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Original Article

Predictors of pregnancy intention among child marriage based on the theory of planned behavior

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Abstract

***Background & Aims*:** The phenomenon of child marriages, or the marriage of children under the age of 18, jeopardizes the mental and physical health of millions of children and adolescents worldwide. This study aimed to investigate the predictors of pregnancy intention among child marriages using the theory of planned behavior in the city of Karun, Southwest Iran.

***Materials & Methods*:** A descriptive-analytical study was conducted on 344 child marriages in the city of Karun, located in Southwest Iran. The data collection tools consisted of a demographic information questionnaire and a structured theory of planned behavior questionnaire, which included questions related to attitude, subjective norms, perceived behavioral control, and behavioral intention. The collected data were analyzed using SPSS version 22.

***Results*:** All study participants had completed no more than a high school education, with 96.7% having only completed elementary or middle school. Additionally, 99% of participants were housewives. Of the child marriages surveyed, 50.3% reported intending to become pregnant before the age of 18. Attitude, subjective norms, and perceived behavioral control were found to predict 57% of the variance in intended pregnancy among child marriages. Among these factors, subjective norms had the strongest impact on intended pregnancy among child marriages.

***Conclusion*:** The results of this study showed a high prevalence of pregnancy intention below the age of 18 among child marriages who presented to healthcare centers, which could endanger their health. Given the correlation between the structured theory of planned behavior and intended pregnancy below the age of 18 in child marriage, educational strategies based on predictive factors can be used to educate women about respecting the appropriate age and conditions for pregnancy.

***Keywords*:** Child marriage, Intention, Pregnancy, Theory of planned behavior

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Introduction

Child marriage, defined as the formal or informal marriage of individuals before the age of 18, has been recognized as a harmful practice that violates human rights by the United Nations Human Rights Council (1). This practice has had a significant impact on girls worldwide, particularly in developing countries, compromising the physical and mental well-being of millions of children and adolescents (2).

In developing countries, more than one-third of girls are married before the age of 18, and one-ninth of them are married before their fifteenth birthday (3). A UNICEF report reveals that among women aged 20 to 24 in less developed countries, 12% were married before the age of 15, and 38% were married before the age of 18. Notably, regions in West and Central Africa, particularly Niger, experience the highest rates of child marriage, with 76% of girls affected (4). The United Nations Population Fund reports child marriage rates of 30% in South Asia, 24% in Latin America and the Caribbean, and 12% in Eastern Europe and Central Asia (5).

In Iran, according to UNICEF data, 3% of women aged 20 to 24 were married before the age of 15, and 17% were married before the age of 18 (6). A study conducted by Azimi demonstrated that among every ten girls aged 10 to 19 in urban areas, and among every five girls in rural areas, at least one had been married at least once (7).

Child marriage, whether formal or informal, has numerous consequences for adolescent girls. Those who marry before the age of 18 are more likely to experience early childbearing, have limited control over their fertility, face shorter birth intervals of less than 24 months, encounter barriers in accessing contraception, undergo multiple unintended pregnancies, and face higher risks of maternal mortality and infertility (8, 9). Moreover, child marriage exposes them to various undesirable social and health consequences, including educational dropout, illiteracy, mental health disorders, violence, and sexually transmitted infections (10-14).

Child marriage, which often leads to early or unintended pregnancies, places girls at a higher risk of complications such as hemorrhage, sepsis, obstructed labor, and the adverse effects of unsafe abortion. Also, child marriage may expose girls to many harms and threats from non-legal aspects, such as social, medical, and psychological consequences. According to experts, these include sudden separation of children from their world of peers and friends, physical immaturity for motherhood, the problems associated with difficult and premature births, an increase in abortions, a rise in the number of underweight, premature, and malnourished babies, and the inability of "mothers' and fathers' children" to care for and raise children. Other factors include a high number of divorces, early or emotional divorces after getting older, lack of knowledge about reproductive health and family planning, prevalence of mood disorders (including depression, anxiety disorders, obsessions, and panic disorders), inability to achieve personal independence and intellectual maturity, loss of family support, loss of the freedom to interact with peers and participate in social activities, and going through incomplete stages of sexual, psychological, and social development. These factors significantly contribute to mortality among adolescent girls aged 15 to 19 (15-18). Given the prevalence of child marriages and their adverse outcomes, there is an urgent need for behavioral interventions. Understanding child marriage, awareness of its undesirable outcomes, and associated behaviors during pregnancy are crucial for developing effective interventions.

