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RESEARCH ARTICLE

Early Marriage and its Association with the Socioeconomic and Sociocultural Factors of Women in Sudan: A Predictive Model

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Abstract:

Background:

Early marriage is spreading in Sudan, like in most African countries. Early marriage is defined as any marriage that happens before the age of 18. Early marriage is a human rights violation and has a huge negative effect, especially on girls.

Objectives:

The aim of this study was to assess the prevalence and determinants of socioeconomic and sociocultural factors associated with women's early marriage in Gezira state in Sudan.

Methods:

The study depended on primary data from Gezira state (2021). The study adopted the questionnaire as a tool for data collection. The questionnaire was designed to collect data on variables related the early marriage. The descriptive statistics, chi-square test, and logistic regression model were used to analyze the collected data.

Results:

The results revealed that the prevalence of early marriage among females in Gezira state was 54.9%, the prevalence of early marriage among rural areas was 57.3%, and there was a significant association between early marriage and unemployment. The result of the logistic regression model showed that there was a significant relationship between early marriage and the factors such as area, wealth index quantile, unemployment, and exposure to media. Whereas the model found an insignificant association between early marriage and the factors such as low financial condition leading to early marriage, early marriage is one of the signs of urbanization, immigrant cultures support early marriage, establishing a good maternal relationship between the child and the mother.

Conclusion:

Early marriage is widespread in Gezira state, and it is associated with socioeconomic and sociocultural factors.

Keywords: Early marriage, Association, Socioeconomic, Sociocultural, Model, Gezira state.

1. INTRODUCTION

Early marriage is defined as any marriage before age 18 [1, 2]. Early marriage is a human rights violation. It has a huge negative effect, especially on girls [3 - 5]. UNICEF report that more than 12 million girls worldwide are married early. Of these 12 million, approximately 37% of early marriages occurred in sub-Saharan Africa and 30% in South Asia [6].

According to the Sudan Multiple Indicator Cluster Survey 2014 (MICS), 34.3% of the women had early marriage [7]. A study conducted in Ethiopia revealed that the prevalence of early marriage is 73%, and the prevalence is high in the Amhara region compared to other regions of the country [8]. Many studies conducted across the World stated that different contributing covariates of early marriage, such as place of residence, wealth index, family size, education level of the father, marital age, and exposure to the media [9 - 15]. A study conducted in Sudan revealed that 45.9% was the prevalence of

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women in early marriage [16]. The incidence of early marriage was significantly less among young women aged 20-24 years compared to their older counterparts [17]. It is reported that factors such as education levels of household heads and women, wealth status, mass media, family size, and residence were significant factors linked to early marriage [18]. It has been revealed that early marriage in Indonesia is determined by social and economic aspects within and surrounding the girls [19]. A study conducted in India demonstrated that early-married girls showed different patterns of growth compared to unmarried girls [20]. Previous studies revealed that inflation and income inequality are significant determinants of early marriage in Iran [21]. Early marriage has different consequences on women and their children's health and social issues. These include increased risk of depression and suicidality; compromised sexual, reproductive, and parental health [4, 22 - 25]. Early marriage is most common in Bangladesh compared to Indonesia [26]. The aim of this study was to assess the prevalence and determinants of socioeconomic and sociocultural factors associated with Women's early marriage in Gezira State in Sudan.

2. MATERIALS AND METHODS

2.1. The Source of Data

This study depends on primary data from Gezira state (2021). A structured questionnaire was used for data collection. The questionnaire was designed to collect data on variables related to early marriage. The questionnaire was distributed to all localities of Gezira state.

2.2. Sample Design

The study was conducted in Gezira state (2021). Multistage cluster stratified sample designed to draw a represented sample. To distribute the sample on the strata, the proportional distribution of the sample was used, where the total community was divided into (8) strata representing the localities of the state of Al-Gezira. There are (120) administrative units (clusters). Within each cluster, households are selected and they represent the clusters of the second stage. A kish table was used for selecting the respondents. The random sampling method in any society is used to estimate the dependent variable and when the statistical population was homogeneous, the sample size was calculated using the following simple random sampling equation:

$$n_0 = \frac{z^2 pq}{d^2}$$

Where:

n = The primary sample size

z: Standard variable contrast to a certain level of confidence (taken here 5%)

d: Statistical adjustment on both sides of p (taken here 5%)

P: Expected Society parameter

$q = 1 - p$

Now, the final sample size, according to the rate of confidence in the parameter estimation (P 95%) is 400, if the researcher takes a circular approximation. And the ca of the random sample design not be used due to in heterogeneity of the communities; we revise the design to a multi-stage cluster sample by multiplying by in by design effect which is 3, so the final sample size was:

$$n = 400*3 = 1200$$

2.3. Study Variables

The response variable for this study is an early marriage, and it was categorized in such a way that 0 is marriage at the age of 18th or above and 1 is marriage experienced before the 18th birthday. The explanatory variables are cultural, social, and economic factors.

The ergonomic and sociocultural factors used in this study are suggested by many studies [7, 18, 27 - 34].

2.4. Methods of Analysis

In this session, the study applied the statistical indicators and models related to early marriage data. The study adopted descriptive statistics, logistic regression, and the chi-square test. Also, the estimate coefficients and statistical tests were obtained to distinguish between the factors related to early marriage.

