

ORIGINAL RESEARCH

Parenting Practices and Associations with Development Delays among Young Children in Dominican Republic



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Abstract

BACKGROUND According to the World Health Organization, >200 million children in low- and middle-income countries experience developmental delays. However, household structure and parenting practices have been minimally explored as potential correlates of developmental delay in low- and middle-income countries, despite potential as areas for intervention.

OBJECTIVE The objective of the study was to examine associations of developmental delays with use of World Health Organization–recommended parenting practices among a clinic-based cohort of children aged 6–60 months attending in La Romana, Dominican Republic.

METHODS This study was conducted among 74 caregiver-child pairs attending the growth-monitoring clinic at Hospital Francisco Gonzalvo in June 2015. The Malawi Developmental Assessment Tool was adapted and performed on each child to assess socioadaptive, fine motor, gross motor, and language development. The IMCI Household Level Survey Questionnaire was used to assess parenting practices. Fisher's exact test was used to determine associations significant at $P < .05$. Significant variables were then entered into a multivariable logistic regression.

FINDINGS Almost two-thirds of children had a delay in at least 1 developmental domain. Most caregivers used scolding (43.2%) or spanking (44%) for child discipline. Children who were disciplined by spanking and scolding were more likely to have language delay ($P = .007$) and socioadaptive delay ($P = .077$), respectively. On regression analysis, children with younger primary caregivers had 7 times higher odds of language delay (adjusted odds ratio [AOR]: 7.35, 95% confidence interval [CI]: 1.52–35.61) and 4 times greater odds of any delay (AOR: 4.72, 95% CI: 1.01–22.22). In addition, children punished by spanking had 5 times higher odds of having language delay (AOR: 5.04, 95% CI: 1.13–22.39).

CONCLUSIONS Parenting practices such as harsh punishment and lack of positive parental reinforcement were found to have strong associations with language and socioadaptive delays. Likewise, delays were also more common among children with younger caregivers.

KEY WORDS child development, discipline, Dominican Republic, early childhood, global health, parenting.

INTRODUCTION

Over the past 2 decades, mortality of children younger than 5 years in low- and middle-income countries

(LMICs) has decreased by more than half, to approximately 5.9 million deaths per year.¹ Because more of the world's children are living longer, more attention is warranted to assess not only the quantity

Conflicts of Interest: The authors have indicated they have no potential conflicts of interest to disclose.

