

CHILDREN'S LIVES:
INTERNATIONAL
CONFERENCE ON
CHILDREN AND THEIR
FAMILIES USING THE
MULTIPLE INDICATOR
CLUSTER SURVEYS
(MICS)

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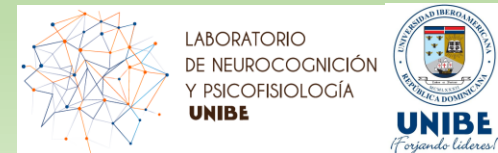
Impact of Adolescent Motherhood, Poverty, and Childrearing on Developmental Outcomes in Early Childhood

Cross-sectional Analysis of Household Surveys
from Latin America and the Caribbean

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Research in Context

Evidence before this study:

We searched PubMed, EBSCOhost, EMBASE, and SciSpace online databases for “early childhood development” and “adolescent pregnancy.” We included publications in any language between 2015 and 2024 and screened 283 studies, plus 23 earlier studies cited in these publications; we excluded all other publications. We found four recent observational studies conducted in single countries that analyzed the associations between adolescent motherhood, poverty, and ECD.

Added value of this study:

This is the first cross-national study to analyze the differential impact of socioeconomic and childrearing factors on early childhood development according to the adolescent status of the mother. We provide evidence that both poverty and childrearing practices interact in the association between adolescent motherhood and early childhood development delay.

Implications of all the available evidence:

The findings underscore the potential benefits of policies that improve educational and employment opportunities for adolescents and help delay the age of motherhood.

The Impact of Adolescent Motherhood on Early Childhood Development (ECD)

We explore the impact of adolescent motherhood on ECD using data from MICS household surveys from Latin America and the Caribbean.

Adolescent pregnancy is a complex issue that gained global attention in 1994.

The complexity of adolescent pregnancy results from intertwined socioeconomic and educational factors that constrain life opportunities for adolescents and have significant consequences for the health and developmental outcomes of their children.

Children of adolescent mothers are at a higher risk of:

- poor health outcomes: low birth weight, preterm birth, undernutrition, higher mortality rates, poor physical and mental health
- developmental delay
- limited nurturing care and greater physical assault and psychological aggression from their mothers
- lower language development, educational attainment, life satisfaction, and personal income

These challenges are not solely due to the mother's age.

Socioeconomic factors, limited educational opportunities, and exposure to gender-based violence also play a significant role.

Adolescent Pregnancy in Latin America and the Caribbean

Prevalence of adolescent pregnancy

Adolescent pregnancy is a significant challenge in Latin America and the Caribbean:

- second-highest prevalence of adolescent pregnancy globally
- fertility rate of 266 births per 1,000 women under the age of 20
- 14.3% of children born to mothers aged 15 to 19 (1.4 million children)

Regional variation

Wide range of variation in percentage of children born to adolescent mothers.



Study Aims

Study Aim 1: Association between Adolescent Motherhood and ECD

Confirm the association between adolescent motherhood and ECD across diverse contexts in Latin American and Caribbean countries. By examining the impact of adolescent motherhood on ECD, we can better understand the challenges faced by young mothers and inform interventions and policies to support child development.

Study Aim 2: Frequency of Violent Discipline towards Children among Adolescent Mothers

Determine if the use of violent discipline is more frequent among adolescent mothers compared to older mothers. By examining this aspect, we can gain insights into the unique challenges faced by adolescent mothers and the potential impact on childrearing practices.

Study Aim 3: Impact of Mothers' Beliefs about Violence

Analyze the impact of mothers' beliefs about physical punishment of children and partner violence on early childhood development, specifically considering the mother's adolescent status.

By understanding these factors, we can inform effective interventions and policy-making that can alleviate the negative impacts of adolescent motherhood on ECD, helping break the cycle of disadvantage across generations.

Methods: Cross-sectional Study from MICS rounds 5 and 6

15 countries with a diversity in prevalence of children born to adolescent mothers

MICS5

1. Belize (MICS5 2015-16)
2. El Salvador (MICS5 2014)
3. Mexico (MICS5 2015)
4. Panama (MICS5 2013)
5. Paraguay (MICS5 2016)

MICS6

1. Argentina (MICS6 2019-20)
2. Costa Rica (MICS6 2018)
3. Cuba (MICS6 2019)
4. Dominican Republic (MICS6 2019)
5. Guyana (MICS6 2019-20)
6. Honduras (MICS6 2019)
7. Jamaica (MICS6 2022)
8. Suriname (MICS6 2018)
9. Trinidad and Tobago (MICS6 2022)
10. Turks and Caicos (MICS6 2019-20)

Note: Analysis of Jamaica and Trinidad and Tobago is in progress.

