beyond alleviating poverty to address discriminatory norms, inadequate policy frameworks, and gaps in child protection systems. Investment in universal birth registration, equitable education, access to healthcare, and robust child protection mechanisms is essential. Moreover, culturally sensitive interventions aimed at transforming social attitudes towards childrearing and discipline are critical for achieving sustainable improvements in child well-being.

International cooperation, alongside stronger commitments from national governments, is necessary to close these gaps. Only through integrated approaches that combine social, legal, educational, and economic reforms can we ensure that all children, regardless of where they are born, enjoy their fundamental rights and grow up free from abuse, neglect, and exploitation.

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