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Manifestations of socioeconomic status and its association with physical child punishment—Results from the Multi-Indicators Cluster Survey in Viet Nam, 2006–2014

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Abstract

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Authors' contributions

SC and JO have participated in the conception of the study. SC led analysis and interpretation of the data, drafting, and revising the manuscript. JY, JP, HYL, HTGT, JKL contributed to interpretation and provided critical revisions. JO contributed to conceptualization, data interpretation, and critical revisions and provided overall supervision.

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None

Physical child punishment is a critical public health problem that exhibits negative and long-lasting mental and physical health consequences. Yet, the predictors of physical punishment are understudied in developing countries, and disparities that exist between levels of economic status are not known well. The socioeconomic predictors of physical child punishment were investigated using three rounds of the Multiple Indicator Cluster Survey (MICS) results in a lower middle-income country, Viet Nam from 2006 to 2014. A total of 16,784 households that have answered the child punishment questionnaire from MICS data from 2006 to 2014 were included in the analysis. Descriptive statistics, univariate, and multivariate logistic regression analyses were conducted. A secular trend of disparity was investigated with and without the parents' normative values on physical punishment. Children in Viet Nam have been subject to some form of violent physical punishment by their parents or caregivers. About half of the children in the poorest households (44.7%) experienced physical child punishment while lesser percentage of children in the richer households experienced physical child punishment. Disparities existed across different wealth groups as the prevalence of physical child punishment decreased: the gap between the poorest and the richest group widened. Compared to the richest households, the poorest households were more likely to experience physical child punishment AOR 1.58 (95% CI 1.39–1.79). There is a decrease in the prevalence of physical punishment over the recent years in Viet Nam, socioeconomic disparities, in contrast, have increased, and the poorest children have a higher risk of experiencing physical child punishment. Such disparities should be considered in future research and intervention development.

Keywords

Physical child punishment; child maltreatment; socioeconomic disparity; Viet Nam

INTRODUCTION

Physical child punishment is a common and critical public health problem worldwide, and yet the topic remains understudied in developing countries [1, 2]. The global interest in the protection of child rights is rising as the post-2015 Sustainable Development Goals include targets to reduce violence against children, which the Millennium Development Goals did not address [3]. Globally, the past literature on child punishment demonstrate the negative, long-lasting and multifaceted consequences of exposing children to physical punishment or abuse. Most instances of child abuse occur in the context of punishment, and the victims of physical abuse are more likely to experience mental health problems such as depression, alcohol abuse, suicide and more [4, 5, 6, 7, 8, 9, 10, 11]. A systematic review and meta-analysis result posit that in both high and low-to-middle income countries, physically abused children were more likely to have a higher risk of developing depressive disorders compared to non-abused children.[11] Individuals who have experienced frequent physical punishment or abuse in their childhood were more likely to develop risky behaviors that are delinquent and aggressive [12]. In addition, family, social and economic disadvantages may occur [13], as the risks of anti-social behavior, aggression, drug use and family violence increase for victims in adulthood [14]. Recent literature also attests that severe physical punishment, (i.e. pushing, grabbing, shoving, slapping, and hitting) is associated with a higher likelihood of unfavorable physical health conditions [6]. Evidence of physical child punishment being

harmful is strong, and many studies up to now have focused on addressing that relationship [10].

Physical child punishment has been related to low socioeconomic status (SES), low levels of maternal and paternal education and other related family factors such as parental attachment and parental divorce [15]. A recent cross-sectional analysis in Viet Nam, a low-middle-income country in Asia, demonstrates that three out of four children have been physically punished by their parents [16]. Sociodemographic characteristics such as wealth, education, and place of residence are associated with children's exposure to physical punishment, consistent with other studies [17]. Yet, no studies have explored the relationship between physical punishment among households with different income levels in Viet Nam and its secular trend. In this study, we examine whether the relationship between economic status and physical child punishment across years after adjusting for the education level of the household head and their attitudes (parents' personal normative values) toward child punishment. In addition, we examine the prevalence of physical child punishment in Viet Nam by stratifying years (2006, 2011, and 2014) among households with different income levels groups to scrutinize secular trends in socioeconomic disparities.

