

Exploring the Determinants of Child Marriage Among Males and Females in Vietnam: A Survival Analysis

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Abstract

While the determinants of child marriage among females have been well-documented, there is a lack of research on the determinants of child marriage among males. In Vietnam, where child marriage persists despite legal restrictions, understanding the profile of child grooms and brides is crucial for developing effective interventions. This study aims to bridge the gap in the literature by using Cox proportional hazards regression models to investigate the determinants of child marriage among males and females. The findings of this research reveal that higher levels of education, ideally extending up to upper secondary and tertiary levels, can significantly reduce the likelihood of child marriage between the two genders. Additionally, individuals from ethnic minority groups have a much higher likelihood of getting married at an early age compared to those from the majority ethnic groups, with boys from ethnic minority communities facing a disproportionately higher risk compared to girls. Furthermore, men and boys living in the Mekong River Delta region are more prone to getting married early than their peers in the Red River Delta, while girls from the countryside are more likely to enter into child marriage compared to those in urban areas. These findings are crucial for policymakers when designing policy interventions aimed at preventing child marriage, thereby promoting gender equality and protecting children's rights in Vietnam.

Keywords

Child brides; child grooms; determinants; survival analysis; Vietnam

Introduction

Marriage is often regarded as a key milestone in the journey towards adulthood (Botha & Booysen, 2013). Nevertheless, child marriage is a pervasive issue that evokes more apprehension than celebration, affecting millions of children worldwide (Solotaroff & Pande, 2014). It refers to a legally recognized or unofficial relationship where one or both parties are below the threshold age—typically 18 (Nour, 2006; Schaffnit et al., 2019). Although there is a global trend towards later marriage in many countries for both genders (Carr & Utz, 2020), a considerable number of adolescents are still entering into marriage during their childhood. According to recent data from UNICEF (2023), approximately 115 million males worldwide entered early marriage and parenthood, affecting about one in every 21 young males and adults in lower- and middle-income countries (Gastón et al., 2019). While this figure is relatively smaller than the 650 million females who got married before their 18th birthday (UNICEF, 2023), getting trapped in child marriage remains a significant issue that requires timely and effective solutions.

Global efforts towards banning child marriages have been receiving increasing attention, with many resolutions passed by the United Nations and the Human Rights Council urging countries and territories to enhance their resources towards ending this practice (Ebetürk, 2021). In September 2015, for example, Target 5.3 of the Sustainable Development Goal on gender equality aims to eradicate all detrimental practices that constitute discrimination against females, including child marriage (United Nations, 2015). Notwithstanding the commitment mentioned above, child marriage continues to be a prevalent concern in sub-Saharan African countries, where 35% of females became trapped in child marriage in the 2015–2021 period, followed by South Asia with 28% (UNICEF, 2023). Furthermore, although certain countries have made some progress in lowering the number of child marriages, rates have remained on the rise in previously under-studied regions such as Southeast Asia and Latin America (Jones & Yeung, 2014; UNICEF, 2023).

Previous research has primarily focused on identifying key driving factors for child marriage, such as living conditions, poverty, education, and social norms (Cislaghi et al., 2019; Edmeades et al., 2022; John et al., 2019). However, while these factors may contribute to child marriage for both genders, the association between them and child marriage appears different for males (Chauhan et al., 2020), implying that other factors influencing child marriage may be more significant for males. This indicates that gender-specific dynamics may be at play, even in contexts where early family formation is common (Mensch et al., 2005). A recent study reveals that males' participation in economic activities is highly associated with their likelihood of entering an informal union or formal marriage (Das et al., 2022). As males may be expected to fulfill the breadwinner role in their families, child marriage tends to be more prevalent among those employed and who have dropped out of school (Edmeades et al., 2022). This contrasts with the situation for females, for whom leaving school often means sacrificing economic opportunities to support themselves and their families (Edmeades et al., 2022).

Persisting for many years, child marriage is still a topic of discussion. However, most of the current empirical studies on this topic have concentrated on South Asian and African countries, where a considerable number of girls get married before turning 18 (Gastón et al., 2019; Malhotra & Elnakib, 2021). There has been limited research in the context of Southeast Asia (Erfina et al., 2019), including Vietnam. Despite the global trend of decreasing rates of

child marriage, the country has experienced an increase in recent years, becoming one of the countries with the highest prevalence rates in the Southeast Asian region (Hang, 2016; UNICEF, 2023). This trend is alarming, particularly given the negative consequences of getting married early on the health, education, and well-being of young adolescents and their families (John et al., 2019; Malhotra & Elnakib, 2021; Sarfo et al., 2022). The figures for women aged 20 to 24 who entered into a formal union or were married early prior to the age of 18 have shown an upward trend, increasing from 9.3% in 2011 to 10.6% in 2014 and further rising to 14.6% in 2020–2021 (General Statistics Office [GSO] & UNICEF, 2021). This issue is particularly widespread in the mountainous regions of the north, where numerous ethnic minorities reside. It is exceptionally high among rural females from disadvantaged households or with uneducated parents (Hang, 2016). Women who try to marry later or fight against gender-based violence are subject to social pressures (Hoang, 2020).

