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RESEARCH

Prevalence of and risk factors for early marriage and the correlations with depressive symptoms in northwest of Iran

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Abstract

Purpose Early marriage (EM), also known as child marriage, is a marriage or union between two people when one or both are under 18. Globally, risk factors for EM and the consequences on depressive symptoms (DSs) have been poorly understood. The current study aimed to investigate risk factors for EM and the correlation between EM and DSs.

Methods A total of 402 married people were randomly selected from the general population of Malekan County, Iran, from 2017 to 2018. Depression was assessed in the participants after EM through family physicians' medical records in the community health centers. Data were collected using valid and structured instruments as well as face-to-face interviews. Multiple logistic regression analysis was carried out to estimate the adjusted odds ratios (AOR) and 95% confidence intervals (CIs) for the relationship between EM and DSs.

Results The overall and sex-based prevalence of EM was 21.64% ($n=87$), i.e., 69 (26.5%) in females and 19 (13.4%) in males, respectively. In the regression analysis, the low educational level of EM people (AOR = 4.27: 1.28–14.35), their parental (AOR = 5.53: 2.14–17.22), female sex (AOR = 1.58: 1.07–2.33), and family low income (AOR = 2.74: 1.00–7.84), and being a housewife (AOR = 1.71: 1.22–3.26) were identified as the most reliable predictors of EM. In the final analysis, after adjusting for the potential confounders, EM was associated with an increased risk of DSs (AOR = 1.60: 1.2–2.72).

Conclusion Based on the results, EM is common and associated with DSs in this county. Our study provides preliminary findings to guide future studies, given that this issue has been neglected in previous investigations. Progress in reducing EM and addressing its full set of consequences can occur through political commitment and combining the experiences and voices of people affected by EM.

Keywords Early marriage · Child marriage · Depression · Mental disorder · Iran

Introduction

Early marriage (EM), also known as child marriage, is defined as a union or marriage between two people when one or both are below 18 years of age at the time of the first marriage [1]. EM is a public mental health issue around the world, and it is a human rights violation that puts health and growth at risk and limits the opportunities for empowerment and social well-being, especially for girls. EM is often a negative life event causing many physical and mental

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health problems among adolescents of both genders, especially in Southeast Asia and low-income countries [2, 3]. It is estimated that child marriage has influenced around 60 million girls globally [4]. Previous investigations have demonstrated a high incidence of EM in East Asia and Sub-Saharan African countries [5, 6]. In low-income countries, one in three girls lives with EM [6, 7].

Evidence often shows that low education level, poverty and low level of family income, residence in rural, literacy level, religion, occupation, and knowledge of legal marital were reliable determinants of early marriage around the world. For example, these findings have been highlighted in Indonesia [8], Ethiopia [9] and Bangladesh [10]. These findings were approved in a a literature review among in developing countries [11]. Risk factors for EM in Iran are the same socio-economic characteristics and these findings have been shown in several studies [12, 13]. Moreover, Hosseni et al. in a qualitative study in Iran explored three main categories for EM including EM as a transcendental coercion, EM as a solution or a kind of problem solving, and EM as voluntary act" (real agency and imaginary agency) [14].

EM could have serious complications for mental and physical health, well-being, relationships with peers, and academic progress [1, 15]. A high incidence of EM (40%) has been reported in Sistan and Baluchestan province, in southeastern Iran [16]. Limited studies found that EM could be associated with depression and depressive symptoms (DSs) [6, 17]. These studies have only addressed psychological consequences without considering depression as the main variable related to early marriage, nor have they offered causal pathway through regression analyses [18, 19]. Furthermore, child marriage is associated with maternal mortality, and the duration of childbirth and gestation is one of the leading causes of mortality among girls who experience child marriage [1]. Besides, infants who are born to mothers under 18 years old are susceptible to preterm birth, low birth weight, poor nourishment, and poor quality of life [20, 21].

DSs are the leading cause of disability around the world, and depression is the most prevalent mental disorder among teenagers, with a prevalence of 4–5% [22, 23]. Adolescent girls and boys who experience EM are susceptible to depressive disorders, complications for mental health [24], and also intimate partner violence [25]. Furthermore, meta-analysis studies have found that intimate partner violence [25] and family problems are associated with child marriage and suicidal behaviors [26, 27].

The health needs assessment of the Malekan Healthcare system has reported a high prevalence of EM in northwestern Iran [28]. Also, there are several gaps that remain uncertain regarding the association of EM risk factors and predictors in Iran, as well as the correlations with DSs. So far, the socioeconomic characteristics and effective factors for EM have been poorly investigated among the married people at the population-based. Moreover, there are limited perceptions and findings available regarding the correlation between EM and its effect on the occurrence of depressive symptoms. Therefore, the main objective of the current study was to investigate the prevalence of and risk factors for EM. Moreover, we investigated the correlation between EM and DSs among married people in Malekan County.