METHOD

Study Participants

To determine the prevalence of physical child punishment among households in Viet Nam, we examined the UNICEF Multi Indicators Cluster Survey (MICS), rounds 2006, 2011, and 2014 in Viet Nam (MICS3 (2006), MICS4 (2011), MICS5 (2014)). These cross-sectional surveys were conducted by General Statistics Office of Viet Nam at the national level. In brief, samples were recruited using a multi-stage stratified cluster sampling method, in which were stratified by region and areas. In the 2006 Viet Nam MICS, eight regions of Viet Nam have included: Red River Delta, North West, North East, North Central Coast, South Central Coast, Central Highlands, South East, and Mekong River Delta. In the 2011 and 2014 survey, six regions were included: Red River Delta, Northern Midland and Mountain areas, North Central area and Central Coastal area, Central Highlands, South East, and Mekong River Delta. The regions were identified as the main sampling domains and the samples were selected in two stages. The first stage was carried out using the probability proportional to size sampling method. In 2006, within each region, 30–33 Enumeration Areas (EAs) were selected. Then, a systematic sample (1/3 of households) in each EA was drawn. In 2011 and 2014, a random systematic sample of 20 households was selected in each EA. Questionnaires regarding child discipline were administered to household heads or caregivers with children aged less than 14 years. One child was randomly selected per household for child discipline-specific questions. The questionnaires were implemented by a face-to-face interview. The respondents' attitudes toward child discipline and disciplinary actions were assessed by asking series of questions relating to whether the randomly selected child had experienced the survey questions. In 2006, 2011, and 2014, 25, 30 and 32 survey teams including three trained interviewers conducted fieldwork using structured questionnaires, respectively. A total of 29,948 households were included in the study: 8,355, 11,614, and 9,979 households completed the interviews in rounds 2006, 2011, and 2014,

respectively. This study was confined to a total of 16,784 households that have completed the child punishment questionnaire. The detailed study designs of the MICS have been described previously elsewhere [18, 19, 20, 21].

Measures

Outcome Variable: Physical child punishment (Yes or No)—Respondents were asked, “During the last four weeks, when [NAME of the randomly selected child] made the error or had wrong behavior, did you or any adult in the household use the following methods with [NAME]: 1. Spanked on the bottom of the child (with a bare hand), 2. Spanked, hit on the bottom (or somewhere else) of the child with a belt, rod or another hard object, 3. Hit or slapped on the face, head or ear of the child (with a bare hand), 4. Hit or spanked on the hand, arm or leg of the child (with a bare hand), 5. Hit the child continuously with a rod.” Respondents indicated yes (coded 1) or no (coded 0) for each of the five situations.

The outcome variable, physical child punishment variable was operationally defined when the head of the household indicated *yes* for at least one of the five actions in regards to the randomly selected child. The exact wording of the 2006 to 2014 questions can be found in Supplementary File 1.

Independent Variable—The primary independent variable is the wealth index (poorest, second, middle, fourth, and richest). The wealth index presented households’ economic status by measuring individual assets using the Principal Component Analysis (PCA), following the recommendations of Rutstein and Johnson, 2004, Filmer and Pritchett, 2001 and Gwatkin et al., 2000 [22, 23, 24]. The wealth index was computed by grouping households into quintiles (20%), from the poorest, 1, to the richest, 5. Sociodemographic factors used to describe the study sample are household head sex, education levels (none, completed primary, completed lower secondary, and completed upper secondary or more), residence area (urban, rural), and the attitude towards physical child punishment. The attitude towards physical child punishment was dichotomized according to the respondent’s answer to the following question: “Do you think that, in order to raise the child properly, physical punishment is necessary?” (yes=1, no=0).