In Vietnamese culture, a gendered stigma associated with being unmarried causes females to fear remaining single as they age and losing marriage opportunities (Bélanger & Haemmerli, 2019). Additionally, gender also plays a role in decision-making, with males being more decisive when choosing a spouse, while females are more passive and frequently feel pressured by social norms and expectations (Nhat et al., 2021). Therefore, addressing child marriage in Vietnam requires a multifaceted approach that tackles the root causes of the problem while promoting gender equality and investing in education and health services for young people (UNICEF, 2018). This paper utilized data from the sixth round of the Multiple Indicator Cluster Survey (MICS6), conducted in 2020–2021 by the General Statistics Office (GSO) and UNICEF, to examine the determinants of child marriage among males and females in Vietnam.

Incorporating child grooms in our study has significant implications for both policymaking and research as it provides us with a better understanding of the key factors associated with child marriage in both genders. This understanding can help in identifying protective factors that can be utilized to prevent child marriage and mitigate the consequences of this harmful practice in Vietnam.

Literature review

Scholars from diverse fields have developed multiple theoretical frameworks to investigate and address the complex phenomenon of child marriage. Demographic theories have identified background variables, including social, economic, and environmental factors, and proximate variables, such as biological and behavioral factors, associated with child marriage (Davis & Blake, 1956; Matras, 1965). Additionally, socioeconomic theories suggest that individuals with lower socioeconomic status, characterized by schooling, occupation, and income levels, are more likely to marry early than those with higher socioeconomic status (Singh & Samara, 1996). Individuals either choose to get married when they can optimize their well-being by gaining benefits such as companionship, love, children, caregiving, division of labor, prestige, and overall quality of life from their chosen partner, or they choose to remain single (Becker, 1973).

For many years, research has consistently identified drivers of child marriage for girls. Among these drivers, education has emerged as a crucial predictor of early marriage (Hossain et al., 2016). The lack of schooling and income-generating opportunities puts child brides in a disadvantaged position, making them more susceptible to early marriage than their

unmarried or older counterparts (International Center for Research on Women, 2007). Regrettably, research indicates that the risk of child marriage is more significant for those who are not in school, while higher levels of education significantly reduce the incidence of this practice (Paul, 2019). Rural women with limited formal education are inclined toward child marriage (Rumble et al., 2018). This is evident in the case of Vietnam, where women who are not going to school are nearly seven times more likely to engage in early relationships when compared with others (UNICEF, 2018).

Such findings are consistent with other studies conducted in lower-middle-income countries, highlighting the importance of interventions to increase school attendance in preventing child marriage (Field & Ambrus, 2008; Jejeebhoy et al., 2013). However, in certain situations, the connection between marriage and education might not be as robust as believed (Male & Wodon, 2018). This may be due to inadequate school conditions leading to insufficient skills, which may prompt young women and their families to reconsider attending school (Psaki et al., 2019). It implies that even when educational opportunities are available, the impact of schooling on children and early marriage can be weak in environments where cultural traditions discourage female employment (Psaki et al., 2019). Furthermore, studies have revealed that parents with low schooling may be less aware of the consequences of young marriage on their daughters' lives and are more likely to view it as a means of securing their economic stability (Yilmaz et al., 2022). In other words, lower levels of education among parents may increase the likelihood of their daughters being exploited through forced marriage (Trinh & Zhang, 2021).

While education is a crucial factor in determining child marriage, poverty is also considered a significant driver of this practice (Field & Ambrus, 2008; Jejeebhoy et al., 2013; Paul, 2019; Razu, 2018). Poverty impacts child marriage through various mechanisms, such as the socioeconomic status of parents and the demand for material goods that parents cannot afford for their children (Nour, 2006). Females from impoverished families are often perceived as an economic hardship, making them more dependent on their parents' decisions (Lee-Rife et al., 2012). In some cases, child marriage may be an economic strategy for families to cut the cost of attending school for their daughters, particularly when girls and women have fewer opportunities to participate in the labor force (Ahmed et al., 2019). This means that females may marry early to escape poverty or support their education (Stark, 2018). Besides, the decision to marry often involves transactions between the bride's and groom's families, which can also impact the timing of the marriage (Bajracharya & Amin, 2012). Although the association between poverty and young marriage is consistent, the mechanisms could differ depending on social, cultural, and historical contexts (Field & Ambrus, 2008; Razu, 2018). It is worth noting that child marriage is also practiced in wealthy families (Paul, 2019).