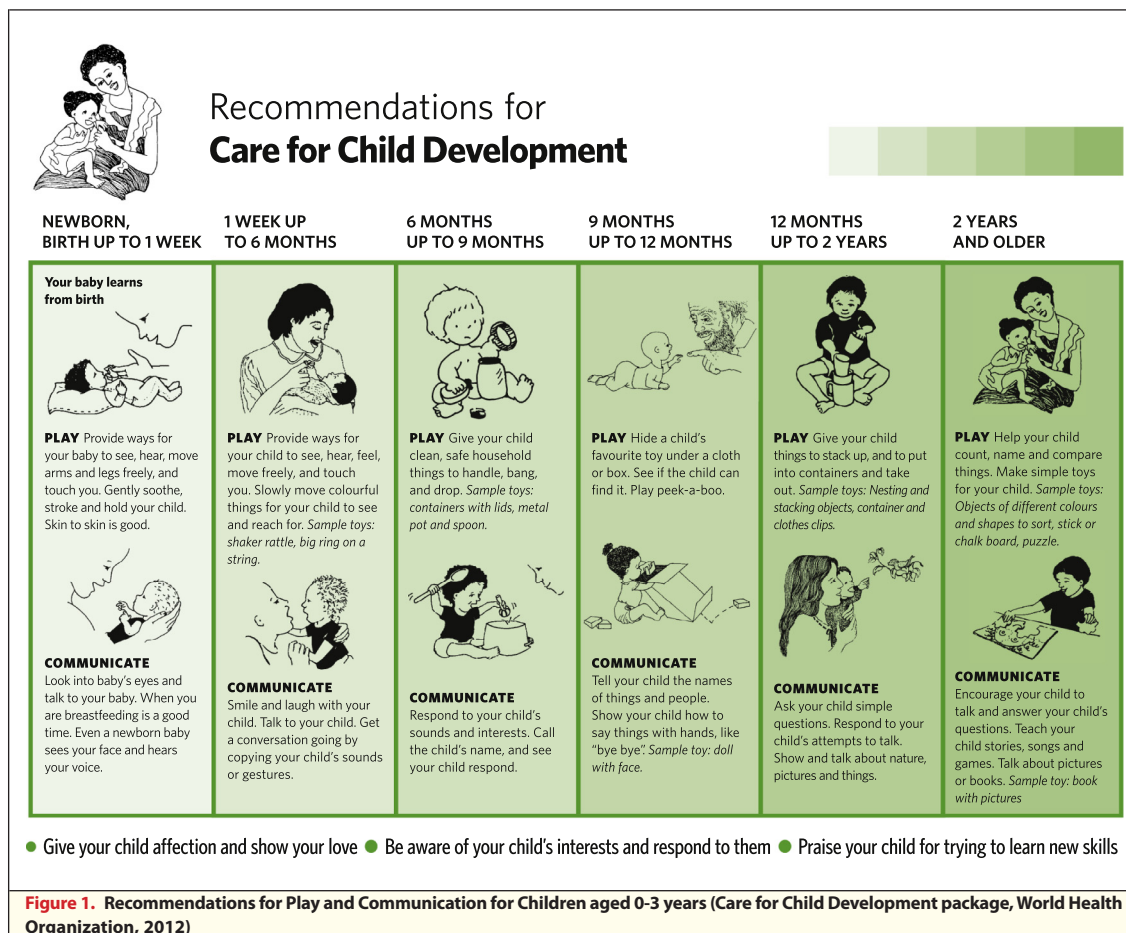
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of young lives saved but also the quality of these young lives, with a particular focus on early childhood development.² The rise in culturally appropriate tools to assess early childhood development in LMICs has increased recognition and has also uncovered the large global burden of developmental disability.³ Moreover, more than 200 million children in LMICs still do not experience their full range of skills and functioning abilities or have delays in development.⁴

According to the World Health Organization (WHO), factors that greatly affect the presence of developmental delays include poverty, stigma, discrimination, institutionalization, violence, child neglect, and scarcity of health services, many of which require large-scale and institutional interventions or changes in policy.⁵ However, parental roles and parenting practices have only been minimally explored for associations with developmental delay, despite their potential as focus areas for family-centered interventions. The examination of these factors is supported by the Bronfenbrenner Ecological Framework for Human Development, which postulates that human

development is most affected by the child's "microsystem," or the relationships and interactions a child has with his or her immediate surroundings (eg, family).^{6,7} In addition, family systems theory also supports the influence of parenting practices as potent determinants of child behavior, such as those used for communication, conflict and discipline, and connectedness or attachment to the child.^{8,9}

To promote family practices for supporting healthy child development, the Care for Child Development (CCD) package was developed in the late 1990s and revised in 2012 by WHO and United Nations Children's Fund (UNICEF).¹⁰ The CCD package has been designed as a training manual for health care workers to provide age-appropriate guidance to caregivers of young children for stimulating cognitive, language, and social-emotional development.¹⁰ Specifically, the CCD package provides recommendations for responsive child-caregiver interactions through improved play, communication (Fig. 1), and discipline techniques (not shown). However, the association between caregiver use of these practices and



developmental outcomes in LMICs has not been well elucidated. We hypothesize that children in LMIC who live in families who do not report use of CCD-recommended behaviors will have higher odds of developmental delay.

The primary objective of this paper is to examine the associations of developmental delays with family structure and CCD-recommended parenting behaviors among a clinic-based cohort of young children in La Romana, Dominican Republic. This study aims to add to the small but growing literature base on determinants of developmental delay among young children in Latin America.