Statistical Analysis

The unit of analysis in this study was the household. STATA *svyset* and *svy* commands were employed to estimate the proportion of variables according to the given multi-stage sampling, clustering, and weights for the complex survey sample design. Observations and percentages with 95% confidence intervals (CIs) are reported. Sociodemographic and physical child punishment characteristics were analyzed by wealth groups. Univariate and multivariate logistic regressions were performed producing unadjusted and adjusted odds ratios for each independent variable. Three models are shown. Model 1 is adjusted for potential confounders household head sex, household size, ethnicity, religion, survey year and the place of residence with household wealth quintiles as the primary independent variable and the reference group being the poorest. Model 2 additionally adjusted for education-level of the household head. Model 3 additionally adjusted for the attitudes toward

child punishment. We assessed change in absolute inequalities over time using the significance level of the coefficient(s) for an interaction term household wealth quintiles $\times$ survey year, which was added to the model including household wealth quintiles, household head sex, household size, ethnicity, religion and the place of residence, and survey year as independent variables (Model 4 in Table 3). Statistical significance was set at $p < .05$. All analyses were performed using Stata/SE version 14.0.

Ethical Considerations

This study used MICS data collected by the UNICEF. All information in the original dataset was collected confidentially and all identifying information have been removed. The survey obtained informed consent from the household head before conducting survey questionnaires. All data were publically available; therefore, ethical review was not required.

RESULTS

According to 2006 to 2014 data from MICS, 41 percent of children in Viet Nam have been subject to some form of physical punishment practices by their parents/caregivers. Table 1 shows the sociodemographic characteristics across wealth groups in quintiles. The percentage of experiencing physical child punishment was higher for the poorest group compared with the richest group (44.7% vs. 36.9%). More educated, Kinh/Chinese individuals, and individuals living in an urban area had more wealth than their counterparts such as less educated, non-Kinh/Chinese and those living in rural area. (Table 1). Most Vietnamese households were headed by males, and the proportion of household heads according to education levels differed as most of the poorest households did not complete primary school (62.5%) compared to the richest households (19.7%). The overall proportion of parents who believe that physical child punishment is necessary is higher among the household heads that are from the poorest households compared to those from the richest households, 26.9% and 18.2%.

On univariate analysis, poorer SES status was negatively associated with experiencing physical child punishment compared to the most affluent status in 2006, but was positively associated in 2011 (1.53 (95% CI 1.32–1.78)) and in 2014 (1.67 (95% CI 1.42–1.98)) with p-value for trend being less than 0.001 (Table 2). The proportion of physical child punishment in the poorest group increased compared with the richest group (p-value for adjusted wealth quintiles $\times$ survey year < 0.001).

After adjusting for household head sex, household size, ethnicity, religion and the place of residence, physical child punishment had clear socioeconomic gradients: the status of child physical punishment being most favorable among the most affluent and progressively worse for the poorest (Table 3). We explored the relationship between wealth index and physical punishment further after additionally adjusting for the education level of the household heads in Model 2. Again, wealth status was associated with experiencing physical child punishment although only the relationship between no education group and physical child punishment was significant. Finally, Model 3 indicates that after additionally controlling for the attitudes toward physical child punishment in addition to the education level, the AOR of physically punishing their children was still significant (1.35 (95% CI 1.18–1.55), and the

education level yielded as insignificant. In all three models, the poorest children were most at risk for receiving physical punishment compared to the children from the richest. Spanking the bottom of the child with bare hand was the most prevalent form of physical child punishment (Supplementary File 2).

Physical child punishment trends among different wealth groups showed increasing absolute inequalities and the disparity was still persistent even after further controlling for attitudes (parents' personal normative values) toward child punishment (Table 2, Table 3). We conducted secondary analyses to determine if wealth status is associated with parental beliefs. Poorer parents are more likely to believe that physical child punishment is necessary than the richer parents (Supplementary File 3). In addition, less educated parents are more likely believe in physical child punishment.