Multiple investigations have established the association between child marriage and the parental attitudes and community norms that promote this practice (Edmeades et al., 2022; Gage, 2013). While attitudes are individual opinions and evaluations, social norms reflect the shared beliefs about acceptable behaviors in a given society (Cislaghi & Heise, 2018; Schultz et al., 2007). Cultural norms surrounding women's involvement in formal employment can impact how families prioritize investing in education for females (Schultz et al., 2007). In certain situations, parents may view daughters as economic burdens and opt for early marriage as a way to alleviate financial difficulties, thus contributing to the prevalence of child marriage (Parsons et al., 2015). As such, individuals may hold negative attitudes toward child marriage but still conform to social norms and participate in the practice (Cislaghi & Heise, 2018).

Studies have indicated that the occurrence of child marriage is more widespread in rural regions compared to urban areas, with females residing in disadvantaged areas facing a higher risk of child marriage (Godha et al., 2013; Paul, 2020). This is because rural communities tend to follow social and cultural norms that endorse child marriage as soon as girls reach puberty, whereas families in urban areas prioritize education (Modak, 2019). Additionally, inadequate access to healthcare, education, and economic opportunities in rural areas can make females vulnerable to early marriage. Conversely, urban areas typically have superior access to higher levels of education, healthcare, and economic opportunities, which may assist females in postponing marriage and pursuing their personal goals and ambitions (Fan et al., 2022).

To date, previous research has primarily focused on the issue of child marriage among females, leaving a significant gap in our understanding of child marriage among males. From a gender-relational perspective, the failure to gain deeper insights into the experiences of child grooms carries substantial consequences. It not only hinders advancements in attaining gender equality within the context of global development but also reinforces the notion that gender and development policies tend to focus on young women. This, in turn, can marginalize the experiences of young men and relegate their concerns to the background. Therefore, this study aims to fill these significant research gaps by investigating the diverse determinants that contribute to the occurrence of child marriage among both males and females in Vietnam.

Methodology

Data source

The current study applied the data from the sixth round of the Multiple Indicator Cluster Survey (MICS6), carried out during 2020–2021 by the General Statistics Office (GSO) and UNICEF. The international MICS program, acknowledged globally, is a household survey launched by UNICEF. The primary purpose is to collect comprehensive data on various indicators related to the well-being of children and women. The collected information serves the dual role of informing policies and projects and assessing advancements toward achieving the Sustainable Development Goals. In Vietnam, the MICS6 was conducted with a sample size of 13,359 interviewed households, 10,770 women, and 4,923 men aged 15–49 (GSO & UNICEF, 2021). The survey employed a multi-stage, stratified cluster sampling approach to establish its sample, ensuring representation across various demographic and geographic factors, such as living areas, regions, and ethnic groups (GSO & UNICEF, 2021). It includes extensive information on various aspects of human development, allowing for the estimation of a broad range of indicators at the national level.

Variable measurements

The legal age for marriage varies among different countries. In this study, we followed the cut-off age recommended by the GSO to identify when children became trapped in marriage (GSO & UNICEF, 2021). Our outcome of interest is age at first union/marriage, which takes a value of “1” if females are married before 18 or males are married before 20 (referred to as “child marriage”), and “0” otherwise. The independent variables employed in the model

include education level, wealth index quintile, living area, ethnicity, and region. For more detailed information about variable constructions, please refer to Table 1.

Table 1: Variables of Interest to Examine the Determinants of Child Marriage

Variable	Description
Age at First Union/Marriage	Select "1" if a person was married before 18 (for females) and 20 (for males). Select "0" otherwise.
Education Level	Select "0" if a person had no education or completed pre-primary education. Select "1" if a person completed primary education. Select "2" if a person completed lower secondary education. Select "3" if a person completed upper secondary education. Select "4" if a person completed vocational training. Select "5" if a person completed higher education.
Wealth Index Quintile	Select "1" if a person comes from a "poorest" household. Select "2" if a person comes from a "poor" household. Select "3" if a person comes from a "middle" household. Select "4" if a person comes from a "rich" household. Select "5" if a person comes from a "richest" household.
Living Area	Selects "1" if a person lives in an urban area. Selects "0" if a person lives in a rural area.
Ethnicity	Select "1" for the Kinh/Hoa people. Select "2" for the Tay/ Thai/ Muong/ Nung people. Select "3" for the Khmer people. Select "4" for the Hmong people. Select "5" for others.
Region	Select "1" if a person originally comes from the Red River Delta. Select "2" if a person originally comes from the Northern Midlands and Mountain. Select "3" if a person originally comes from the North Central and Central Coastal. Select "4" if a person originally comes from the Central Highlands. Select "5" if a person originally comes from the South East. Select "6" if a person originally comes from the Mekong River Delta.