Data Collection and Analysis

Merging of Datasets

Merged three datasets from MICS:

- **Household Questionnaire**
- **Questionnaire for Individual Women**
- **Questionnaire for Children Under Five**

Exclusion Criteria

Excluded children without data on ECD or mother's age at the time of birth

Data disaggregation

Mother's age (<20 and ≥ 20)
Child's sex at birth
Child's age
Family wealth quintile
Mother's educational level

Dependent variable

Early Childhood Development Index (ECDI) or
Early Childhood Development Index 2030 (ECDI2030)

Methods by Aim

Study Aim 1: Association between Adolescent Motherhood and ECD

Conduct an ANCOVA to examine the relationship between ECD and the child's age and sex at birth.

Perform an ANCOVA to investigate the association between wealth quintile, maternal educational level, and adolescent status.

Study Aim 2: Frequency of Violent Discipline towards Children among Adolescent Mothers

Student's t-tests to determine differences in positive and negative parenting practices between mothers aged <20 and ≥ 20 .

Study Aim 3: Impact of Mothers' Beliefs about Violence

Analyze frequency distributions and Chi-Square test to compare perspectives on physical punishment of children and justification of violence in relationships between mothers aged <20 and ≥ 20 .

Calculate average ECD scores and use Student's t-tests to explore potential relationships between ECD scores and beliefs in physical punishment or justification of violence in relationships.

Results: Descriptive Statistics

Combined sample size: n=24,542 children

20.8% were born to adolescent mothers

Children's age, wealth quintile, and maternal education levels are associated with ECD scores across countries –despite ECD mean scores variation between countries.

- As expected, children aged 4 have higher ECD index scores than children aged 3 across countries.
- ECD index scores improve with higher wealth quintiles and maternal education levels, indicating a positive correlation between socioeconomic position, educational attainment, and ECD.
- Female children tend to have higher ECD scores across countries, and children born to mothers aged ≥ 20 tend to have higher ECD index scores across all countries compared to children born to mothers aged < 20 .

Adolescent mothers were poorer and reached lower educational attainment than mothers ≥ 20 in most countries.

- The differences in wealth quintile are statistically significant across all countries (except Belize).
- Educational differences are less consistent: 8 countries showing significant effect sizes and 5 countries not showing differences.

Results: Impact of adolescent maternal status on ECD

ANCOVA

Country	ANCOVA	η^2 Children's Age (control variable)	η^2 Sex (control variable)	η^2 Wealth quintile (control variable)	η^2 Educational level (control variable)	η^2 Mother's adolescent status (independent variable)
Model 1						
Argentina	F(3,2351)=42.885***	.043***	.003**			-.005**
Belize	F(3,954)=27.314***	.063***	.019***			-
Costa Rica	F(3,1394)=9.477***	.006**	.012***			-
Cuba	F(3,2086)=20.340***	.025***	-			-.002*
Dominican Republic	F(3,2869)=32.920***	.023***	.006***			-.005***
El Salvador	F(3,2699)=32.151***	.028***	.003**			-.003**
Guyana	F(3,959)=16.954***	.041***	.011**			-
Honduras	F(3,3133)=43.945***	.038***	.002*			-
Mexico	F(3,3036)=61.384***	.048***	.01***			-
Panama	F(3,1984)=19.472***	.027***	-			-.002*
Paraguay	F(3,1566)=24.515***	.030***	-			-.013***
Suriname	F(3,1376)=14.080***	.018***	.004*			.009***
Turks and Caicos	F(3,125)=1.500*	-	-			-
Model 2						
Argentina	F(5,2218)=44.549***	.052***	.003**	.033***	.002*	-.002*
Belize	F(5,916)=23.894***	.059***	.017***	.040***	-	-
Costa Rica	F(5,1372)=22.266***	.008***	.011***	.055***	-	-
Cuba	F(5,2085)=28.921***	.026***	-	.031***	-	-
Dominican Republic	F(5,2771)=50.820***	.027***	.006***	.050***	-	-
El Salvador	F(5,2526)=67.404***	.033***	.005***	.018***	.019***	-.002*
Guyana	F(5,940)=26.380***	.048***	.008**	.077***	-	-
Honduras	F(5,3002)=52.282***	.09***	.002*	.040***	-	-
Mexico	F(5,2969)=53.357***	.048***	.011***	.024***	-	-
Panama	F(5,1815)=53.569***	.032***	-	.098***	-	-
Paraguay	F(5,1533)=46.148***	.030***	-	.089***	-	-.004*
Suriname	F(5,1313)=30.692***	.019***	.004*	.070***	.006**	.004*
Turks and Caicos	F(5,125)=3.876**	-	.045*	.10***	-	-