To confirm our findings, we have additionally examined the trends in the relative index of inequality (RII) and the slope of index inequality (SII) (Supplementary File 4). After controlling for the effects of household head sex, ethnicity, religion and the place of residence, the RII for experiencing physical child punishment remained less than 1, showing that physical child punishment is less prevalent among groups of higher SES. The decreases in SII and RII from 2006 to 2014 indicate growing inequalities (RII=0.81 in 2006 to 0.37 in 2014; and SII=0.88 and 0.64 in 2014; Supplementary File 4).

DISCUSSION

In this paper, we examined the sociodemographic risk factors of childhood physical punishment and the relationship between low economic status and physical punishment in Viet Nam, which were highlighted in various studies [14, 25]. In line with other countries [26], the overall trend of physical child punishment differed by wealth status of the household. Across years, the proportions of experiencing child punishment increased among the poorest group compared to the richest group and disparities among households with different income levels groups were evident. Likewise, having lower economic status was associated with greater risk of physical child punishment. The poorest quintile had the highest likelihood of physical child punishment even after controlling for parental education level and parental attitude towards child punishment. When adjusted for wealth and attitudes toward physical child punishment, education of the household head did not appear to impact the association. Overall, parents' belief in physical child punishment, which did not change over time, facilitates physical child punishment.

Past literature denoted that the middle and upper SES parents were more likely to reward their children instead of endorsing spanking. Without adequate resources, the lower SES parents had no choice but to 'punish' their children, even when they wish to 'reward' their children when they did something right [27]. The reason behind why the households of lower economic status have a higher prevalence in committing physical punishment can be explained by factors not measured in the MICS survey such as stress levels of the parents. For example, Pinderhughes' research showed that low-income parents tend to endorse harsher disciplinary responses not only because they hold stronger beliefs about the value of spanking, but also because they experience higher levels of stress due to different stressors

that seem to have a significant influence over the actual endorsement of child punishment [28].

In earlier research, the attitudes toward child punishment have been one of an important predictor for imposing physical punishment [29]. In our study, after adjusting for the attitudes toward child punishment and wealth index, the association between the education level of the household head and physical child punishment did not appear to be significant. This may be explained by Eleni Karagiannaki's previous research on how parent's level of education influences a child's educational outcome; parental education was not as predictive of children's outcome as was household wealth [30]. In other words, our study showed that the magnitude of the effect of household wealth is greater than education level of parents.

This study extended earlier research concerned with the determinants of physical punishment. First, although this study aggregated three cross-sectional surveys over time in Viet Nam, it is the first study utilizing longitudinal population data from 2006 to 2014 measuring the overall trend of the physical punishment in Viet Nam, compared to a cross-sectional data acquired at a single point in time. This study is noteworthy because to our knowledge, this is the first study to examine the relationship between economic disparities and physical child punishment over time in Viet Nam. Disparities in physical punishment between the poor and the rich have increased from 2006 to 2014. Based on our results, infliction of physical child punishment have been unequally distributed among the different socioeconomic groups of Viet Nam.

Several limitations of this study are to be noted. First, we do not take into account the parent's past experience regarding child punishment and abuse. Many studies show relevance between parental violence experience during childhood and actual endorsement of child punishment on their own children. Improvements to our results can be attained by also conducting a survey about parents' personal histories. In addition, this study employed UNICEF MICS survey data from 2006 to 2014 that used different sampling regions in 2006 compared to 2011 and 2014. From 2006 to 2011, households with children aged 2 to 14 years were included in the survey process while in 2014, households with children aged 1 to 14 years were included. The results of the secular trend could be biased due to this inconsistency in age inclusion criteria over time. Unavailability of uniform data across the three rounds of surveys (2014 survey includes a variable that reflects the age of children while 2006 and 2011 survey does not) hindered us from addressing the age of the child.

Although there is a consensus that physical punishment effects are negative, up to now, studies have not been translated into appropriate action, and have not focused on achieving equity as the protection of child rights has been largely overlooked compared to other child health agendas.