The theory of planned behavior is one of the theories developed to understand and predict behavior. It posits that behavioral intentions are influenced by attitudes toward the behavior, subjective norms, and perceived behavioral control (19). These intentions are the primary determinants of individuals' behaviors. Attitude refers to the overall evaluation of behavior, while subjective norms represent perceived social pressure to engage or not engage in a behavior. Perceived behavioral control reflects the perceived level of control over the behavior (19).

Considering the cultural and religious context and the high prevalence of child marriages, examining the applicability of the theory of planned behavior in

predicting pregnancy intentions among child marriages is vital. Therefore, this study aimed to investigate the factors associated with intended pregnancy in child marriages using the theory of planned behavior in the city of Karun, Southwest Iran. The results of this research can help healthcare providers design, implement, and evaluate appropriate interventions to reduce child marriages among the population.

Materials & Methods

This study is a descriptive-analytical study and is part of a research project focused on child marriages, specifically conducted within the comprehensive health centers in Karun City, located in Southwestern Iran. The sample size was determined using a census approach, where all child marriages covered by the comprehensive health centers in Karun City were included in the study. Selected samples were invited to participate in the study by trained midwives. Upon entering the child marriages into the healthcare centers, midwives provided an explanation regarding the purpose and significance of the study, as well as the confidentiality of the study information. Participants were then admitted to the study after willingly completing the informed consent form with full awareness.

The inclusion criteria were married women covered by healthcare centers, under 18 years old, and satisfied with participation. The exclusion criteria included being pregnant and the family's dissatisfaction with participation in this research.

Data Collection Tools

The information was collected using a two-part questionnaire (a demographic information questionnaire and a structured questionnaire based on the constructs of the theory of planned behavior) in a self-report format.

Demographic information included in the questionnaire consisted of age, occupation, place of residence, educational level, ethnicity, age at marriage for both spouses, type of marriage, and the number of siblings for each spouse.

The structured questionnaire based on the constructs of the theory of planned behavior included attitude, subjective norms, perceived behavioral control, and behavioral intention regarding pregnancy in child marriages. The questionnaire was designed by the research team, taking into account existing studies and relevant questionnaires related to the theory of planned behavior.

The attitudes toward pregnancy under the age of 18 in child marriages were measured using a 14-item questionnaire. Scoring was done using a Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The attitude score ranged from 14 to 70, with higher scores indicating a more positive attitude towards pregnancy under the age of 18.

The subjective norms (perceived social pressure and conformity to the beliefs of others, including the spouse, father, mother, sister, brother, physician, spouse's father, spouse's mother, and friends) regarding pregnancy under the age of 18 in child marriages were assessed using a 17-item questionnaire. For example, statements like "My mother believes that I should have a pregnancy under the age of 18" and "I am inclined to have a pregnancy under the age of 18, according to my mother's opinion" were assessed. The questions were scored using a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree." Higher scores indicated a greater perceived pressure to engage in the behavior.

The perceived behavioral control of the participants was assessed using five questions regarding "having control and autonomy over pregnancy and the ability to delay pregnancy until after the age of 18, and that barriers and difficulties cannot prevent my pregnancy before the age of 18." The questions were evaluated using a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree." Higher scores indicated greater perceived control over engaging in the relevant behavior.

The intention was assessed using three questions: "I intend to get pregnant before the age of 18," "I intend not to get pregnant unless the living conditions are favorable," and "I intend to get pregnant considering the risks of pregnancy after the age of 18." The questions were evaluated using a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree." Higher

scores indicated a stronger intention to engage in pregnancy below the age of 18. The score of each question ranged from 1 to 5 (strongly agree = 5, agree = 4, no idea = 3, disagree = 2, and strongly disagree = 1). It should be noted that the scores of the sections of attitudes, subjective norms, perceived behavioral control, and intention were finalized proportionately for 100.

