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Extended Abstract
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Adverse Childhood Experiences and Age at First Sex in Cebu, Philippines

Abstract

We explore the effect of adverse childhood experiences, measured by maternal report, on adolescents' own report of age at first sex using data from the Cebu Longitudinal Health and Nutrition Survey. Maternal reports of adverse childhood experiences were measured when the children were 0-2, 7, 11, and 15 years old. Age at first sex was measured at age 21. Adverse childhood experiences are defined in five domains: parental discord; maternal illness; household poverty; poor appearance of mother, child, and household; and adverse physical environment. Based on Cox proportional hazards regression, we found that boys initiate sex significantly earlier if they grew up in households experiencing maternal illness and characterized by having adverse physical environments. In contrast, age at first sex for girls is associated with parental discord, household poverty, and adverse physical environments.

Introduction

There are many studies assessing determinants of age at first sex, since early first sex initiation has been linked to numerous negative health consequences throughout the lifespan. These negative health consequences include: decreased condom use, increased casual partnerships, unplanned pregnancy and higher probabilities of sexually transmitted infections including HIV (Blank 1998; Lugoe 1996; Pettifor 2004; Zaba 2004).

Adverse Childhood Experiences (ACE) have been developed and analyzed for prediction of poor health outcomes such as alcoholism, drug abuse, depression, suicide attempt, smoking, sexually transmitted infections, severe obesity, cancer, chronic lung disease, and liver disease, predominantly in research focused on the United States (Felitti 1998). This research has been limited in a number of ways, including retrospective reporting of ACEs as well as some of the outcomes. Our study provides several advances as follows, (1) we conduct all analysis using prospective data with multiple time points measuring ACEs; (2) we explore the appropriateness of the ACEs in a developing country context including some unique predictors; and (3) we use reports from mothers about the ACEs and reports from children on the outcome, taking advantage of the intergenerational and longitudinal data available in the Cebu Longitudinal Health and Nutrition Survey.

A better understanding of the risk factors associated with early age at first sex will aid in targeting high risk subgroups with appropriate prevention interventions. In addition, findings from this study may provide insight into new areas for collaboration. For instance, it may be beneficial for programs aimed at reducing poor reproductive health to partner with institutions interested in improving sanitary conditions. Instead of working separately on two different issues, groups may collaborate to find a single solution to shared problems.

Methods

The data for this research study are from the Cebu Longitudinal Health and Nutrition Survey (CLHNS), a longitudinal study based in Cebu, Philippines. The CLHNS data collection began in 1983 with over 3,000 pregnant women. The eligible women were identified and followed up at childbirth, and then were interviewed at bimonthly intervals for two years. Subsequently, the mothers and their children have been followed and data have been collected from the mothers at four year intervals in, 1991, 1994, 1998, 2002, and 2005. The children were interviewed beginning in 1998.

The 1998, 2002 and 2005 surveys ask the children, who are adolescents at the time of the surveys, varied questions on relationship formation, precoital behaviors (Upadhyay 2006a), and sexual initiation (Upadhyay 2006b), as well as many other topics. As sexual debut is known to be later in the Philippines than in many countries (Singh 2000), we use the most recent round of data since by age 21, nearly half of all adolescents have had sex (Upadhyay 2006a; Upadhyay 2006b).

In 2005, 1,912 adolescents responded to the 2005 data question, “At what age did you first have sexual intercourse?” Of those 1,912 responding to the question, only 1,904 (99.6%) matched with the maternal records from the earlier survey rounds. Based on the 1,904 in our data set, 797 responded that this question was not applicable to them, indicating they had not yet had initiated sexual intercourse, while 1,107 responded with a value. The self reported age at first sex ranged from 8 to 22. We dropped 51 respondents reporting age at first sex less than 15 years to ensure predictor variables occurred prior in calendar time to the outcome variable – age at first sex. Thus, the final sample size is 1,853 Filipino adolescents.

We used data collected at 1983-1986 (birth to two years), 1991 (age 7), 1994 (age 11), and 1998 (age 15) to measure associations between ACEs and age at first sex. ACEs are hypothesized to impact children negatively and affect negative health behaviors in adolescents and adulthood.