Statistical analyses

This study used chi-squared tests to examine the associations between age at first union/marriage and various independent variables. After examining the association, the study utilized Cox proportional hazard models to determine hazard ratios and the confidence intervals that corresponded with those ratios to evaluate the impact of specific independent variables on the occurrence of child marriage. In this study, "survival time" was identified as the age at which individuals entered their first marriage or union. For individuals who were not married at the time of the survey, we determined their "survival time" based on their age when the MICS6 was being conducted.

Concerning time-ordered information such as adolescent marriages, the issue of censorship poses a significant challenge. This stems from the fact that individuals under the age of 18 who had not entered into marriage at the time of the survey were not exposed to child marriage for the duration of the event. In response to this issue, Cox regression was employed, which facilitates the modeling of right censored data as the outcome variable. This approach assumes that the impact of covariates on hazard ratios follows an exponential pattern, making

it possible to conduct a comprehensive and reliable study of child marriage within this context.

The likelihood of child marriage is expressed as the hazard, and it was formulated using the following equation:

$$H(t) = H_0(t)e^{(\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5)} \quad (1)$$

The equation represents a collection of independent variables denoted as X_1 through X_5 in order, as shown in Table 1, while $H_0(t)$ represents the baseline hazard at time t , signifying the hazard for an individual with all explanatory variables set to 0. Equation (1) undergoes a transformation when both sides are divided by $H_0(t)$ and logarithms are applied.

$$\ln \frac{H(t)}{H_0(t)} = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \quad (2)$$

Accordingly, $\frac{H(t)}{H_0(t)}$, in Equation (2), is defined as the hazard ratio (HR). The coefficients β_1 through β_5 are estimated through the Cox regression model.

In the multivariate analysis, two models were employed. Model 1 assessed the unadjusted effects of a single independent variable, while Model 2 examined the combined effects of all independent variables. The statistical analyses in this study were performed using Stata (Version 17.0), and statistical significance was assessed at a 95% confidence level for the hazard ratio.

Findings

Descriptive statistics

Table 2 presents descriptive statistics for both males and females. For males, it shows that 14.05% of them entered into child marriage. Among the participants, 62.94% identified as Kinh/Hoa, while the remaining belonged to other minority ethnic groups. Approximately 70% of the participants resided in rural areas, and 49.18% attained educational levels equivalent to lower secondary education or below. For females, it shows that 17.04% of them were married prior to turning 18. Among the female participants, 64.29% identified as Kinh/Hoa, while the remaining belonged to other minority ethnic groups. Approximately 68% of the participants were living in rural areas. Additionally, 53.2% of them completed lower secondary education or attained lower levels of education.

Table 2: Characteristics of Study Sample

Variables	Categories	Males		Females	
		Frequency	%	Frequency	%
Age at First Union/Marriage	Adult Marriage	2,811	51.78	7,303	64.66
	Child Marriage	763	14.05	1,965	17.40
Education Level	Pre-Primary or None	322	5.93	1,234	10.93
	Primary	729	13.43	1,592	14.10
	Lower Secondary	1,619	29.82	3,181	28.17
	Upper Secondary	1,256	23.14	2,461	21.79

Variables	Categories	Males		Females	
		Frequency	%	Frequency	%
	Vocational Training	194	3.57	354	3.13
	Higher Education	803	14.79	1,947	17.24
Wealth Index Quintiles	Poorest	1,862	34.30	3,707	32.82
	Poor	834	15.36	1,911	16.92
	Middle	756	13.93	1,726	15.28
	Rich	745	13.72	1,671	14.80
	Richest	726	13.37	1,755	15.54
Living Area	Urban Area	1,653	30.45	3,573	31.64
	Rural Area	3,770	69.44	7,710	68.27
Ethnicity	Kinh and Hoa	3,417	62.94	7,261	64.29
	Tay, Thai, Muong, or Nung	492	9.06	995	8.81
	Khmer	341	6.28	717	6.35
	Hmong	572	10.54	1,173	10.39
	Others	607	11.18	1,148	10.16
Region	Red River Delta	922	16.98	2,064	18.28
	Northern Midlands and Mountain	1,181	21.75	2,431	21.52
	North Central and Central Coastal	671	12.36	1,426	12.63
	Central Highlands	682	12.56	1,334	11.81
	South East	1,146	21.11	2,300	20.36
	Mekong River Delta	821	15.12	1,728	15.30