Methods

Study design and setting

We conducted the current cross-sectional study among married people in Malekan County from 2017 to 2018. This study was derived from a community-based suicide prevention program in Malekan County, Iran. The detailed methods of this population-based study have been published previously [29]. The sample size was 402 married people based on a previous study [30] ($p=0.30$ for the prevalence of early marriage, $\alpha=0.05$, 95% CI, and 1.2 for the design effect). The participants were randomly selected using the stratified random sampling method. The strata were selected from different areas of the county according to the geographical divisions by the community health centers.

Eligibility criteria

The study included all married people in the county. Non-native people, unmarried cases, subjects who suffered from major depressive disorders before marriage, and subjects with a history of recurrences of depressive disorders before marriage were excluded since there was not a temporal association between child marriage as a risk factor and depression (outcome) in this situation. The history and morbidity of DSs were assessed based on family physicians' medical records in community health centers using community health workers [29].

Early marriage and demographic characteristics

For data collection and measuring the study variables, face-to-face interviews were conducted by two trained clinical psychologists with master degree in a single 60-minute session. EM was defined as any kind of marriage (formal vs. informal) or union between two individuals when one or both are less than 18 years old. We also used native community health workers [31] to gather reliable and valid information about EM and the socioeconomic status of the participants. Socioeconomic status was measured using the

Persian version of a valid and reliable instrument previously used in this county [32]. Education levels were evaluated based on years of education and subsequently classified into two categories: academic and non-academic. In Iran, there exists a significant disparity in the education and awareness of individuals with academic versus non-academic backgrounds.

Depressive symptoms

DSs were measured through face-to-face interviews conducted by trained psychologists using the Persian version of the Beck Depression Inventory (BDI-II), which has been validated and utilized in this field previously [33]. The BDI was a 21-item questionnaire with a four-point Likert scale ranging from 0 to 3. The tool scoring was 0 to 13, 14 to 19, 20 to 28, and 29 to 63 and was categorized into normal, mild, moderate, and severe ranges for depression, respectively. For better understanding and based on previous studies [30, 34], participants were categorized into two groups of *normal* and *depressed* with any symptoms (mild, moderate, and severe). The Persian version of BDI-II among Iranian people has been approved by Ghassemzadeh et al. and they have been reported a high internal consistency (Cronbach's $\alpha = 0.87$) and acceptable test-retest reliability ($r = 0.74$) [33].

Statistical analysis

A chi-square ($\chi 2$) test was used for categorized variables, and an independent t-test was carried out for quantitative variables. DSs were classified into four categories: normal, mild, moderate, and severe, based on the tool scoring system, and compared between early married and non-early married groups. We also categorized them into two groups: normal (score: 0–13) and depressed (score: >13) for better understanding, based on previous studies [30, 34].

Multiple logistic regression models were carried out to estimate the crude and adjusted odds ratio (OR) with a 95% confidence interval (CI) for estimating the predictors of EM as well as the true association between EM and the risk of depression in the presence of covariates and potential confounders. Given that many variables (risk factors and confounders) were associated with depression and the actual association between EM and DSs may have been confounded with these variables, we adjusted the potential confounders, including age, sex, education, economic status (income), and substance abuse, by modeling multiple logistic regression. All the variables mentioned (potential confounders) were risk factors for depression and were associated with EM. Any p value less than 0.05 ($p < 0.05$) was considered statistically significant. All the tests were carried out using SPSS software (version 19.0, Chicago, IL, USA).

Results

Table 1 shows the prevalence and association between socio-demographic characteristics, risk factors, and EM among the general population of married people in Malekan County. Out of 402 participants, the overall prevalence of EM was 21.64% ($N = 87$). The sex-based prevalence of EM was 69/260 (26.54%) in females and 19/142 (13.40%) in males, respectively. Regarding age categories at the time of the study, the distribution of advanced age was higher among not-early-married partners compared to early-married partners. In the early-married group, we observed a decreasing trend in age range; however, these differences were not significant when compared with the early-married group ($p = 0.153$). Of the 87 people who married early, 69 (79.3%) were female and 19 (21.7%) were male and there was a significant difference between sex and EM ($p = 0.001$).