To determine the validity of the researcher-made questionnaire, the qualitative method of content validity was used with an experienced panel of experts, including those in health education and health promotion, midwifery, psychology, medicine, and preventive medicine. In this method, the experts were asked to examine the items of the questionnaires in terms of simplicity, clarity, relevance, and necessity, and to express their opinions and suggestions. After receiving feedback and suggestions from the experts, the necessary amendments were made to the study tools. Finally, the validity of the tools was confirmed.

The reliability of the questionnaire was measured by Cronbach's alpha test method on 30 females who were similar to the studied population in terms of demographic characteristics. The values were 0.86 for attitudes, 0.85 for subjective norms, 0.75 for perceived behavioral control, and 0.7 for intention; ultimately, the instrument's reliability was confirmed.

The collected data were analyzed using SPSS software version 22 with a significance level of 0.05. Descriptive statistics and appropriate analytical statistics, such as Spearman's correlation coefficient and multiple linear regression using the backward method, were employed for data analysis.

This research was approved by the Ethics Committee of Yasuj University of Medical Sciences with the ethics code IR.YUMS.REC.1398.122. Participation in this study was voluntary and based on personal consent. Participants completed a pre-study informed consent form, ensuring that their information would be kept confidential.

Results

The findings of the study indicate that 344 child marriages between the ages of 12 and 17 participated, with a mean age (standard deviation) of 15.32 (1.35). The age range of marriage for the participants was between 11 and 17 years, with a mean age (standard deviation) of 14.27 (1.268). Based on the findings, 96% of the participants had an educational level of primary school or middle school, while 3% had a high school diploma. Out of the participants, 99% (331 individuals) were homemakers. The age range of the participants' spouses at the time of marriage was 16 to 40 years, with a mean (standard deviation) of 35.22 (3.456) years. Regarding the education level of the participants' spouses, 95.2% had a high school diploma or below. In terms of occupation, 23.4% of the spouses were unemployed, and 11.4% were employed. Additionally, 50.3% of the child marriages expressed the intention to become pregnant before the age of 18 (Table 1).

Table 1. Results of demographic factors

Variables	Number (%) or mean ± SD	Variables	Number (%) or mean ± SD
Education level		**Education level of husband**	
Elementary school	129 (38.6)	Elementary school	38 (11.4)
Guidance	194 (58.1)	Guidance	187 (56)
Diploma	11 (3.3)	Diploma	93 (27.8)
University	0 (0)	University	16 (4.8)
Age of marriage		**Husband's age at marriage**	
11	4 (1.2)	> 20	51 (15.4)
12	24 (7.2)	20-30	274 (82.3)
13	65 (19.5)	< 30	13 (13)
14	90 (26.9)	**Husband's occupation**	

Variables	Number (%) or mean ± SD	Variables	Number (%) or mean ± SD
15	99 (29.6)	worker	115 (34.4)
16	41 (12.3)	Employee	38 (11.4)
17	11 (3.3)	Freelance	103 (30.8)
Marriage		Unemployed	78 (23.4)
Family	248 (74.3)	**Job**	
Non-family	86 (25.7)	Housewife	332 (99.1)
		Employed	3 (9)

Multiple regression analysis was performed using the backward method. The dependent variable was pregnancy intention, and the predictor variables included attitude, subjective norms, and perceived behavioral control. Assumptions of multiple regression were examined. The assumption of multicollinearity was checked by evaluating the variance inflation factor (VIF), which measures the correlation between predictor variables. In the final model, all predictor variables had VIF values less than 5, indicating no significant multicollinearity. The assumption of normality was tested using a standardized residual plot against standardized predicted values of the predictor variables under investigation, and normality was found to be established. Linear regression analysis showed that, in the second step, the variables of attitude, perceived behavioral control, and subjective norms accounted for 57% of the variance in pregnancy intentions (R^2 = 0.57). All the input variables had a statistically significant impact on pregnancy intentions in child marriage (p < 0.001), with the variable of subjective norms having the greatest influence on pregnancy intentions (Table 2 & Table 3).