METHODS

Setting. The study took place in La Romana, the third-largest city in the Dominican Republic. In 2010, La Romana's population was estimated at 130,426 within the city limits, of whom 97.8% live in urban areas and one-third live in poverty. Ten percent of those living in La Romana are younger than 5 years of age, and according to 2014 estimates, 9.3% of persons younger than age 65 have been diagnosed with a developmental disability.¹¹

This study was conducted at Hospital Provincial Francisco Gonzalvo (HPFG) in La Romana, the main municipal hospital of the La Romana province. HPFG has 140 beds and serves as the main referral center for medical care, particularly for low-income citizens. The hospital has a range of inpatient, emergency, and outpatient services, including the under-5 clinic.

The under-5 clinic provides integration of primary care services targeted toward young children provided by primary care nursing staff. Universal monitoring of growth and nutritional status of all children (aged <5 years) is provided at regular intervals in conjunction with the provision of immunizations. Growth monitoring is based on the revised WHO growth monitoring standards, and nurses document the 4 main growth- and nutrition-related problems among children younger than 5: underweight, wasting, stunting, and obesity. Breastfeeding is promoted, and mothers are counseled on infant and child nutrition, including the appropriate use of complementary feeding and micronutrient supplements. The clinic also provides immunization against 11 diseases: tetanus, diphtheria, pertussis, tuberculosis, measles, rubella, mumps, polio, *Haemophilus influenzae* type B, hepatitis B, and pneumococcus. In contrast, surveillance of developmental milestones is not routinely provided and only when concerns are

noted from parental history or direct observation at the time of the visit.

Participants. The study population consisted of a convenience sample of caregiver-child dyads attending the growth monitoring and vaccination clinic at HPFG during June to July of 2015. Children aged 6-60 months old attending the clinic with their primary caregiver were eligible to participate. Any child who was currently ill or had a chronic medical condition or developmental disorder was excluded from the study. Informed consent was obtained for all participants.

Measures. Developmental milestone screening was performed on each child participant using the Malawi Developmental Assessment Tool (MDAT), a tool devised in a low-income country with high sensitivity (97%) and high interobserver test-retest rate (99%-100%).¹² The MDAT tests for the presence or absence of developmental delay in socioadaptive, fine motor, gross motor, and language domains using performance of age-appropriate skills or parental report of skills. There are 34 items in each domain, and a normal reference age-range chart was used to determine which item to start with for each child. At least 6 items on each domain were evaluated for each child based on age. If all items were accurately completed, the child is marked "pass," meaning the child is within the normal range of developmental skills. If there were more than 2 incorrect tasks or prompts, then the child was marked "fail," meaning the child's progress was poor and he or she had at least some difficulty performing the corresponding skill.

To assess parenting behavior, the IMCI Household Level Survey Questionnaire was used.¹³ This questionnaire was developed in 1999 using questions from UNICEF's Multiple Indicator Cluster Survey-2 Questionnaire (MICS),¹⁴ the WHO Multi-Country Evaluation of the Integrated Management of Childhood Illness (IMCI) Effectiveness questionnaire,¹⁵ and the Demographic and Health Surveys 1992-1997.¹⁶ The MICS is the largest source of internationally comparable data on women and children worldwide, using questions that have been validated in LMICs and is currently used in 107 countries.¹⁴ Although the complete IMCI Household Level Survey Questionnaire was administered to all participants, data for this research were specifically centered on the Key Practice #7 section: "Promote mental and social development by responding to a child's needs for care, through talking, playing and providing a stimulating environment." This section included questions on type of play activities, choice of activities to create stimulating environments for

children, discipline, and parental response to negative and positive behaviors.

Data Collection. Before conducting the research study, 3 research assistants, including the first author of this paper, were trained on the use of the MDAT and administration of the IMCI Household Level Survey Questionnaire.