The distribution of academic and higher educational levels among early married and non-early married spouses, as well as parental education levels, was (10.3% vs. 16.5%; p-value = 0.001) and (6.9% vs. 19.0%; p-value = 0.001), respectively. Likewise, the proportion of families with an income exceeding 2 million per month in early married and non-early married groups was (13.8% vs. 39.4%), respectively, and an income of less than 2 million increased the likelihood of EM (p-value = 0.042). The majority of participants in the study groups were housewives. However, the proportion of housewives was 77.0% among early married partners and 49.5% in the non-early married group, showing a significant difference (p-value = 0.003). We found that EM was associated with smoking (p-value = 0.007), while no significant associations were identified for family size or the number of children and substance abuse (p-value > 0.05). Please refer to Table 1 for detailed information.

Figure 1 shows the distribution of depression among the respondents with and without the experience of EM. In those who had experienced EM, the prevalence of DSs was 59.7%, whereas in those who had not, it was 46.4%. This difference was statistically significant (p-value = 0.018).

Table 2 demonstrates the results of the univariate analysis on the association between DSs and EM. We found that EM could increase DSs. Meanwhile, non-depressed participants were considered the control group. EM increased the odds of mild, moderate, and severe symptoms of depression by (OR = 1.79; 95% CI: 0.91–3.5), (OR = 3.15; 95% CI: 1.85–5.2), and (OR = 2.93; 95% CI: 1.7–5.8) times, respectively. In Table 2, we also compared depressive symptoms among spouses with one and/or two partners who are early married

Table 1 Socio-economic status and risk factors for early marriage among married people

Variables		Early marriage (n=402)				Total N (%)	P-value
		Yes (n=87; %)		No (n=315; %)			
Gender	Female	69	26.54	191	73.46	260 (64.67)	0.001
	Male	19	13.40	123	86.62	142 (35.30)	
Age group	20>	41	47.1	8	2.5	49 (12.20)	0.153
	20–30	21	24.1	181	57.5	202 (50.25)	
	>30	17	19.5	134	42.5	151 (37.55)	
Educational status*	Non-academic	78	89.7	263	83.5	341 (84.82)	0.002
	Academic/high	9	10.3	52	16.5	61 (15.18)	
Educational level of Parent	Non-academic	81	93.1	255	81.0	336 (83.58)	0.001
	Academic/high	6	6.9	60	19.0	66 (16.42)	
Family income* (monthly)	Blew 2 million	75	86.2	191	60.6	266 (66.20)	0.042
	Above 2 million	12	13.8	124	39.4	136 (33.83)	
Resident	Urban	28	32.2	111	35.2	139 (34.57)	0.677
	Rural	55	63.2	204	64.8	259 (64.43)	
Occupation	housewife	67	77.0	156	49.5	223 (55.47)	0.003
	Farming or farming related	3	3.4	38	12.1	41 (10.20)	
	Student	6	6.9	24	7.6	30 (7.46)	
	Others	11	12.6	97	30.8	108 (26.87)	
Smoking status	Yes	3	3.4	40	12.7	43 (10.70)	0.007
	No	84	96.6	275	87.3	359 (89.30)	
Alcohol abuse	Yes	4	4.6	14	4.4	18 (4.48)	0.819
	No	83	95.4	301	95.6	384 (95.52)	
Substance abuse	Yes	2	2.3	8	2.5	10 (2.50)	0.447
	No	85	97.7	307	97.5	392 (97.50)	
Family size	2≥	13	14.9	33	10.5	46 (11.44)	0.245
	2–4	57	65.5	226	71.7	283 (70.40)	
	≥4	17	19.5	56	17.8	73 (18.20)	