Table 2. Correlation between the studied constructs and intention among the subjects

Variables	1	2	3	4
Attitude	1			
Subject norms	0.786**	1		
Perceive control behavior	0.439**	0.426**	1	
Intention	0.609**	0.727**	0.525**	1

** Correlation is significant at the 0.0001 level (2-tailed)

*Correlation is significant at 0.01 the level (2-taitled)

Table 3. Linear regression analysis to determine the predictors

Variables	B	SE B	Beta	T	*P* value
Step 3					
Subject norms	0.131	0.009	0.615	15.210	< 0.000
Perceive control behavior	0.202	0.034	0.241	5.949	< 0.000
Adjusted R squared = 0.57, P < 0.0001					

Discussion

Child marriage has been recognized as an important priority on the global health and development agenda. Data show that every year, 3.7 million adolescent girls become pregnant in developing countries (20). These pregnancies can have immediate and long-term consequences for the health, education, and income of girls, often affecting their offspring as well (21). The

present study was conducted to examine the factors associated with becoming pregnant in child marriages, using the theory of planned behavior.

The study results showed that more than 50% of the participating child marriages in the study involved individuals married before the age of 15. These findings are consistent with the findings of other studies. Hossain, in his study among Bangladeshi women, reported the average age of women at their first marriage as 15 years, and more than 5% of women got married before the age of 13 (22). In our study, this percentage was 8% before the age of 13. Reiss, in his study on child marriage in America, reported that approximately 96% of child marriages took place at the age of 16 or 17, with a small number of children being 10 years old at the time of marriage (23). John et al., in a study conducted among women in Ghana and Ethiopia, showed that 2.5% of Nigerian women and 7.6% of Ethiopian women got married at the age of 12 or younger. Moreover, more than 80% of Nigerian women and 65% of Ethiopian women were married by the age of 17 (24). Given the region under study in the research, it appears that cultural and traditional practices, poverty, limited awareness of the risks of child marriages among girls, cultural family values, religious beliefs, and low autonomy of women in decision-making, as well as responses to social, emotional, and sexual needs, can be cited as reasons for child marriages (7).

The study results showed that more than 96% of the participating child marriages had completed primary and secondary education, and none of them were illiterate. It appears that the compulsory nature of education during the early years in Iran may be the reason why child marriages were not illiterate in this study. John et al., in a study conducted among Nigerian and Ethiopian women, showed that 64% of Ethiopian women and 87% of Nigerian women were illiterate (24), which contradicts the findings of this study. Numerous studies have indicated that illiterate or less educated children are more likely to experience early marriage, which can have negative consequences on their lives (2, 15, 22, 25-29).

More than 50% of the participating child marriages in the study expressed the intention to become pregnant before the age of 18. Behavioral intention reflects the magnitude or extent of an individual's motivation to engage in a specific behavior. In other words, it indicates the necessary willingness of a person to perform a particular behavior (19). Child marriage forces individuals to engage in marital and daily household responsibilities for which they are not mature enough to handle. This immaturity, both socially and psychologically, can lead to undesirable consequences in terms of fertility. They are compelled to deal with marital issues and daily tasks that may have adverse social, psychological, and physiological effects on their well-being. Considering the consequences of pregnancy under the age of 18 on the health of child marriages (8-13, 16) and their high intention for pregnancy, if this intention is translated into pregnancy behavior, the health of a significant number of child marriages is put at risk. Therefore, it is essential to carry out necessary educational interventions regarding the consequences of pregnancy in this group.

The study findings revealed that the constructs of the theory of planned behavior accounted for 57% of the variance in behavioral intentions. Among these constructs, subjective norms played a significant role in explaining the variability in pregnancy intentions. Yaghoubi et al. (30) conducted a study that revealed a significant positive correlation between behavioral intentions and the constructs of the theory of planned behavior regarding natural childbirth. The constructs of the theory of planned behavior accounted for 28% of the variance in behavioral intentions for natural child marriage among pregnant women. Malek et al. (31) conducted a study on pregnant women and found that the constructs of the planned behavior theory accounted for 66% of the total variance in the intention to consume healthy food. The constructs related to perceived behavioral control and subjective norms were identified as the strongest predictors of the intention to consume healthy food among pregnant women. Ismail et al. conducted a study on breastfeeding women and found

that the theory of planned behavior constructs accounted for 51% of the variance in behavioral intention. Perceived behavioral control and attitude were identified as the most significant predictors of behavioral intention (32). Whitaker et al. conducted a study on pregnant women and found that the constructs of the theory of planned behavior predicted 23% to 39% of the variance in weight gain, physical activity, and nutrition (33).