Analysis of association

This study conducted chi-squared tests to check the association between independent and dependent variables before conducting proportional hazards regression analysis (see Tables 3 and 4). The findings reveal significant associations between age at first union/marriage and demographic and socioeconomic variables, including education level, wealth index quintiles, living area, ethnicity, and region. Regarding education level, it was observed that participants with higher levels of education, particularly those who entered a certain level of tertiary education, exhibited a significantly lower tendency for child marriage. Conversely, individuals with fewer years of schooling are associated with a higher tendency toward child marriage.

The results of the association between ethnic groups and child marriage imply that ethnic groups played a significant role in shaping trends in child marriage. The analysis identified that the likelihood of child marriage was associated with Hmong and other minority ethnic groups than the majority Kinh and Hoa populations. Additionally, individuals from economically disadvantaged backgrounds were more inclined to marry at an early age, and the likelihood of child marriage is also associated with the level of household wealth, with the implication that child marriage was notably higher among individuals from poor families.

Table 3: Association Between Male Characteristics and Age at First Union/Marriage

Variables	Categories	Adult	Child	Chi-Square	<i>p</i> value
Education Level	Pre-Primary or None	160	133	300.440	.000
	Primary	433	199		
	Lower Secondary	946	309		

Variables	Categories	Adult	Child	Chi-Square	<i>p</i> value
Wealth Index Quintiles	Upper Secondary	592	94	537.849	.000
	Vocational Training	153	12		
	Higher Education	527	16		
	Poorest	856	577		
	Poor	485	87		
	Middle	479	53		
Living Area	Rich	485	32	128.295	.000
	Richest	506	14		
Ethnicity	Urban Area	883	83	841.534	.000
	Rural Area	1,928	680		
	Kinh and Hoa	1,968	160		
	Tay, Thai, Muong, or Nung	249	115		
	Khmer	178	54		
Region	Hmong	155	300	423.074	.000
	Others	261	134		
	Red River Delta	564	34		
	Northern Midlands and Mountain	514	403		
	North Central and Central Coastal	380	80		
	Central Highlands	350	87		
	South East	556	61		
Mekong River Delta	447	98			

Table 4: Association between Female Characteristics and Age at First Union/Marriage

Variables	Categories	Adult	Child	Chi-Square	<i>p</i> value
Education Level	Pre-Primary or None	612	572	1,100.000	.000
	Primary	1,067	438		
	Lower Secondary	2,216	675		
	Upper Secondary	1,372	169		
	Vocational Training	317	4		
	Higher Education	1,402	19		
Wealth Index Quintiles	Poorest	2,004	1,272	1,100.000	.000
	Poor	1,279	273		
	Middle	1,222	148		
	Rich	1,175	124		
	Richest	1,307	60		
Living Area	Urban Area	2,470	240	349.412	.000
	Rural Area	4,833	1,725		
Ethnicity	Kinh and Hoa	5,125	593	1,600.000	.000
	Tay, Thai, Muong, or Nung	676	220		
	Khmer	464	137		
	Hmong	407	666		
	Others	631	349		
Region	Red River Delta	1,465	142	764.310	.000
	Northern Midlands and Mountain	1,297	888		
	North Central and Central Coastal	970	215		
	Central Highlands	862	271		
	South East	1,523	194		
	Mekong River Delta	1,186	255		

Survival analysis

The study employed bivariate and multivariate Cox proportional hazard regression analyses to examine time at first union/marriage for both male and female individuals. Detailed findings from these analyses can be found in Tables 5 and 6. The outcomes are expressed as unadjusted hazard ratio (UHR) and adjusted hazard ratio (AHR) with a 95% confidence interval (CI).