Conclusion

The study explored the relationship between low economic status and the risk of experiencing child physical punishment in Viet Nam. Children living in economically disadvantaged households in Viet Nam are at greater risk of experiencing physical punishment. These results open a window of opportunity for intervention development to

reduce negative disciplinary actions among poorer households. More work needs to be done to understand the magnitude and the factors that have contributed to such inequalities, in order to understand and prevent child physical punishment, achieving well-being of children and families.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.Sociodemographic variables of physical child punishment in Viet Nam by wealth index¹

N (%) (95% CI)	Wealth Index (Quintiles)					Total
	1 Poorest	2 Second	3 Middle	4 Fourth	5 Richest	
Total	3814 (22.7)	3076 (18.3)	3079 (18.3)	3319 (19.8)	3496 (20.8)	16784
Physical Punishment in last 4 weeks						
Yes	1644 (44.7) (42.9, 46.6)	1302 (42.6) (40.6, 44.6)	1320 (42.7) (40.7, 44.7)	1361 (40.6) (38.7, 42.5)	1317 (36.9) (35.2, 38.7)	6944 (41.4) (40.6, 42.1)
Attitudes toward physical child punishment						
Believe that physical punishment is necessary	905 (26.9) (24.9, 29.1)	822 (30.2) (28.0, 32.6)	715 (28.0) (25.8, 30.2)	622 (22.2) (20.2, 24.3)	529 (18.2) (16.5, 20.1)	3593 (21.5) (20.9, 22.1)
Do not believe that physical punishment is necessary	2725 (72.1) (69.9, 74.2)	2199 (69.6) (67.2, 71.8)	2312 (72.0) (69.7, 74.1)	2655 (77.5) (75.4, 79.5)	2942 (81.6) (79.7, 83.4)	12833 (76.8) (76.2, 77.5)
Don't Know	134 (1.0) (0.6, 0.2)	29 (0.1) (0.02, 0.04)	35 (0.04) (0.00, 0.30)	21 (0.01) (0.00, 0.08)	10 (0.10) (0.03, 0.42)	229 (1.4) (1.2, 1.6)
Missing	7 (0)	35 (0.09) (0.03, 0.03)	6 (0.04) (0.00, 0.29)	11 (0.23) (0.09, 0.64)	8 (0.05) (0.00, 0.35)	46 (0.3) (0.2, 0.4)
Gender of household head						
Female	571 (15.4) (13.7, 17.2)	568 (19.5) (17.6, 21.6)	608 (18.6) (16.8, 20.6)	799 (22.0) (20.1, 24.0)	1067 (30.4) (28.4, 32.6)	3613 (21.5) (20.9, 22.2)