The constructs of subjective norms are considered secondary predictors of behavioral intentions. Individuals who believe that specific others approve of their behavior and are motivated to meet their expectations exhibit positive subjective norms. Conversely, individuals who believe that others do not approve of their behavior have negative subjective norms (19).

In this study, the spouse, spouse's parents, parents of the women, siblings, and friends were considered important significant others. They demonstrated a significant influence on the intention of pregnancy behavior among women, which is consistent with the findings of similar studies that have recognized the impact of subjective norms (31, 34).

It appears that peer pressure and the motivation to comply (as important factors shaping subjective norms) play a determining role in the intention for pregnancy. Traditional family values, family customs, and the beliefs of individuals can significantly influence married females. This included parents, relatives, friends, and individuals who have experienced pregnancy under the age of 18 in their family. These factors can lead to increased pressure in making choices and adhering to the intention of getting pregnant under the age of 18. Furthermore, considering the cultural context of the study region and the religious and spiritual beliefs regarding childbearing among the examined group can increase the influence of subjective norms on the intention for pregnancy.

Among the constructs of the theory of planned behavior, subjective norms exhibited the strongest association with behavioral intentions, whereas attitude demonstrated a weaker relationship with behavioral intentions. These findings indicate that the beliefs and emotions of married females have a relatively lesser impact on their intention for pregnancy compared to other constructs of the theory of planned behavior. Therefore, changing attitudes alone may not be an effective intervention approach to reducing the intention for pregnancy in married females. It is necessary to utilize other constructs of the theory of planned behavior in interventions.

One of the limitations of the present study is the influence of the COVID-19 pandemic on the completion of questionnaires. Additionally, the reliance on self-report data collection posed challenges in accurately reporting and transferring certain constructs. Moreover, due to the cross-sectional design of the study, the evaluation of the translation of intention into behavior among married females regarding pregnancy under the age of 18 was not carried out.

Conclusion

The findings of this study highlight the high intention for pregnancy among married females, which may lead to various consequences and outcomes that require increased attention from policymakers. Moreover, the study revealed the effectiveness of the theory of planned behavior in explaining the intention for pregnancy among married females. Given the significant correlation between the constructs of the theory of planned behavior and the intention for pregnancy, these constructs can be employed in designing and implementing interventions aimed at educating married females on reducing pregnancies under the age of 18.

Limitations

The limitations of this study are important to consider when interpreting the results and their generalizability. The sample was limited to pregnancy intention among child marriages in Karun City, Ahvaz, Iran. This geographical limitation restricts the external validity of the study, meaning that the findings may not be applicable to other populations or regions, especially

those with different social, cultural, or economic contexts.

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Author's Contributions

The conceptualization of the project was carried out by Javad Harouni, Seyed Fazel Zinat Motlagh and Sahar Mehdipour birgani. The methodology was developed by Seyed Fazel Zinat Motlagh, Naser Sharafkhani and Sahar Mehdipour birgani. Data collection was handled by Sahar Mehdipour birgani, Javad Harouni and Seyed Fazel Zinat Motlagh. Data analysis was performed by Narges Roustaei and Moslem Sharifi. The project was supervised by Javad Harouni, Seyed Fazel Zinat Motlagh and Sahar Mehdipour birgani. Project administration was overseen by Naser Sharafkhani, Seyed Fazel Zinat Motlagh and Sahar Mehdipour birgani. The original draft of the writing was prepared by Javad Harouni, Naser Sharafkhani, Seyed Fazel Zinat Motlagh and Sahar Mehdipour birgani. The editing was done by Sahar Mehdipour birgani. Finally, the review and further writing were carried out by Seyed Fazel Zinat Motlagh and Sahar Mehdipour birgani.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflict of Interest

The authors have no conflicts of interest associated with the material presented in this paper.

Ethical Statement

The Ethics Committee of Yasuj University of Medical Sciences approved the study (IR.YUMS.REC.1398.122).

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