Table 5: Factors Associated with Age at First Union/Marriage Among Males

	Simple Cox Regression			Multiple Cox Regression		
	UHR	SE	95% CI	AHR	SE	95% CI
Education Level						
Pre-Primary or None (ref)						
Primary	0.622*** (-4.23)	0.070	0.500, 0.775	1.111 (0.92)	0.127	0.887, 1.391
Lower Secondary	0.465*** (-7.38)	0.048	0.380, 0.570	1.153 (1.31)	0.125	0.931, 1.427
Upper Secondary	0.244*** (-10.46)	0.033	0.188, 0.318	0.686*** (-2.70)	0.096	0.522, 0.902
Vocational Training	0.127*** (-6.84)	0.038	0.070, 0.230	0.512** (-2.18)	0.157	0.280, 0.934
Higher Education	0.051*** (-11.27)	0.013	0.030, 0.085	0.279*** (-4.53)	0.079	0.161, 0.485
Wealth Index Quintiles						
Poorest (ref)						
Poor	0.324*** (-9.79)	0.037	0.259, 0.406	0.825 (-1.41)	0.113	0.631, 1.079
Middle	0.208*** (-10.95)	0.030	0.157, 0.275	0.671** (-2.28)	0.118	0.476, 0.946
Rich	0.127*** (-11.35)	0.023	0.089, 0.182	0.570** (-2.55)	0.126	0.369, 0.878
Richest	0.055*** (-10.74)	0.015	0.032, 0.093	0.376*** (-3.02)	0.122	0.200, 0.709
Living Area						
Rural Area (ref)						
Urban Area	0.301*** (-10.32)	0.035	0.240, 0.378	1.141 (0.97)	0.155	0.873, 1.489
Ethnicity						
Kinh and Hoa (ref)						
Tay, Thai, Muong, or Nung	4.622*** (12.52)	0.565	3.637, 5.874	3.396*** (6.75)	0.615	2.381, 4.843
Khmer	3.318*** (7.62)	0.522	2.437, 4.517	1.439* (1.90)	0.275	0.989, 2.092
Hmong	13.254*** (26.29)	1.303	10.932, 16.070	9.181*** (11.94)	1.705	6.380, 13.211
Others	5.171*** (14.03)	0.606	4.110, 6.505	4.023*** (8.12)	0.690	2.875, 5.630
Region						
Red River Delta (ref)						
Northern Midlands and Mountain	9.532*** (12.62)	1.703	6.716, 13.528	0.986 (-0.06)	0.221	0.636, 1.530
North Central and Central Coastal	3.230*** (5.73)	0.661	2.162, 4.824	0.882 (-0.55)	0.201	0.564, 1.378
Central Highlands	3.796*** (6.60)	0.768	2.554, 5.643	0.782 (-1.06)	0.182	0.496, 1.234
South East	1.759*** (2.64)	0.377	1.157, 2.676	1.206 (0.84)	0.270	0.778, 1.870
Mekong River Delta	3.348*** (6.07)	0.666	2.267, 4.946	1.689** (2.24)	0.395	1.069, 2.670

Note: *t* statistics in parentheses; * $p < .1$, ** $p < .05$, *** $p < .01$

Table 6: Factors Associated with Age at First Union/Marriage among Females

	Simple Cox Regression			Multiple Cox Regression		
	UHR	SE	95% CI	AHR	SE	95% CI
Education						
Pre-Primary or None (ref)						
Primary	0.521*** (-10.27)	0.033	0.460, 0.590	1.039 (0.55)	0.072	0.908, 1.189
Lower Secondary	0.399*** (-16.17)	0.023	0.357, 0.446	1.067 (0.95)	0.073	0.933, 1.220
Upper Secondary	0.178*** (-19.72)	0.016	0.150, 0.211	0.515*** (-6.80)	0.050	0.426, 0.624
Vocational Training	0.020*** (-7.81)	0.010	0.007, 0.053	0.074*** (-5.15)	0.037	0.028, 0.200
Higher Education	0.021*** (-16.50)	0.005	0.013, 0.034	0.089*** (-9.86)	0.022	0.055, 0.144
Wealth Index Quintiles						
Poorest (ref)						
Poor	0.399*** (-13.76)	0.027	0.350, 0.455	0.932 (-0.85)	0.077	0.792, 1.097
Middle	0.239*** (-16.49)	0.021	0.201, 0.283	0.680*** (-3.61)	0.073	0.552, 0.838
Rich	0.211*** (-16.55)	0.020	0.175, 0.253	0.820* (-1.67)	0.098	0.649, 1.036
Richest	0.095*** (-17.81)	0.013	0.073, 0.123	0.640*** (-2.77)	0.103	0.466, 0.878
Living Area						
Rural Area (ref)						
Urban Area	0.312*** (-16.91)	0.021	0.272, 0.357	0.863* (-1.81)	0.070	0.736, 1.012
Ethnicity						
Kinh and Hoa (ref)						
Tay, Thai, Muong, or Nung	2.465*** (11.43)	0.195	2.111, 2.877	1.624*** (4.39)	0.179	1.307, 2.016
Khmer	2.317*** (8.86)	0.220	1.924, 2.790	1.354** (2.51)	0.164	1.069, 1.716
Hmong	8.521*** (37.84)	0.482	7.626, 9.521	4.597*** (13.48)	0.520	3.683, 5.738
Others	3.946*** (20.34)	0.266	3.457, 4.504	2.549*** (9.44)	0.253	2.099, 3.095
Region						
Red River Delta (ref)						
Northern Midlands and Mountain	5.448*** (18.75)	0.492	4.563, 6.504	0.977 (-0.19)	0.119	0.770, 1.240
North Central and Central Coastal	2.137*** (7.02)	0.231	1.729, 2.642	0.928 (-0.61)	0.112	0.732, 1.177
Central Highlands	2.937*** (10.40)	0.304	2.397, 3.598	0.978 (-0.18)	0.120	0.770, 1.243
South East	1.298** (2.36)	0.143	1.046, 1.612	0.997 (-0.03)	0.120	0.787, 1.262
Mekong River Delta	2.072*** (6.96)	0.217	1.688, 2.544	1.048 (0.36)	0.134	0.815, 1.346