Male	3243 (84.6) (82.8, 86.3)	2508 (80.5) (78.4, 82.4)	2471 (81.4) (79.4, 83.2)	2520 (78.0) (76.0, 79.9)	2429 (69.6) (67.4, 71.6)	13171 (78.5) (77.8, 79.1)
Household size						
Mean	4.9 (4.8, 5.0)	4.7 (4.6, 4.8)	4.8 (4.7, 4.9)	4.8 (4.7, 4.8)	4.8 (4.7, 4.9)	4.8 (4.7, 4.8)
Ethnicity						
Kinh/Chinese	1454 (44.9) (42.5, 47.3)	2551 (87.3) (85.7, 88.7)	2871 (94.8) (93.7, 95.7)	3214 (97.8) (97.1, 98.3)	3429 (98.4) (97.8, 98.9)	13519 (80.5) (79.9, 81.1)
Other	2360 (55.1) (52.7, 57.5)	525 (12.7) (11.3, 14.3)	208 (5.2) (4.3, 6.3)	105 (2.2) (1.7, 2.9)	67 (1.6) (1.1, 2.2)	3265 (19.5) (18.9, 20.1)
Religion						
None	3005 (84.3) (82.6, 85.9)	2296 (80.5) (78.4, 82.3)	2280 (79.7) (77.7, 81.6)	2334 (79.8) (77.9, 81.6)	2673 (82.0) (80.2, 83.6)	12588 (75.0) (74.4, 75.7)
Any (Buddhism, Christian Catholic, Cao Dai, Hoa Hao)	806 (15.7) (14.1, 17.4)	780 (19.5) (17.7, 21.6)	799 (20.3) (18.4, 22.3)	985 (20.2) (18.4, 22.1)	823 (18.0) (16.4, 19.8)	4193 (25.0) (24.3, 25.6)
Education of household head						
Completed primary or less	2420 (62.5) (60.3, 64.7)	1888 (55.5) (53.1, 57.9)	1777 (48.1) (45.7, 50.6)	1590 (38.4) (36.1, 40.8)	891 (19.7) (17.9, 21.6)	8566 (51.0) (50.3, 51.8)
Completed lower secondary	519 (14.9) (13.3, 16.6)	602 (22.8) (20.8, 24.9)	615 (22.4) (20.5, 24.5)	771 (23.7) (21.7, 25.8)	834 (21.7) (19.9, 23.7)	3341 (19.9) (19.3, 20.5)
Completed upper secondary or more	314 (11.3) (9.9, 12.8)	446 (18.3) (16.5, 20.2)	608 (27.7) (25.5, 29.9)	892 (36.4) (34.1, 38.7)	1734 (58.1) (55.8, 60.3)	394 (23.8) (23.2, 24.4)
Missing	561 (11.3) (9.9, 12.8)	140 (3.4) (2.6, 4.5)	79 (1.8) (1.2, 2.5)	66 (1.6) (1.1, 2.3)	37 (0.5) (0.3, 0.9)	883 (5.3) (4.9, 5.6)
Area						
Urban	320 (6.1) (5.2, 7.2)	474 (8.9) (7.7, 10.2)	801 (16.5) (14.9, 18.2)	1525 (30.5) (28.5, 32.7)	2753 (71.5) (69.2, 30.8)	5873 (35.0) (34.3, 35.7)
Rural	3494 (93.9) (92.8, 94.8)	2602 (91.1) (89.8, 92.3)	2278 (83.5) (81.8, 85.1)	1794 (69.5) (67.3, 71.5)	743 (28.5) (26.4, 30.8)	10911 (65.0) (64.3, 65.7)