In this study, we examined the effects of five different ACEs on sexual initiation. The five ACE domains are: parental discord (including number of separations and quarreling); maternal illness (including daily difficulties and chronic illness); household poverty (a combined measure of assets, electricity, and housing material); poor appearance of mother, child, and household (as reported by the interviewer); and adverse

physical environment (household and neighborhood excreta removal and food storage cleanliness). Distribution of ACE domains by survey round are reported in Table 1. We used time-to-event analysis to examine the unadjusted and adjusted relative hazards of first sex by each ACE exposure variable. Given the known differences in the timing and predictors of sexual debut by gender, we ran all analyses stratified by gender. Table 2., and Table 3. show the results of our analyses.

Results

The association of ACE domains with age at first sex in Cebu, Philippines, differs for adolescent boys and girls. Boys are not affected by poverty and parental discord; however, they are more likely to initiate sex at an early age having experienced maternal illness in the form of health restricting daily activities as well as maternal chronic illness. In addition, there is an association between the adverse physical environment, measured as the excreta removal at the house and in the neighborhood, and the cleanliness of the area where the food is kept, and early initiation of sex for boys.

Girls are not affected by their mother's daily difficulties, but they are more likely to initiate sexual intercourse early when their mother reports chronic illness. They are, like the boys, affected negatively by their adverse physical environment. In addition, they are affected by poverty and parental discord.

Planned Analyses

We will explore whether ACEs at particular ages (survey rounds) are more predictive than other ages using the ACE domains at each survey round to predict age at first sex. Also, we will test for gender interactions.

Key Points

This is the first manuscript that we know of that takes an index that has been very predictive of outcomes in US populations but has not been tested in developing countries to determine whether a similar index may be developed and be predictive of outcomes in developing country populations.

We examine a unique set of factors, including the physical environment that the child is living in at different stages of growth, the physical appearance of the mother, child, and overall household as determined by the interviewer, not the study subject, and the impact of impaired functioning due to poor health on daily living.

The data for this study is prospective and longitudinal. It is important to have the prospective aspect when teasing out the exposures accrued in childhood on adolescent outcomes. Retrospective reports are subject to recall bias and other types of bias that are

not of concern with longitudinal, prospective data. This data allows us to determine the causal effect of exposures because the exposure comes before the outcome and this is documented in the data.

Table 1. Distribution of ACEs by Survey Round and Overall Summary ACE for Final Model

ACE	1983	1991	1994	1998	Overall
Parental Discord					
Separations (1+)	--	7.98%	1.73%	4.12%	12.71%
Quarreling (>once/month)	--	--	--	17.86%	17.86%
Maternal Illness					
Daily Difficulty (any reported)	--	--	9.51%	5.72%	8.82%
Chronic Illness (2 or more)	--	4.10%	7.24%	17.91%	37.18%
Poverty					
SES (lowest SES quintile)	31.25%	23.06%	26.05%	29.10%	50.79% ^a
Poor Appearance					
Mother, Child, House (2+ time mother, child or household reported as not neat)	--	--	60.29%	51.32%	56.36% ^b
Adverse Environment					
Household/Neighborhood Sanitary Conditions, and Cleanliness of Food Storage (Mean value, higher indicating more adverse)	3.46 ^c	5.58	5.79	6.37	21.23

^aOverall SES is the percentage of persons in a household in the lowest SES quintile in at least one survey round.

^bOverall poor status is 5+ times being reported as mother, child, or house hold not well kept.

^cOnly two items of the three were available this round, no question on neighborhood excreta removal available.

Table 2. Boys Relative Hazard of Initiating Sexual Intercourse, based upon Boys' Reports of Age at First Sex at Age 21 and Maternal Reports of Boys' ACE Exposures from Age 0 to 15

ACE	Unadjusted Relative Hazard (95% CI)	Adjusted Relative Hazard ¹ (95% CI)
Parental Discord		
Separations (1+ vs. 0)	1.02 (0.82, 1.28)	0.74 (0.40, 1.37)
Quarreling (>once/mth vs. once/mth or less)	0.97 (0.84, 1.12)	1.08 (0.85, 1.38)