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Model 1: Controls for child's age and sex at birth

- All models for each country are significant
- Child's age is a significant predictor of ECD
- Child's sex at birth is associated with ECD but effect sizes are small.
- The adolescent status of the mother shows a small but significant effect on ECD scores in Argentina, Cuba, the Dominican Republic, El Salvador, Panama, Paraguay, and Suriname.
- In Belize, Costa Rica, Guyana, Honduras, Mexico, and Turks and Caicos, the adolescent status of the mother does not significantly impact ECD scores after controlling for the child's age and sex.

Model 2: Controls for child's age, sex at birth, wealth quintile, and education

- All models for each country are significant
- Wealth quintile consistently shows an effect on ECD
- Maternal educational level significantly impacts ECD in Argentina, El Salvador, and Suriname.
- The adolescent maternal status remains significant when controlling for wealth quintile and education in Argentina, El Salvador, Paraguay, and Suriname.

Results: Positive and negative discipline by adolescent maternal status

Mean scores comparison

Country	Wealth quintile			Education		
	Mother <20 \bar{x} (SD)	Mother ≥ 20 \bar{x} (SD)	Effect Size (f)	Mother <20 \bar{x} (SD)	Mother ≥ 20 \bar{x} (SD)	Effect Size (f)
Argentina	2.21 (1.21)	2.86 (1.43)	-.27***	2.80 (-.84)	3.07 (-.95)	-.21***
Belize	2.66 (1.23)	2.82 (1.41)	-	2.18 (1.14)	2.20 (1.28)	-
Costa Rica	2.09 (1.21)	2.59 (1.39)	-.20***	2.71 (-.89)	2.71 (1.13)	-
Cuba	2.54 (1.34)	3.12 (1.40)	-.23***	3.18 (-.51)	3.44 (-.54)	-.24***
Dominican Republic	2.13 (1.17)	2.72 (1.41)	-.23***	2.70 (1.07)	2.97 (1.14)	-.17***
El Salvador	2.62 (1.34)	2.92 (1.43)	-.12***	1.96 (-.87)	2.17 (1.08)	-.10***
Guyana	2.12 (1.26)	2.61 (1.48)	-.18***	2.67 (-.70)	2.72 (-.89)	-
Honduras	2.38 (1.28)	2.53 (1.37)	-.06*	1.50 (-.91)	1.63 (1.05)	-.05*
Mexico	2.38 (1.21)	2.54 (1.33)	-.06**	2.19 (-.76)	2.25 (-.97)	-
Panama	1.75 (1.01)	2.13 (1.38)	-.12***	2.34 (1.07)	2.42 (1.19)	-.06*
Paraguay	2.34 (1.17)	2.89 (1.45)	-.21***	2.29 (1.02)	2.48 (1.24)	-.09*
Suriname	2.28 (1.22)	2.73 (1.43)	-.18***	2.12 (.72)	2.43 (1.01)	-.17***
Turks and Caicos	2.17 (1.17)	3.32 (1.35)	-.47*	3.33 (-.52)	3.61 (-.55)	-

Notes: **p<0.01 in Student's t-test *** p<0.001 in Mann-Whitney's test.

Child discipline module: The module consists of eleven statements regarding methods of child discipline and is an adapted version from the Parent-Child Conflict Tactics Scale. The adult participant was asked to indicate whether they have used any of the discipline methods during the past month. For this study, we categorized the methods into two categories: positive discipline and negative discipline.

Positive discipline	Averaging answers to the following statements computed this variable: took away privileges, explained why the behavior was wrong, and gave the child something else to do. The positive discipline variable scores ranged from 0 to 1.
Negative discipline	Averaging answers to the following statements computed this variable: shook the child; shouted, yelled or screamed at the child; spanked, hit or slapped child on the bottom with bare hands; hit the child on the bottom or elsewhere with a belt, brush, stick, etc.; called child dumb, lazy or another name; hit or slapped the child on the face, head or ears; hit or slapped the child on the hand, arm or leg; and beat child up as hard as one could. The negative discipline variable ranged from 0 to 1.