Wealth Index (Quintiles)						
N (%) (95% CI)	1 Poorest	2 Second	3 Middle	4 Fourth	5 Richest	Total

^I All values are unweighted frequency/mean and weighted proportions

Table 2.

Univariate analyses of sociodemographic factors and physical child punishment by survey year

	2006 OR (95% CI)	2011 OR (95% CI)	2014 OR (95% CI)	Interaction by year P-value ^I
Wealth index (quintiles)				
1 (Poorest)	0.75 *** (0.62, 0.91)	1.53 *** (1.32, 1.78)	1.67 *** (1.42, 1.98)	<0.001
2 (Second)	1.03 (0.86, 1.26)	1.28 *** (1.09, 1.49)	1.48 *** (1.24, 1.77)	0.008
3 (Middle)	1.04 (0.85, 1.25)	1.36 *** (1.16, 1.58)	1.43 *** (1.20, 1.71)	0.017
4 (Fourth)	0.91 (0.74, 1.11)	1.26 *** (1.08, 1.46)	1.25 ** (1.05, 1.48)	0.020
5 (Richest)	Ref	Ref	Ref	
Gender of household head				
Female	1.16 * (0.99, 1.36)	0.94 (0.84, 1.06)	1.10 (0.97, 1.25)	0.604
Male	Ref	Ref	Ref	
Household size				
	0.99 (0.95, 1.03)	1.01 (0.98, 1.04)	1.00 (0.96, 1.03)	
Ethnicity				
Kinh/Chinese	1.38 *** (1.18, 1.60)	0.98 (0.86, 1.11)	0.90 (0.78, 1.04)	<0.001
Other	Ref	Ref	Ref	
Religion				
None	Ref	Ref	Ref	
Any (Buddhism, Christian Catholic, Cao Dai, Hoa Hao)	1.37 *** (1.16, 1.62)	1.07 (0.97, 1.19)	1.30 *** (1.15, 1.48)	0.647
Education of household head				
Completed primary or less	1.10 (0.94, 1.28)	1.21 *** (1.05, 1.41)	1.31 ** (1.11, 1.54)	0.130
Completed lower secondary	1.15 (0.99, 1.33)	1.06 ** (0.89, 1.28)	1.12 (0.91, 1.37)	0.854
Completed upper secondary or more	Ref	Ref	Ref	
Missing		1.35 *** (1.08, 1.70)	1.68 *** (1.32, 2.14)	<0.001
Area				
Urban	Ref	Ref	Ref	
Rural	0.85 ** (0.74, 0.98)	1.20 *** (1.09, 1.33)	1.03 (0.92, 1.15)	0.038
Attitudes toward physical child punishment				
Believe that physical punishment is necessary	Ref	Ref	Ref	
Do not believe that physical punishment is necessary	0.23 *** (0.20, 0.26)	0.30 *** (0.26, 0.35)	0.27 *** (0.23, 0.32)	0.104
Don't know		0.74 * (0.53, 1.04)	0.80 (0.38, 1.64)	0.068

	2006 OR (95% CI)	2011 OR (95% CI)	2014 OR (95% CI)	Interaction by year P-value ^I
Missing		0.02 *** (0.00, 0.08)		

^I*
p<0.1

**
p<0.05

p<0.01.

Table 3.Adjusted logistic regression (AOR) for physical child punishment in Viet Nam, 2006–2014[/]

	Model 1 Wealth Index AOR (95% CI)	Model 2 Wealth Index + Education Level AOR (95% CI)	Model 3 Wealth Index + Education Level + Attitudes toward Child Punishment AOR (95% CI)	Model 4 Wealth interaction by year p-value
Wealth index (quintiles)				
1 (Poorest)	1.58 *** (1.39, 1.79)	1.50 *** (1.31, 1.71)	1.35 *** (1.18, 1.55)	<0.001
2 (Second)	1.38 *** (1.23, 1.55)	1.33 *** (1.18, 1.50)	1.21 ** (1.07, 1.37)	0.012
3 (Middle)	1.36 *** (1.22, 1.52)	1.31 *** (1.17, 1.48)	1.24 *** (1.10, 1.40)	0.047
4 (Fourth)	1.18 *** (1.07, 1.31)	1.16 *** (1.04, 1.28)	1.14 ** (1.02, 1.26)	0.05
5 (Richest)	Ref	Ref	Ref	Ref
Education of household head				
Completed primary or less		1.08 (0.98, 1.20)	1.03 (0.93, 1.14)	
Completed lower secondary		1.05 (0.95, 1.16)	1.03 (0.93, 1.14)	
Completed upper secondary or more		Ref	Ref	
Missing		1.30 ** (1.09, 1.55)	1.13 (0.94, 1.35)	
Attitudes toward physical child punishment				
Believe that physical punishment is necessary			Ref	
Do not believe that physical punishment is necessary			0.27 *** (0.24, 0.29)	
Don't know			0.66 *** (0.49, 0.89)	
Missing			0.01 *** (0.00, 0.06)	
Year				
2006	Ref	Ref	Ref	
2011	2.71 *** (2.50, 2.93)	2.58 *** (2.36, 2.83)	3.66 *** (3.31, 4.04)	
2014	1.86 *** (1.71, 2.02)	1.77 *** (1.62, 1.94)	2.57 *** (2.32, 2.85)	
Pseudo R²				
	0.0348	0.0352	0.0818	

[/] All 3 models were adjusted for the year in which the survey was conducted, household head sex, ethnicity, religion, household size and the place of residence.

* p<0.1

** p<0.05

p<0.01.

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