Note: *t* statistics in parentheses; * $p < .1$, ** $p < .05$, *** $p < .0$

The bivariate Cox proportional hazard analysis reveals a statistically significant correlation between the risk of child marriage and many covariates observed. For instance, individuals with higher levels of education exhibit a substantially reduced likelihood of child marriage compared to their non-enrolled counterparts. Similarly, those from more affluent households experience a reduced risk of transitioning into child marriage when contrasted with the poorest households. It is worth noting, however, that the UHR for child marriage was significantly higher among Hmong individuals (UHR = 13.254, 95% CI [10.932, 16.070] for males and UHR = 8.521, 95% CI [7.626, 9.521] for females) and among residents of the Northern Midlands and Mountain regions (UHR = 9.532, 95% CI [6.716, 13.528] for males and UHR = 5.448, 95% CI [4.563, 6.504] for females).

The multiple Cox proportional hazard analysis confirms an association between education level, wealth, ethnicity, and the risk of child marriage. Regarding education, males who completed upper secondary education were approximately 31% less likely to enter into child marriage than their peers who were not in school or enrolled only in preschool programs (AHR = 0.686, 95% CI [0.522, 0.902]). The risk significantly decreased for males who pursued vocational training (AHR = 0.512, 95% CI [0.280, 0.934]) or attended college (AHR = 0.279, 95% CI [0.161, 0.485]). Interestingly, the likelihood of entering into child marriage did not significantly differ between individuals who completed either lower secondary or primary education and those without any education or enrolled only in preschool programs. Females who completed upper secondary education were approximately 49% less likely to enter into child marriage than their peers who were not in school or enrolled only in preschool programs (AHR = 0.515; 95% CI [0.426, 0.624]). The risk dramatically decreased for females who pursued vocational training (AHR = 0.074, 95% CI [0.028, 0.120]) or attended college (AHR = 0.089, 95% CI [0.055, 0.144]). Nevertheless, unlike the findings of the unadjusted ratios, there was no statistically significant difference in the probability of child marriage between females with no education or those who enrolled in pre-primary education and those who completed either primary education or lower secondary education. This demonstrates the significant role of attaining higher levels of education, such as completing upper secondary or tertiary education, in mitigating the likelihood of child marriage for both males and females.

Ethnicity remains a significant factor in predicting the probability of survival in the unmarried state for both genders. Specifically, ethnic minority children faced a greater likelihood of getting married early compared to those from the dominant ethnic groups (Kinh/Hoa). For males, Hmong individuals, in particular, faced a nine-fold higher risk of getting married early (AHR = 9.181, 95% CI [6.380, 13.211]). The AHR of child marriage was also higher among Tay, Thai, Muong, or Nung (AHR = 3.396, 95% CI [2.381, 4.843]) and other minority groups (AHR = 4.023, 95% CI [2.875, 5.630]), in comparison to Kinh/Hoa. For Hmong females, these individuals faced a four-fold higher risk of getting married early (AHR = 4.597, 95% CI [3.683, 5.738]). The AHR of getting married early was also higher among Tay, Thai, Muong, or Nung (AHR = 1.624, 95% CI [1.307, 2.016]), Khmer (AHR = 1.354, 95% CI [1.069, 1.716]), and other minority groups (AHR = 2.549, 95% CI [2.099, 3.095]) in comparison to the Kinh/Hoa. These findings also underscore the disproportionate vulnerability of boys from ethnic minority communities compared to girls.