- Mean scores for positive discipline are similar for mothers aged <20 and ≥ 20 , with most countries showing no significant difference.
- El Salvador, Panama, and Paraguay show a slight, yet significant, frequency of positive discipline in mothers aged ≥ 20 .
- Mean scores for negative discipline are mostly small across countries, with Argentina, Costa Rica, the Dominican Republic, Guyana, and Honduras showing a significant difference, indicating less use of negative discipline among mothers aged 20 and above.
- The Dominican Republic shows:
 - A higher mean score for positive discipline among adolescent mothers than mothers aged ≥ 20 .
 - The largest significant difference in negative discipline, with adolescent mothers scoring higher than mothers aged ≥ 20 .
- Although the data show a trend toward more positive and less negative discipline practices among mothers aged ≥ 20 , these differences are always small.

Results: Effect of mother's justification of physical punishment of children and partner violence on ECD by mother's adolescent status

Country	Mother's age group (%)	ECD by age group (mean)	Mother believes in physical punishment of child (%)	Mother believes in physical punishment of child (T-test)	Mother does not believe in physical punishment of child (T-test)	Effect Size (Cohen's d)	Mother justifies partner's violence (%)	Mother justifies partner's violence (T-test)	Mother does not justify partner's violence (T-test)	Effect Size (Cohen's d)
Argentina	<20	6.88	4.7%***	6.33	6.92*	.41	3.4%	6.75	6.89	-
	≥20	7.18	1.3%	7.20	7.28	-	3.8%	6.85	7.29*	.30
Belize	<20	7.32	13.5%	7.11	7.13	-	7.2%	7.00	7.14	-
	≥20	7.24	11.2%	7.52	7.41	-	5.4%	7.19	7.45	-
Costa Rica	<20	6.55	21.1%	6.43	6.60	-	4.4%	7.08	6.54	-
	≥20	6.71	27.8%*	6.64	6.74	-	4.2%	6.61	6.72	-
Cuba	<20	6.89	5.3%	6.87	6.93	-	3.2%	7.37	6.91	-
	≥20	7.07	2.8%	6.64	7.12**	.37	2.1%	7.11	7.09	-
Dominican Republic	<20	6.62	8.7%	5.91	6.70***	.24	2.4%	6.47	6.62	-
	≥20	6.88	4.5%	6.57	6.92*	.50	2.5%	6.78	6.89	-
El Salvador	<20	6.27	13.1%	6.24	6.31	-	9.5%*	5.93	6.33*	.28
	≥20	6.47	10.3%	6.60	6.52	-	6.6%	6.25	6.55	-
Guyana	<20	7.37	13.8%	7.06	7.58	-	24.9%***	7.05	7.61*	.30
	≥20	7.48	7.5%	7.45	7.51	-	14.4%	6.82	7.60**	.44
Honduras	<20	5.86	34.3%	5.71	5.99**	.21	5.5%	5.97	5.86	-
	≥20	5.97	21.3%	5.90	6.09*	.13	6.5%	5.64	6.03*	.27
Mexico	<20	6.54	5.2%	5.90	6.74***	.58	7.2%	6.57	6.67	-
	≥20	6.57	3.7%	6.58	6.60	-	5.5%	6.24	6.62*	.27
Panama	<20	6.15	4.0%	6.11	6.25	-	11.9%	5.80	6.28	-
	≥20	6.32	3.5%	6.13	6.63*	.32	10.7%	5.53	6.66***	.75
Paraguay	<20	6.10	11.7%	5.84	6.34*	.35	9.3%*	6.12	6.25	-
	≥20	6.54	8.5%	6.52	6.70	-	6%	6.16	6.70*	.36
Suriname	<20	6.46	22%	5.59	6.74***	.67	5.7%	6.90	6.44	-
	≥20	6.93	23.8%	6.62	7.03**	.24	3.3%	6.49	6.95	-
Turks and Caicos	<20	7.83	33.3%	7.00	8.25	-	16.7%	5	8.40**	6.21
	≥20	7.87	27.5%	7.58	8.27*	.53	11.7%	7.91	7.98	-

Notes: In Chi-squared tests, * p<0.05, **p<0.01, *** p<0.001. Chi-squared yes/no mother believes in physical punishment of child: X²(1)=15*150*** in Argentina and X²(1)=4*934* in Costa Rica.

- >20% women of any age believe in the physical punishment of children in Costa Rica, Honduras, Suriname, and Turks and Caicos.
- Adolescent mothers believe in physically punishing their children more frequently than mothers aged ≥20 in all the countries except Costa Rica and Suriname; differences are only significant in Argentina and Costa Rica.
- Among women of any age, justifying their partner's violence occurs less frequently than believing in physically punishing their child in most countries, except in Guyana, Mexico, and Panama, and among women aged ≥20 in Argentina.
- Adolescent mothers justify their partner's violence more frequently than mothers ≥20 in all the countries except Argentina, the Dominican Republic, and Honduras. Differences are statistically significant in El Salvador, Guyana, and Paraguay.
- Among mothers who do not believe in physically punishing their children have children with higher ECD scores:
 - Adolescent mothers: Argentina, Dominican Republic, Honduras, Mexico, Paraguay, and Suriname.
 - Mothers aged ≥20: Cuba, Dominican Republic, Honduras, Panama, Suriname, and Turks and Caicos. The effect sizes were significant, ranging from modest to moderate.
- Among mothers who do not justify their partner's violence have children with significantly higher ECD scores with a significant effect size:
 - Adolescent mothers: El Salvador, Guyana, and Turks and Caicos.
 - Mothers ≥20: Argentina, Guyana, Honduras, Mexico, Panama, and Paraguay.