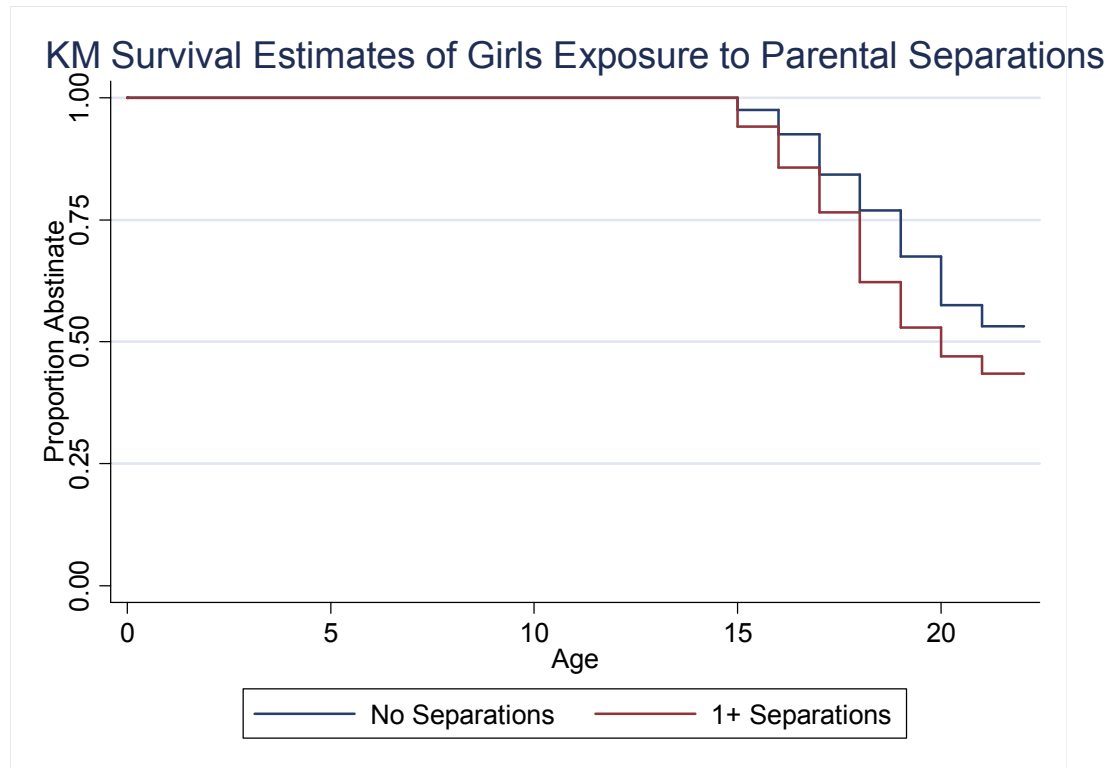
Maternal Illness		
Daily Difficulty (1+ vs. 0)	1.31 (0.99, 1.72)	1.08 (0.78, 1.50)
Chronic Illness (2+ vs. <2)	1.08 (0.89, 1.31)	1.12 (0.92, 1.37)
Poverty		
SES (1-4, number of times in the lowest SES quintile)	0.90 (0.85, 0.97)	0.89 (0.82, 0.96)
Poor Appearance		
Mother, Child, House (0 or 1 time reported as neat vs. 1+ times reported as unneat)	0.84 (0.68, 1.03)	0.85 (0.68, 1.05)
Adverse Environment		
Household and Neighborhood sanitary conditions, and Food Storage cleanliness	1.01 (0.98, 1.04)	1.06 (1.02, 1.09)

¹Adjusted models include all covariates listed in unadjusted models

Table 3. Girls Relative Hazard of Initiating Sexual Intercourse, based on Girls' Reports of Age at First Sex at Age 21 and Maternal Reports of Girls' ACE Exposures from Age 0 to 15

ACE	Unadjusted Relative Hazard (95% CI)	Adjusted Relative Hazard ¹ (95% CI)
Parental Discord		
Separations (1+ vs. 0)	1.41 (1.08, 1.83)	1.22 (0.76, 1.98)
Quarreling (>once/mt vs. once/mth or less)	1.26 (0.99, 1.60)	1.17 (0.89, 1.53)
Maternal Illness		
Daily Difficulty (1+ vs. 0)	1.11 (0.77, 1.60)	0.99 (0.59, 1.66)
Chronic Illness (2+ vs. <2)	1.21 (0.99, 1.48)	1.16 (0.90, 1.50)
Poverty		
SES (1-4, number of times in the lowest SES group)	1.18 (1.10, 1.26)	1.12 (1.02, 1.18)
Poor Appearance		
Mother, Child, House (0 or 1 time reported as neat vs. 1+ time reported as not neat)	1.31 (1.07, 1.60)	0.89 (0.68, 1.18)
Adverse Environment		
Household and Neighborhood Sanitary Conditions, and	1.10 (1.06, 1.13)	1.10 (1.05, 1.15)

¹Adjusted models include all covariates listed in unadjusted models



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