* Toman/Rial as Iranian currency

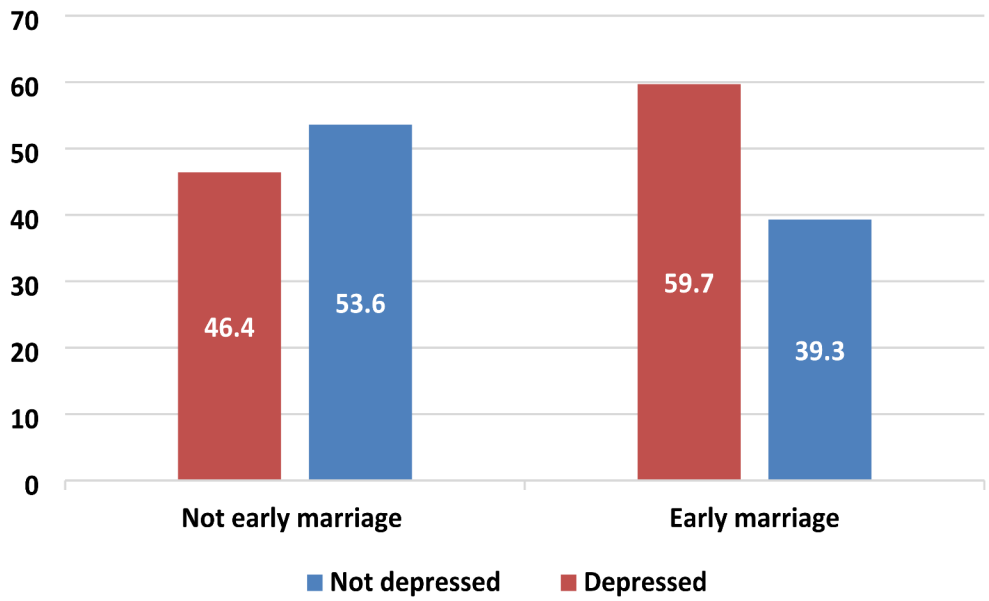

Fig. 1 The prevalence rate of depression* among early marriage and not early marriage people (χ^2 test; P-value=0.018). *Depressed subjects included levels of mild, moderate, and severe, and not-depressed was normal without any depressive symptoms

((within-group comparison of early married spouses). However, except for mild depressive symptoms (p=0.024), there were no significant differences between spouses with one and two of those being early married and other severity of depressive symptoms (p<0.05).

Table 3 illustrates the results of multiple logistic regression analysis and adjusted OR with a 95% CI for the association between EM and risk factors. The findings showed that the low education level of the respondents and their parents significantly increased the risk of EM (OR=5.53, 95% CI:

Table 2 The association between early marriage and depressive symptoms

Variables		Early marriage ($N=402$)				Total ($n=402$)	Crude OR**	95% CI	*P*-value
		Yes ($n=87$)			No				
		One partner ($n=66$)	Two partners ($n=21$)	(P-value)*	($n=315$)				
depressive symptoms	Not depressed	**27 (40.9)**	**8 (38.9)**	**0.872**	169 (53.65)	204 (50.75)	1	1	1
	Mild	**14 (21.2)**	**7 (33.3)**	**0.024**	78 (24.76)	99 (24.62)	1.79	0.91–3.50	0.088
	Moderate	**13 (19.7)**	**4 (19.0)**	**0.916**	42 (13.33)	59 (14.67)	3.15	1.85–5.21	0.001
	Sever	**12 (18.1)**	**2 (9.6)**	**0.398**	26 (8.25)	40 (9.95)	2.93	1.71–5.84	0.001
Total		**66 (100.0)**	**21 (100.0)**	-	315 (100)	402 (100)			

* (within-group comparison of early married spouses)

** (between-group comparison of early married and not early married spouses)

Table 3 Measure of association between early marriage risk and effective factors by multiple logistic regression analyses*

Variables		Crude OR (95% CI)	Adjusted OR (95% CI)
Gender	Male	1	1
	Female	2.31 (1.34–4.07)	2.43 (1.32–4.46)
p-value		0.003	0.004
Participants education status	Academic	1	1
	Non-academic I	5.47 (1.65–17.82)	4.27 (1.28–14.35)
P-value		0.005	0.019
Parent education status	Academic	1	1
	Non-academic	6.09 (2.44–19.74)	5.53 (2.14–17.22)
P-value		0.001	0.002
Family income (monthly)	More than 2 million	1	1
	Less than 2 million	2.71 (1.02–7.37)	2.74 (1.00–7.84)
P- value		0.049	0.052

*Adjusted for occupation, and smoking status

Ɨ included primary, and secondary school

2.14–17.22; OR = 4.27, 95% CI: 1.28–14.35, respectively). Likewise, female sex (OR = 2.43, 95% CI: 1.32–4.46) and poor income (OR = 2.74, 95% CI: 1.0–7.84) were significantly associated with the risk of EM.

Table 4 indicates the relationship between EM and the risk of depression, as well as the crude and adjusted OR with a 95% CI in multiple logistic regression analysis. After adjusting for education, family income, and substance abuse, EM increased the odds of depression (OR = 1.60, 95% CI: 1.02–2.72). Moreover, female sex, being in the age range of 20–30 years, and being a housewife increased the risk of depression by 1.58, 1.71, and 1.61 times, respectively.