Discussion

- In most countries, **children of adolescent mothers have lower ECD scores than other children**, but the significance of the association varies when controlling for the child's age and sex, wealth quintile, and mother's education.
- While the child's age consistently predicts ECD scores across countries, the association between the child's sex at birth and ECD varies by country.
 - This finding is similar to those from a prior study in which females scored higher than males in Argentina and Belize and males higher than females in Guyana and Trinidad and Tobago.
 - More research is needed to find if sex differences in ECD could be explained by cultural factors that favor greater stimulation and discipline depending on the child's sex.
- A central finding of our study is the **association between the mother's adolescent status at the time of a child's birth, poverty, and lower ECD scores**.
 - The wealth quintile had a consistent and significant effect on ECD in all countries.
 - The effect of maternal education showed significance in some countries, which could be explained because
 - The effect of poverty outweighs the effect of education
 - Adolescents have fewer chances of attaining greater education levels given that they are younger.
- The adolescent maternal status remains significant when controlling for wealth quintile and education in Argentina, El Salvador, Paraguay, and Suriname.
 - In the other countries, wealth and education may mediate the relationship between maternal age and ECD.
 - This finding is similar to those from studies in Australia, Mexico, and East Java that have associated economic and educational disadvantages with adolescent pregnancy.

Study Limitations

- The cross-sectional nature of the MICS surveys precludes causal inferences, and the varying observed effect sizes.
 - We cannot discern if becoming an adolescent mother has aggravated social disadvantage in addition to the initial disadvantage.
 - For example, it is not possible to determine the temporal sequence between pregnancy and ending schooling; it is possible that some adolescents had abandoned their education before becoming pregnant.
- Cultural variations across countries are not captured in the MICS surveys, which may impact the interpretation and reporting of child disciplinary practices and beliefs about violence.
 - This suggests a need for culturally sensitive approaches in data collection and intervention design.

Conclusions: Poverty and violent childrearing among adolescent mothers and ECD

Adolescent mothers:

- use less positive and more negative discipline practices with their children than women aged ≥ 20 in the Dominican Republic, Argentina, Costa Rica, Guyana, and Honduras
- believed more frequently in physically punishing their child and justifying their partner's violence against them in most countries.

However, the effect sizes are modest.

Several studies have shown that adolescent mothers have fewer skills than older women in self-regulating, coping with stress, being more patient, affectionate, and interactive with their children, providing stimulating opportunities, and understanding their children's needs—all of which may lead to less responsive, stimulating, and affectionate care.

They may also experience greater psychological distress, anxiety, and depression, and their stress may be heightened in cultures where early marriage and pregnancy are not normative.

Whereas some scholars have argued that the poverty of adolescent mothers is the most important explanatory variable of ECD delay among their children, others have emphasized that parenting practices compounded with preexisting and ongoing social disadvantages help explain the association between adolescent motherhood and lower ECD outcomes among their children.

Our findings collected from multiple countries support the hypothesis that **it is a combination of poverty and violent childrearing that accounts for ECD delay among children of adolescent mothers.**

Policy Implications of Adolescent Pregnancy and ECD

1

Addressing the socioeconomic context

Our study's findings underscore that strategies aimed at delaying the age of motherhood need to address the socioeconomic context in which adolescent motherhood occurs—in addition to making available sexual education, reproductive health services, and contraceptive methods that are accessible to youth.

2

Improving educational and employment opportunities for youth

Consequently, policies that improve educational and employment opportunities for adolescents, particularly those living in poverty, can mitigate some of the disadvantages they face—such as unfulfilled educational aspirations and unstable housing—that predispose adolescents to start childrearing and, when they do, intensify their disadvantage.

3

Promoting nurturing parenting practices

For adolescents with children, providing resources and knowledge that promote nurturing parenting practices and non-violent family environments is instrumental, in addition to socioeconomic measures, for improving the well-being of both adolescents and their children and reducing existing inequity gaps in early childhood development outcomes.





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