Participants were recruited while waiting for their growth monitoring visit. Three Dominican translators on the study team worked with each research assistant to provide caregivers with detailed information about the study, following a standardized script in English and Spanish at a third grade level. The study interviewer ensured understanding of the study components by the potential participant. After the participant gave verbal consent, the participant was given a copy of the study information sheet and local study personnel available for any questions.

Research assistants used a private clinic room for administration of both the MDAT and the UNICEF MICS-adapted questionnaire. For the developmental assessment, the majority of screening items were directly observed, but caregiver report was also used for items if the mother was very certain that the child could do the item and item score was consistent with assessment of associated areas of development. Items were scored as pass or fail. If the child was uncooperative, items were scored as “don’t know.” As per scoring instructions, items were assessed until the child failed 7 consecutive items.

After the MDAT was completed, another researcher and translator administered the IMCI Household Level Survey Questionnaire. Caregiver, child, and household demographics such as child and caregiver age, gender, head of household, number of children in the household, and paternal presence in the household were collected, in addition to information about parental play, communication, discipline, and parental response to negative and positive child behaviors. Of note, this validated questionnaire did not include child birth weight.

After completing all data collection procedures, the mother was debriefed on the child’s performance and given advice for childcare that promotes positive child development according to the guidelines of the World Health Organization. For example, if a 9-month-old child failed the language skill domain, advice would be given such as, “Tell your child the names of things and people. Show your child how to say things with hands, like ‘bye-bye’” (see Fig. 1). Administration of both the developmental assessment and questionnaire was completed in a total of 45-60 minutes. All responses were recorded on the

survey materials, and a small age-appropriate book for the child was given to caregivers as compensation for their participation in the study.

Analytic Plan. Collected data were cleaned and coded using SPSS 23.0 (IBM Corp., Armonk, NY).¹⁷ Descriptive statistics were used to measure prevalence of developmental delays by domain and overall prevalence of any delay. Fisher’s exact and χ^2 tests were used to identify associations between developmental delay and CCD-recommended parenting practices, with a significance level of $P \leq .10$. Variables found to be significant on these bivariate associations were then imputed using multivariable logistic regression to calculate odds ratios and control for confounding variables, including child and caregiver age, head of household type and age, presence of single parent household, and parenting practices (responses to negative and positive child behaviors).

Ethical Consideration. The Northwell Health System Institutional Review Board and the Ethics Review Committee at HPGF in La Romana approved the research study. Written informed consent was obtained from all study participants before participation.

RESULTS

Demographics. The demographic characteristics of the caregiver-child pairs ($N = 74$) are presented in Table 1. Children were mostly male (59.5%), with a mean age of 27 months. Female caregivers accounted for approximately 97.2% of the participants. The median daytime caregiver age was 29, with mothers being the predominant primary caregiver (78.4%). One-quarter of the primary wage earners in the home were mothers of the child. Almost two-thirds of children came from a single-caregiver household (63.5%). All child-caregiver dyads were Spanish speaking and of Dominican-born heritage.

Presence of Developmental Delays. The overall prevalence of any developmental delay was 64.8%. Further analyses of prevalence in each developmental domain were: socioadaptive (31.1%), gross motor (19.2%), fine motor (31.0%), and language skills (37.8%) (Table 1). The most commonly reported caregiver practices to promote childhood development were talking with the child (87.5%) and making creative play activities available for the children (91.8%). As for caregiver discipline, the majority of the caregivers used either scolding (43.2%) or spanking (44%). In response to good behavior, less than half of caregivers reported positive reinforcement, such as hugging or kissing the child (44.6%) (Table 1).