Table 4 The relationship between early marriage and the risk of depression after adjusting for the potential source of bias by multiple logistic regression analyses*

Variables		Crude OR (95% CI)	Adjusted OR (95% CI)
Early marriage	No	1	1
	Yes	1.72 (1.06–2.77)	1.60 (1.02–2.72)
	P-value	0.029	0.048
Gender	Female	1.78 (1.23–2.56)	1.58 (1.07–2.33)
	P-value	0.002	0.021
	Male	1	1
Age groups	20>	1.41 (0.89–2.26)	1.70 (1.04–2.80)
	P-value	0.144	0.033
	20–30	1.46 (0.95–2.23)	1.71 (1.10–2.68)
	P-value	0.084	0.019
	>30	1	1
Occupation	Farming or farming related	0.52 (0.28–1.52)	0.57 (0.19–1.72)
	P- value	0.233	0.323
	housewife	1.65 (1.18–3.14)	1.71 (1.22–3.26)
	P- value	0.014	0.023
	Others	1	1

*Adjusted for education, family income, and substance abuse

Discussion

To our knowledge, this is one of the few studies investigating the association between EM and depression, at least in Iran. The results indicated a high prevalence of EM (22.0%) and its effect on DSs in this county. Moreover, it was found that after adjusting for the potential confounders, there was a significant association between socio-demographic characteristics, including the poor educational level of the early married partners and their parents, the low income of the family, female sex, and the risk of child marriage.

Recently, a systematic review study in developing countries found that educational level and place of residence were the most commonly associated factors for EM [35]. Regarding determinants and risk factors for child marriage,

our study findings are in agreement with those of many previous studies in Turkey [4], Serbia, Ethiopia, Uganda, the Democratic Republic of the Congo, and Sudan [36–39]. However, the impact of EM on the incidence of depression and DSs still requires further investigation.

Some evidence showed that the poor educational level of families and their worldviews may consider EM the best method to generate a good relationship with people around them [40]. Our results emphasize the impact of education and culture, and the study confirmed that these variables are reliable predictors of child marriage. However, they should be understood within societies regarding a culturally sensitive conceptual framework [5].

Given that the association between EM and the risk of depression has been poorly understood in previous studies, the current study provides primary findings to guide future studies. After adjusting for covariates including age, sex, and other effective factors on EM such as education and socioeconomic status, there was still a significant association between EM and the risk of DSs in the multiple logistic regression model. Similarly, several previous findings reported the complications of child marriage for the mental health, delivery, and quality of life of girls and boys, as well as their offspring [18, 41].

Several procedures contribute to the association between EM and depressive symptoms as well as psychological well-being. Evidence has shown that EM often places girls and boys at a heightened risk of intimate partner violence, inequity in fecundity, mental health issues, reduced communication with their spouse, poor decision-making, and limited access to resources compared to girls who marry at a more mature age [18, 42]. Furthermore, early married spouses, due to the lack of social, physical, and mental maturity, along with insufficient life skills and coping mechanisms, experience conflicts. These conflicts, stemming from inadequate life skills and an immature worldview, lead to depressive symptoms and psychological complications [10, 43, 44]. Besides, recently a case-control study by Azizi et al. showed that EM of boys and girls can also increase the risk of suicidal behavior [45].

In this study, depression was considered as an outcome variable, while EM was an independent variable that can acutely or chronically affect the occurrence of depression symptoms or its exacerbation. However, this path/relationship is causal when, first EM occurs before the outcome (depression) and secondly, all covariates related to EM and depression, such as age, sex, education level of couples with early marriage, education level of their family, their occupation, income, place of residence, local dominant culture, and some other relevant factors such as partner violence, mental and psychological profile, smoking, and drug and alcohol abuse and other potential confounding variables are controlled and provided they are kept constant, the true association between EM and depression can be estimated [46]. This issue was highlighted in previous studies [45, 47].

In the present study, to estimate a reliable and valid relationship between EM and depression, first we measured all socio-demographic characteristics and risk factors of the participants, and then we performed two types of analysis, including univariate and multiple (using multiple logistic regression). This approach was highlighted in the epidemiological and statistical evidence [48, 49]. The results of multiple logistic regression showed how much each of the variables (especially EM) can increase depressive symptoms; adjusted odds ratio (AOR); provided that the impact of other variables is kept constant [50].

In the current study, the prevalence of EM was almost 27% in females, and approximately 80% of the married individuals before the age of 18 were reported to be of female sex. It can be interpreted that child marriage is more prevalent in girls than in boys. The high prevalence of child marriage was reported in Sub-Saharan Africa and southeast Asian countries [51, 52]. For example 37% of girls are married before 18 in Nepal [53]. Evidence shows that EM consequences can even be related to suicidal behaviors and increase the risk of suicide, suicide attempts, and partner violence [54–56]. The results of the present study suggest that child marriage prevention strategies should be expanded to include information on channels, the consequences of EM on girls' and boys' health and their offspring, improve perceived profits of optimal age for marriage, and conform to a social influence perspective.