Regarding the effect of wealth, males from middle-income households were approximately 33% less likely to marry than those from the poorest families (AHR = 0.671, 95% CI [0.476, 0.946]). The risk significantly decreased for those from rich families (AHR = 0.570, 95% CI [0.369, 0.878]) or the richest households (AHR = 0.376, 95% CI [0.200, 0.709]). For females, those from middle-income households were approximately 32% less likely to get married compared to those from the poorest families (AHR = 0.680, 95% CI [0.552, 0.838]). The risk slightly decreased for those from the richest families (AHR = 0.640, 95% CI [0.466, 0.878]) but increased for those from rich families (AHR = 0.820, 95% CI [0.649, 1.036]). These findings show that while there is a clear pattern suggesting a lower probability of child marriage among boys from wealthier families, no consistent disparity is observed for girls.

Furthermore, the analysis revealed that the living area was slightly associated with the risk of child marriage for females (AHR = 0.863, 95% CI [0.736, 1.012]), while no such pattern was observed among males. Surprisingly, males from the Mekong River Delta were approximately 69% more likely to marry early than those in the Red River Delta (AHR = 1.689, 95% CI [1.069, 2.670]). However, regional disparities are no longer correlated with child marriage among females.

Discussion

By introducing an alternative method for estimating the determinants of child marriage via survival analysis and including males in the analysis, this study contributes significantly to the current research on child marriage in Vietnam and Southeast Asia. The results of chi-squared tests found significant associations between age at first union/marriage and socioeconomic and demographic factors such as education level, living area, ethnicity, region, and wealth index quintiles. The results of multivariate regression analysis confirmed the existence of several factors associated with child marriage among adolescent boys and girls.

First, in alignment with the broader body of literature on child marriage among females (Hossain et al., 2016; Jejeebhoy et al., 2013), obtaining higher levels of education, ideally at the upper secondary or tertiary levels, can significantly mitigate the likelihood of child marriage among males and females. However, the completion of lower secondary education or lower does not offer significant protection against child marriage for both genders. This underscores the critical role of education in empowering children, especially girls, to delay marriage and pursue their aspirations. In this case, allocating resources to increase enrollment rates in upper secondary and tertiary education is essential, which remains relatively low in Vietnam (Bao & Cho, 2021; Dang & Glewwe, 2018). Targeted interventions should be implemented to address barriers such as poverty, gender discrimination, and cultural norms that hinder educational attainment.

Second, ethnicity remains a crucial determinant in forecasting the likelihood of survival in the unmarried state for both males and females. Children from ethnic minority groups have a much higher likelihood of getting married at an early age compared to those from the majority ethnic groups (Kinh/Hoa). These findings underscore the influence of traditional beliefs and community norms, highlighting the intricate interplay between culture and social practices in shaping marriage customs. Policies, programs, and other interventions aimed at ending child marriage should be designed with a comprehensive awareness of the cultural nuances and customs prevalent in different ethnic minority communities. This may involve engaging community leaders, elders, and local stakeholders to co-design interventions that respect and uphold cultural values while challenging harmful practices.

Third, our study sheds light on the disparities in child marriage between males and females in Vietnam. Men living in the Mekong River Delta region are more prone to getting married early than their peers in the Red River Delta, while women from the countryside are more likely to enter into child marriage compared to those in urban areas. These findings suggest the need to better understand how geographical location shapes vulnerability to child marriage. Furthermore, while education and ethnicity are crucial determinants in predicting the likelihood of remaining unmarried for both genders, their effects vary dramatically between genders. Girls who achieve higher levels of education are much less likely to experience child marriage, whereas boys from ethnic minority communities face a disproportionately higher risk compared to girls. This underscores the importance of adopting a gender-sensitive approach in policy and programming efforts to prevent child marriage and promote gender equality.

Conclusion

In summary, our study contributes to the existing literature on child marriage by adding valuable insights and identifying contributing factors related to child marriage among boys and men. We emphasize the significance of education and highlight the nuanced dynamics within ethnic communities, alongside advocating for economic development, as crucial factors influencing child marriage. It is imperative for comprehensive initiatives to prioritize the inclusion of both genders, necessitating the development and implementation of context-specific and culturally sensitive interventions. Furthermore, effective interventions require utilizing targeted social and behavioral communication strategies to tackle gender-related issues and challenge entrenched social norms. This aligns with Vietnam's commitment to eradicate child, forced, and early marriage by 2030, as outlined in the Sustainable Development Goal on gender equality (SDG 5) Target 5.3.

Limitations

The study has several limitations in terms of data and methodology. First, our data were collected through a cross-sectional survey; consequently, while we can identify associations between variables, we cannot establish a causal relationship. Furthermore, depending on data from an existing survey limits the inclusion of numerous other potential variables and a comprehensive assessment of their impact on child marriage. Additional research should be conducted to explore other determinants of child marriage between males and females. Such exploration can provide valuable insights for developing targeted programs and policies aimed at eradicating child marriage.

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