Table 1. Demographics and Parenting Behaviors of Child-Caregiver Dyads (N = 74)

Demographic Variables	Study Population n (%) or mean [SD]
Child Demographics	
Child gender	
Female	30 (40.5)
Male	44 (59.5)
Child age (mo)	27 [18]
Child with any evidence of undernutrition (wasting or stunting)*	
Yes	12 (16.2)
No	57 (77.0)
Child has any developmental delay	
Gross motor delay	13 (18.3)
Language delay	26 (62.0)
Social/cognitive delays	23 (32.4)
Fine motor delay	22 (31.0)
Parental Demographics	
Primary caregiver gender	
Female	72 (97.2)
Male	2 (2.7)
Primary caregiver age	29 [14]
Primary caregiver	
Mother	58 (78.4)
Other	16 (21.6)
Household Characteristics	
Head of household (primary source of household income)	
Mother	19 (25.7)
Other	55 (74.3)
Head of household age	37 [14]
Single-headed household	
Yes	47 (63.5)
No	27 (36.5)
Father present in household*	
Yes	54 (73.0)
No	14 (18.9)
Total children in household	
1	38 (51.4)
2	32 (43.2)
Parenting Behaviors*	
	% response with yes
Caregiver disciplines by scolding	32 (43.2)
Caregiver disciplines by spanking	33 (44.6)
Caregiver disciplines by withholding item	20 (27.0)
Caregiver responds to pleasing behavior by hugging and kissing child	33 (44.6)
Caregiver responds to pleasing behavior by providing a gift/treat for the child*	20 (27.0)

SD, standard deviation.

* Percentages may not equal 100 because of missing data.

Caregiver Factors Associated with Developmental Delays. Several parenting behaviors were significantly associated with developmental delay on bivariate

analyses (Table 2). Children who were disciplined by spanking were more likely to have a language delays than children who were not spanked (54.5% vs 21.9%, $P = .007$). Gross motor delays were more often found in children whose parents did not use milder discipline techniques, such as withholding an item (22.2% vs 0%, $P = .025$), and did not give a gift or treat for pleasing behavior (26.9% vs 0%, $P = .008$). These two caregiver behaviors were also significantly associated with sociocognitive delays and having a delay in any domain. In addition, children with socioadaptive delay were more likely to have parents who disciplined by scolding (40.6% vs 20.6%, $P = .077$).

Child, caregiver, and household demographics were all noted to be associated with developmental delay. Children 24 months or older and those with younger caregivers had greater evidence of language delays. Delays in socioadaptive, fine motor, and any domain were greater among children whose mother was the primary wage earner of the household. If the primary wage earner was younger than 35 years old, these delays persisted in fine motor and in any domain. Lastly, children in single-headed households were more likely to have a delay in any domain.

Associations on multivariable regression analyses (Table 3) only identified associations for language delay or having a delay in any domain. Children who grew up in households with younger primary caregivers had 7 times higher odds of language delay (adjusted odds ratio [AOR]: 7.35, 95% confidence interval [CI]: 1.52-35.61) and 4 times greater odds of having a delay in any domain (AOR: 4.72, 95% CI: 1.01-22.22). In addition, children who were punished by spanking were at 5 times higher odds of having language delay (AOR: 5.04, 95% CI: 1.13-22.39).

DISCUSSION

To our knowledge, our study is one of the few conducted in Latin America examining the association of household structure and caregiver parenting practices with developmental delays. Developmental delays were more common among children who received harsh punishment and lacked positive parental reinforcement, with spanking remaining significantly associated with language delay after multivariate analysis. In addition, children with younger caregivers were also noted to have higher rates of delay. Those who lived in single-headed households or households where the mother was the primary wage earner were also noted to have higher odds of developmental delay,

Table 2. Bivariate Analyses of Associations between Child, Parental, and Household Demographics and Parenting Behaviors with Developmental Delay*†