Limitations

Our study has limitations. Although we found an association between EM and DSs, many covariates such as demographic, socio-economic statues, mental illness status and partner violence, and other variable were associated with depressive disorders, and these variables may have confounded the true effect of EM on depression. Second, this study was cross-sectional, so generalizing the results and providing a causal inference between EM and depression should be taken into account cautiously. To diminish these issues, we assessed EM history before depression through face-to-face interviews and medical records using community health workers. We also used multiple logistic regression analysis to estimate the adjusted odds ratio (AOR) with a 95% CI for the association between EM and the risk of depression after adjusting covariates.

Furthermore, differentiating forced marriages from voluntary marriages and EM episodes in one or both married spouses can assist future studies in giving accurate evidence

about EM and depressive symptoms. This is a departure point for future population-based studies. In this study, the frequency of divorced and deceased spouses was very rare, making analysis impossible. We suggest that future studies examine the relationship between early marriage and depression among these types of couples.

Conclusion

The results of this study showed that the prevalence of EM was high in Malekan County, in northwestern Iran. Low educational level of girls and boys married early and their parents, low income, and female sex were the most effective predicators of EM. Furthermore, there was a positive association between EM and DSs. Hence, reducing EM, addressing its full set of consequences through political commitment, and projecting the experiences of people affected by EM are some essential measures to be taken by policymakers. However, further methodological and longitudinal studies are needed to investigate the causal association between EM and DSs. Meanwhile, it is recommended that future studies evaluate the effect of EM and forced marriage on depressive disorders.

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Author contributions HA developed the original idea, developed the protocol, interpreted and analyzed data, collected data, and drafted all the manuscript sections. EDE, PB, MV, ES, and FKh contributed to the protocol development, editing, technical comments, data collection, manuscript development, and interpretation. All authors read and approved the final version of the manuscript.

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Declarations

Ethics approval and consent to participate The study protocol was accepted by the Ethics Committee of Tabriz University of Medical Sciences (IR.TBZMED.REC.1399.357). We obtained written informed consent from all the participants before the interview. The authors confirm that all the methods were conducted according to the relevant guidelines and regulations.

Competing interests The authors declare no competing interests.

References

1. Baysak E, Yorguner N, Kandemir G, Denizman IA, Akvardar Y (2021) Is early marriage practice a problem for women living in Istanbul? A qualitative study. Arch Women Ment Health 24(2):243–250
2. Rumble L, Peterman A, Irdiana N, Triyana M, Minnick E (2018) An empirical exploration of female child marriage determinants in Indonesia. BMC Public Health 18(1):1–13
3. Rayesh N, Kalantar SM (2018) The role of praying for the spouse and sanctification of marriage in reducing infidelity. Mental Health Relig Cult 21(1):65–76
4. Duran S, Eraslan ST (2019) Socio-demographic correlates of child marriages: a study from Turkey. Commun Ment Health J 55(7):1202–1209
5. Bezie M, Addisu D (2019) Determinants of early marriage among married women in Injibara town, north West Ethiopia: community-based cross-sectional study. BMC Womens Health 19(1):134
6. Fakhari A, Farahbakhsh M, Azizi H, Esmaeili ED, Mizapour M, Rahimi VA, Hashemi L, Gaffarifam S (2020) Early marriage and negative life events affect on depression in young adults and adolescents. Arch Iran Med 23(2):90
7. de Groot R, Kuunyem MY, Palermo T (2018) Child marriage and associated outcomes in northern Ghana: a cross-sectional study. BMC Public Health 18(1):285
8. Berliana SM, Kristinadewi PAN, Rachmawati PD, Fauziningtyas R, Efendi F, Bushy A (2021) Determinants of early marriage among female adolescent in Indonesia. Int J Adolesc Med Health 33(1):20180054
9. Tekile AK, Woya AA, Basha GW (2020) Determinants of early marriage among female children in Amhara Region, Ethiopia. Afr Health Sci 20(3):1190–1195
10. Kamal SM, Hassan CH, Alam GM, Ying Y (2015) Child marriage in Bangladesh: trends and determinants. J Biosoc Sci 47(1):120–139
11. Anggreni D, Notobroto HB, Soedirham O (2023) Determinant factors of early marriage in developing countries: a literature review. J Public Health Afr 14(2):10
12. Asna-ashary M, Farzanegan MR, Feizi M, Gholipour HF (2020) Socio-economic determinants of child marriage: evidence from the Iranian provinces
13. Heidari F, Dastgiri S (2020) The Prevalence and Predicting Factors of Female Child Marriage in North-West of Iran: a CaseControl Multi-center Study. Gazi Med J 31(3)
14. Hosseini M, Asadisarvestani K (2022) Reasons for early marriage of women in Zahedan, Iran: a qualitative study. BMC Womens Health 22(1):542
15. Kyari GV, Ayodele J (2014) The socio-economic effect of early marriage in North Western Nigeria. Mediterranean J Social Sci 5(14):582
16. Matlabi H, Rasouli A, Behtash HH, Dastjerd AF, Khazemi B (2013) Factors responsible for early and forced marriage in Iran. Sci J Public Health 1(5):227–229
17. Efevbera Y, Bhabha J, Farmer P, Fink G (2019) Girl child marriage, socioeconomic status, and undernutrition: evidence from 35 countries in Sub-saharan Africa. BMC Med 17(1):55
18. Sezgin AU, Punamäki R-L (2020) Impacts of early marriage and adolescent pregnancy on mental and somatic health: the role of partner violence. Arch Women Ment Health 23(2):155–166
19. 2 Ahmed1, Khan S, Noushad AKS (2014) S: Early marriage; a root of current physiological and psychosocial health burdens
20. Gibbs CM, Wendt A, Peters S, Hogue CJ (2012) The impact of early age at first childbirth on maternal and infant health. Paediatr Perinat Epidemiol 26:259–284
21. Fall CH, Osmond C, Haazen DS, Sachdev HS, Victora C, Martorell R, Stein AD, Adair L, Norris S, Richter LM (2016) Disadvantages of having an adolescent mother. Lancet Global Health 4(11):e787–e788