Variable	% (n) with Gross Motor Delay		% (n) with Language Delay		% (n) with Social/Cognitive Delay		% (n) with Fine Motor Delay		% (n) with Any Delay	
		<i>P</i>		<i>P</i>		<i>P</i>		<i>P</i>		<i>P</i>
Child Demographics										
Child age										
<24 mo	22.9 (8)	.444	22.9 (8)	.009	33.3 (12)	.684	26.5 (9)	.346	66.7 (24)	.752
≥4 mo	15.8 (6)		52.6 (20)		28.9 (11)		36.8 (14)		63.2 (24)	
Undernutrition present*										
No	17.5 (10)	.685	36.8 (21)	.754	29.8 (17)	1.000	28.6 (16)	.493	61.4 (35)	.194
Yes	25.0 (3)		41.7 (5)		33.3 (4)		41.7 (5)		83.3 (10)	
Parental Demographics										
Primary caregiver										
Other	25.0 (4)	.491	31.3 (5)	.508	12.5 (2)	.125	43.8 (7)	.251	68.8 (11)	.713
Mother	17.5 (10)		40.4 (23)		36.2 (21)		28.6 (16)		63.8 (37)	
Primary caregiver age										
<25 y	22.9 (8)	.444	28.6 (10)	.099	33.3 (12)	.684	29.4 (10)	.663	61.1 (22)	.510
≥25 y	15.8 (6)		48.6 (18)		28.9 (11)		34.2 (13)		68.4 (26)	
Household Characteristics										
Head of household (primary income source)										
Other	16.4 (9)	.312	34.5 (19)	.242	25.5 (14)	.075	23.6 (13)	.007	58.2 (32)	.040
Mother	27.8 (5)		50.0 (9)		47.4 (9)		58.8 (10)		84.2 (16)	
Head of household age										
<35 y	17.1 (6)	.759	37.1 (13)	1.00	36.1 (13)	.497	44.1 (14)	.032	75.0 (27)	.068
≥35 y	20.0 (7)		37.1 (13)		28.6 (10)		20.0 (7)		54.3 (19)	
Single-headed household										
Yes	19.6 (9)	.913	41.3 (19)	.499	31.9 (15)	.838	37.0 (17)	.225	72.3 (34)	.076
No	18.5 (5)		33.3 (7)		29.6 (8)		23.1 (6)		51.9 (14)	
Father present in household*										
Yes	18.5 (10)	.447	35.2 (19)	.531	35.2 (19)	.197	30.2 (16)	1.00	63.0 (34)	.927
No	30.8 (4)		46.2 (6)		14.3 (2)		30.8 (4)		64.3 (14)	
Total children in household										
1	23.7(9)	.255	36.8 (14)	.484	39.5 (15)	.114	32.4 (12)	.988	63.2 (24)	.623
2	12.9 (4)		45.2 (14)		21.9 (7)		32.3 (10)		68.8 (22)	
Parenting Behaviors*										
Disciplines by scolding										
No	14.7 (5)	1.000	41.2 (14)	.638	20.6 (7)	.077	29.4 (10)	.537	61.8 (21)	.745
Yes	16.1 (5)		35.5 (11)		40.6 (13)		36.7 (11)		65.6 (21)	
Disciplines by spanking										
No	12.5 (4)	.733	21.9 (7)	.007	24.2 (8)	.284	25.8 (8)	.247	54.5 (18)	.125
Yes	18.2 (6)		54.5 (18)		36.4 (12)		39.4 (13)		72.7 (24)	
Disciplines by withholding item										
No	22.2 (10)	.025	44.4 (20)	.137	41.3 (19)	.003	33.8 (16)	.369	71.7 (33)	.038
Yes	0.0 (0)		25.0 (5)		5.0 (1)		25.0 (5)		45.0 (9)	
Responds to pleasing behavior by hugging/kissing child										
No	23.1 (9)	.397	43.6 (17)	.246	30.0 (12)	.760	35.9 (14)	.486	62.5 (25)	.711
Yes	15.2 (5)		30.3 (10)		33.3 (11)		28.1 (9)		66.7 (22)	
Responds to pleasing behavior by providing a gift/treat										
No	26.9 (14)	.008	40.4 (21)	.415	41.5 (22)	.002	37.3 (19)	.162	71.7 (38)	.034
Yes	0.0 (0)		30.0 (6)		5.0 (1)		20.0 (4)		45.0 (9)	

* χ^2 and Fisher's exact test used for analyses.
 † *P* < .1 indicated by boldface type.

Table 3. Multivariate Regression Analysis of Associations Between child, Parental, and Household Demographics and Parenting Behaviors with Developmental Delay—Adjusted Odds Ratios (AOR) with 95% Confidence Interval (CI)*

Variable	Gross Motor Delay AOR (95% CI)	Language Delay AOR (95% CI)	Social/Cognitive Delay AOR (95% CI)	Fine Motor Delay AOR (95% CI)	Any Delay AOR (95% CI)
Child Demographics					
Child age					
<24 mo	1.16 (0.15-9.10)	2.44 (0.68-8.82)	1.19 (0.27-5.11)	1.34 (0.38-4.76)	1.30 (0.35-4.80)
≥24 mo	REF	REF	REF	REF	REF
Parental Demographics					
Primary caregiver age					
<25 y	1.16 (0.19-7.19)	7.35 (1.52-35.61)	1.07 (0.25-4.59)	2.00 (0.51-7.81)	4.72 (1.00-22.22)
≥25 y	REF	REF	REF	REF	REF
Household Demographics					
Head of household (primary income source)					
Other	REF	REF	REF	REF	REF
Mother	1.57 (0.20-12.45)	2.86 (0.46-18.00)	2.12 (0.43-10.53)	2.21 (0.51-9.57)	2.77 (0.44-17.58)
Head of household age					
<35 y	REF	REF	REF	REF	REF
≥35 y	3.10 (0.48-20.20)	1.27 (0.31-5.32)	1.24 (0.30-5.05)	3.46 (0.89-13.40)	3.65 (0.80-16.70)
Single-headed household					
Yes	1.74 (0.25-11.97)	1.01 (0.23-4.38)	1.33 (0.31-5.70)	1.99 (0.45-8.73)	3.11 (0.76-12.75)
No	REF	REF	REF	REF	REF
Parenting Behaviors					
Disciplines by scolding					
No	REF	REF	REF	REF	REF
Yes	2.17 (0.33-14.26)	3.05 (0.79-11.82)	3.29 (0.80-13.57)	1.14 (0.34-3.85)	2.70 (0.68-10.66)
Disciplines by spanking					
No	REF	REF	REF	REF	REF
Yes	2.19 (0.25-19.22)	5.04 (1.13-22.39)	1.83 (0.38-8.86)	1.81 (0.47-6.98)	1.85 (0.49-6.97)
Disciplines by withholding item					
No	0.00	3.30 (0.68-15.95)	8.69 (0.90-83.63)	1.39 (0.31-6.18)	3.24 (0.66-16.02)
Yes	REF	REF	REF	REF	REF
Responds to pleasing behavior by providing a gift/treat					
No	0.00	1.91 (0.37-9.96)	8.25 (0.77-88.840)	1.45 (0.30-6.98)	1.46 (0.32-6.60)
Yes	REF	REF	REF	REF	REF

* Boldface type indicates significant associations using χ^2 analyses ($P < .05$).

although this relationship did not persist after multivariate logistic regression, which controlled for confounders (Table 3). According to past studies, children from LMICs are more likely to be exposed to physical conditions such as undernutrition and to lack access to appropriate medical care, and parents in these regions are less likely to receive formal education and parental training, which may account for the high percentage of developmental delays, almost two-thirds, among this study population.¹⁸

Parenting Behaviors.