22. Reynolds CE, Wilson C, Distelberg B (2016) Relational spirituality and depression among married couples in Antigua. Mental Health Relig Cult 19(6):506–521
23. Menon V, Kattimani S, Sarkar S, Sathyanarayanan G, Subramanian K, Velusamy SK (2018) Age at onset of first suicide attempt: exploring the utility of a potential candidate variable to subgroup attempters. Asian J Psychiatry 37:40–45
24. Horwitz AV, White HR Becoming married, depression, and alcohol problems among young adults. J Health Soc Behav 1991:221–237
25. Devries KM, Mak JY, Bacchus LJ, Child JC, Falder G, Petzold M, Astbury J, Watts CH (2013) Intimate partner violence and incident depressive symptoms and suicide attempts: a systematic review of longitudinal studies. PLoS Med 10(5):e1001439
26. Azizi H, Davtalab EsmaeiliE, Fatahbakhsh M, Mirzapour M (2020) The role and comparison of Stressful Life events in suicide and suicide attempt: a descriptive-Analytic Study. Iran J Psychiatry Behav Sci 14 (2): e96051.
27. Nazarzadeh M, Bidel Z, Ayubi E, Asadollahi K, Carson KV, Sayehmiri K (2013) Determination of the social related factors of suicide in Iran: a systematic review and meta-analysis. BMC Public Health 13(1):4
28. Azizi H, Fakhari A, Farahbakhsh M, Esmaeili ED, Mirzapour M (2021) Outcomes of community-based suicide prevention program in primary health care of Iran. Int J Mental Health Syst 15:1–11
29. Esmaeili ED, Fakhari A, Naghili B, Khodamoradi F, Azizi H (2022) Case fatality and mortality rates, socio-demographic profile, and clinical features of COVID-19 in the elderly population: A population-based registry study in Iran. J Med Virol 94(5):2126-2132.
30. Fakhari A, Farahbakhsh M, Azizi H, Esmaeili ED, Mirzapour M, Rahimi VA, Hashemi L, Gaffarifam S (2020) Early marriage and negative life events affect on depression in young adults and adolescents. Arch Iran Med 23(2):90–98
31. Azizi H, Davtalab-Esmaeili E (2020) Iranian first-line health care providers practice in COVID-19 outbreak. Iran J Public Health 49(Supple 1):119–121
32. Fakhari A, Farahbakhsh M, Esmaeili ED, Azizi H (2021) A longitudinal study of suicide and suicide attempt in northwest of Iran: incidence, predictors, and socioeconomic status and the role of sociocultural status. BMC Public Health 21(1):1–11
33. Ghassemzadeh H, Mojtabai R, Karamghadiri N, Ebrahimkhani N (2005) Psychometric properties of a persian-language version of the Beck Depression Inventory-Second edition: BDI-II-PERSIAN. Depress Anxiety 21(4):185–192
34. Angelo A (2018) Prevalence of depression and its associated factors among adult epileptic patients following treatment at selected public health facilities of bench Maji Zone, South West Ethiopia, 2017. Epilepsy J 4(1000121):2472–08951000121
35. Suhariyati S, Haryanto J, Probowati R (2019) Trends of early marriage in developing countries: a systematic review. Jurnal Ners 14(3):277–282
36. Mengistu MM (2017) Early marriage in Ethiopia: so little done but so much to do. Bus Manag 9(3):1
37. Hotchkiss DR, Godha D, Gage AJ, Cappa C (2016) Risk factors associated with the practice of child marriage among Roma girls in Serbia. BMC Int Health Hum Rights 16(1):6
38. Ali A, Ibrahim I, Abdelgbar S, Elgessim M (2014) Socio-demographic factors affecting child marriage in Sudan. J Women's Health Care 3:163