Harsh Punishment. Our research was consistent with a vast number of studies that have found that harsh or violent punishment is associated with socioadaptive

delay. Previous studies have found that harsh parenting, including scolding and spanking, can ultimately lead to limited cognitive and adverse social functioning.¹⁹ Additionally, harsh parental discipline has been said to negatively affect the “moral internalization” of a child, otherwise known as socially acceptable behaviors that depict the child’s social and emotional attitudes and values. Children who are harshly punished more often lack moral internalization and portray antisocial behaviors.²⁰ In our research, language delays and sociocognitive delays were more prevalent among children who were disciplined for bad behavior by being spanked or scolded. Moreover, prior research has found that corporal

punishment such as spanking leads to behavioral issues such as aggression and antisocial behavior.²¹

Lack of Positive Reinforcement From Caregivers. Children who did not receive positive reinforcement such as parental hugging or kissing or toys and rewards for behaving pleasingly were found to have higher prevalence of social developmental delays. In the literature, negative affect and rejection from parents hinder child psychological and emotional development, which may in turn also affect social involvement.²² The association between rewarding positive behavior and developmental delays is consistent with prior research. In contrast, positive reinforcement has been described as a form of parental acceptance, which is directly linked to lower behavioral and emotional difficulties in children.²²

Household Structure. Our findings also indicate greater odds of developmental delays in children with younger caregivers, which is consistent with previous studies conducted within US and international populations.^{23–25} However, data examining households where mothers are the primary wage earners (ie, “mother-headed” households) and the effects on development are scarce. Our research found that fine motor and sociocognitive delays and having any delay were more prevalent in mother-headed households. We posit that these mothers, who are the financial backbone for the family, may have difficulty balancing provision of a stimulating home environment with frequent child interaction and ensuring their work responsibilities are met.¹⁶ In households where the mother is not the primary head of the household, the mother may have greater time to engage and promote development of the children, ultimately resulting in lower odds of developmental delay.²⁶ However, larger studies are warranted to confirm these findings.

Our study was a cross-sectional study and therefore is not able to identify temporality between the associations discussed earlier. Information about caregiver practices was collected by parental report, rather than direct observation, and hence may have been at risk for recall bias. In addition, our study population is small and drawn from an urban center within Dominican Republic, which may limit the generalizability of the findings. However, it is important to note that the population is a hospital-based sample, specifically from a clinic providing pediatric preventive care services. We believe that these children would have less developmental delay because of higher exposure to ad hoc developmental surveillance and counseling for identified concerns, based on the fact that La Romana is a designated site for formal and informal training in the “Roles and Re-

sponsibilities of Local Actors in Integrated Child Development” within the UNICEF–Dominican Republic Municipal Agendas in Childhood framework.²⁷ Therefore the prevalence of developmental delay may actually be an *underestimate* of the prevalence that exists in the general population in La Romana. Lastly, our questionnaire was limited and did not capture data on history of child birth weight, which is an established risk factor for developmental delay. National survey data from the 2013 Demographic and Health Surveys report a prevalence of 14% of newborns with low birth weight, which if extrapolated to our study sample would equate to about 10 children. Forty-six children were identified with at least 1 developmental delay, indicating that although low birth weight would clearly be a contributor, there are other significant factors contributing to delays identified in our sample.

CONCLUSIONS

This study specifically examines the association between CCD-recommended health promotion practices and child development, which has not been studied in LMICs to date. Our study adds to the rapidly growing literature base investigating the association between parenting behaviors and developmental delays in LMICs. Language delay was found to be more common among children receiving harsh punishment such as spanking. In contrast, children who did not receive affection or positive reinforcement for good behavior were also at risk for developmental delays. Although the majority of “positive parenting” interventions have been studied in high-income countries, our research findings reinforce that these studies are warranted in LMICs. Future research is needed to determine the specific impacts of parenting practices on early childhood development, as well as the influence of mother-headed households and households with younger caregivers on development of young children. This information may be useful in identifying specific populations as a potential groups for targeted interventions. Our findings suggest that parental roles and practices within the family are significantly associated with development of a child’s language, personal, social, and other development phases. Investing in research and interventions to empower parents with the skills and knowledge to strengthen early childhood development should serve as a major target area for reduction of developmental delay, which in turn can increase the quality of life for children living in LMICs and their long-term developmental trajectory.

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