39. Mpilambo JE, Appunni SS, Kanayo O, Stiegler N (2017) Determinants of early marriage among young women in Democratic Republic of Congo. J Social Sci 52(1–3):82–91
40. Hardiani H, Junaidi J (2018) Determinants of early marriage and model of maturing marriage age policy: a case in Jambi Province, Indonesia. Innovative Issues Approaches Social Sci 11(1):73–92
41. Soltan M, Raheem TA, Soliman S, Saleh N, Khatery B (2020) Depression and anxiety as risk factors for female sexual pain. Middle East Curr Psychiatry 27(1):1–9
42. Ernawati H, Mas' udah AF, Setiawan F, Isroin L (2023) Health, psychology, economic resilience and wellbeing: Long-term effects on family welfare of early marriage. *F1000Research* 12:366
43. Rumble L, Peterman A, Irdiana N, Triyana M, Minnick E (2018) An empirical exploration of female child marriage determinants in Indonesia. BMC Public Health 18(1):407
44. Yaya S, Zegeye B, Ahinkorah BO, Oladimeji KE, Shibre G (2020) Inequality in fertility rate among adolescents: evidence from Timor-Leste demographic and health surveys 2009–2016. Archives Public Health 78(1):1–10
45. Fakhari A, Allahverdipour H, Esmaeili ED, Chattu VK, Salehiniya H, Azizi H (2022) Early marriage, stressful life events and risk of suicide and suicide attempt: a case–control study in Iran. BMC Psychiatry 22(1):71
46. Mansournia MA, Etminan M, Danaei G, Kaufman JS, Collins G (2017) Handling time varying confounding in observational research. BMJ 359
47. Cao H, Zhou N, Fang X, Fine M (2017) Marital well-being and depression in Chinese marriage: going beyond satisfaction and ruling out critical confounders. J Fam Psychol 31(6):775
48. Szklo M, Nieto FJ (2014) Epidemiology: beyond the basics. Jones & Bartlett
49. Jewell NP (2003) Statistics for epidemiology. chapman and hall/CRC
50. Sperandei S (2014) Understanding logistic regression analysis. Biochemia Med 24(1):12–18
51. Hossain MG, Mahumud RA, Saw A (2016) Prevalence of child marriage among Bangladeshi women and trend of change over time. J Biosoc Sci 48(4):530–538
52. Efevbera Y, Bhabha J, Farmer P, Fink G (2018) Child marriage and underweight in sub-saharan Africa: a 35 country cross-national study. J Adolesc Health 62(2):S25–S26
53. Manandhar N, Joshi SK (2020) Health co-morbidities and early marriage in women of a rural area of Nepal: a descriptive cross-sectional study. JNMA: J Nepal Med Association 58(230):780
54. Poorolajal J, Ebrahimi B, Rezapur-Shahkolai F, Doosti-Irani A, Alizadeh M, Ahmadpoor J, Moradi L, Biderafsh A, Nikbakht F, Golmohammadi Z (2020) The epidemiology of aggression and associated factors among Iranian adult population: a national survey. J Res Health Sci 20(4)
55. Esmaeili ED, Azizi H, Sarbazi E, Khodamoradi F. The global case fatality rate due to COVID-19 in hospitalized elderly patients by sex, year, gross domestic product, and continent: A systematic review, meta-analysis, and meta-regression (2023) New Microbes New Infect 51:101079. doi: 10.1016/j.nmni.2022.101079.
56. Fakhari A, Allahverdipour H, Esmaeili ED, Chattu VK, Salehiniya H, Azizi H (2022) Early marriage, stressful life events and risk of suicide and suicide attempt: a case–control study in Iran. BMC Psychiatry 22(1):1–11