3. RESULTS

The result of Table **1** revealed that marital status showed that 71% of the sample members were married, 23% were divorced, and 5.9% were widowed. According to the area of respondents, the prevalence of early marriage among rural areas was 57.3%, and 42.8% among urban areas.

Regarding the education level of the husband, 51.4% had a university education, 18.4% had postgraduates, 12.8% had secondary education, 7.4% had intermediate education, and 10.3% had primary education. The wife's education level illustrated that 48.3% had a university education, 17% had postgraduates, 15% had secondary education, 7.7% had intermediate education, and 12% had primary education.

In terms of the occupation of the wife, the results revealed that more than sixty were housewives (61.8%), 28.4% were employees, 7.6% were laborers, 1.1% had free jobs, and 1.2% were students. Similarly, the occupation of husband showed that 42.5% of respondents had a free job, 15.4% were employees, 8.3% worked as laborers, 0.8% were students, and 33.1% were without a job. Regarding the wealth index, the result explained that 28.7% of the participants were in the middle class, 27.1% were in the third class, and 9.6% were in the first class. On the other side, the result of the nature of the residence there was that 78.3% of respondents lived with parents and 21.7% of them were living in independent housing.

The results in Table **1** showed that the prevalence of early marriage among females in Gezira state was 54.9%, which indicated that more than half of the sample members were married early.

Table 1. Characteristics of the sample members.

Variables	Frequencies	Percent
Age at first marriage	-	-
Not early marriage	541	45.1
Early marriage	659	54.9
Place of residence	-	-
Rural	513	42.8
Urban	687	57.3
Marital status	-	-
Married	853	71.1
Divorced	276	23
Widowed	71	5.9
Education level of Husband	-	-
Primary	123	10.3
Intermediate	89	7.4
Secondary	153	12.8
University	617	51.4
Postgraduates	218	18.4
Education level of wife	-	-
Primary	144	12
Intermediate	92	7.7
Secondary	180	15
University	680	48.3
Postgraduates	204	17
Occupation of wife	-	-
Housewife	741	61.8
Labor	91	7.6
Employee	341	28.4
Free job	13	1.1
Student	14	1.2
Occupation of husband	-	-
Labor	99	8.3
Employee	185	15.4
Free job	510	42.5
Student	9	0.8
Without job	397	33.1
Wealth index	-	-
First class	114	9.6
Second class	344	28.7
Third class	325	27.1
The nature of the residence	-	-
Independent	260	21.7
With Parents	940	78.3

3.1. Prevalence of Early Marriage

The results shown in Table **2** explain the prevalence of early marriage among the participants. The results showed a significant relationship between early marriage and the factors such as area, wealth index quantile, unemployment, a low financial condition leading to early marriage, immigrant cultures supporting early marriage, reading newspapers and magazines, watching TV, listening to the radio, establishing a good maternal relationship between the child and the mother, early marriage leads to family bonding, the influence of early married friends, and prolonging the childbearing period. Whereas there is an insignificant relationship between early marriage and the factors such as preserving money and wealth, who have no desire to complete education, early marriage is one of the signs of urbanization, the girl is a burden to her family, intellectual reason, immunity from not falling into deviation, force, and cruelty by the parents, and fear of spinsterhood.

Table 2. Prevalence of early marriage.

Variable	Classification	Early marriage	Not early marriage	Chi-square	p-value
Place of residence	Rural	229 (19%)	284 (23.7%)	38.22	0.0001
	Urban	430 (35.8%)	257 (21.4%)		
Wealth Index Quantile	First class	43 (3.6%)	71 (5.9%)	15.04	0.0017
	Second to third class	616(51.3%)	470(39.2%)		
Unemployment	yes	355 (29.6%)	242 (20.1%)	9.92	0.002
	No	304 (25.3%)	299 (24.9%)		
Preserve money and wealth	yes	291 (24.3%)	303 (25.3%)	1.35	0.246
	No	268 (22.3%)	238 (19.8%)		
The low financial condition leads to early marriage	Yes	518 (43.2%)	468 (39%)	12.67	0.0003
	No	141 (11.8%)	73 (6.1%)		
women have no desire to complete their education	Yes	245 (20.4%)	359 (29.9%)	1.62	0.203
	No	518 (43.2%)	182 (15.2%)		
The girl is a burden to her family	Yes	364 (30.3%)	283 (23.6%)	1.023	0.312
	No	568 (47.3%)	238 (19.8%)		
Early marriage is one of the signs of urbanization	Yes	268 (22.3%)	238 (19.8%)	1.35	0.246
	No	391 (32.6%)	303 (25.3%)		
Immigrant cultures support early marriage	Yes	296 (24.7%)	193 (16.1%)	10.51	0.001
	No	363 (30.3%)	348 (29%)		
Intellectual reason	yes	262 (21.8%)	209(17.4%)	0.158	0.691
	No	397 (33.1%)	332 (27.7%)		
Reading newspapers and magazines	Yes	339 (28.3%)	194 (16.1%)	29.23	0.00012
	No	320 (26.7%)	347 (28.9%)		
Watching TV	Yes	317 (26.4%)	217 (18.1%)	7.68	0.006
	No	342 (28.5%)	324 (27%)		
Listen to the radio	Yes	324 (27%)	229 (19.1%)	5.58	0.018
	No	335 (27.9%)	312 (26%)		
Immunity from not falling into deviation	Yes	293 (26%)	219 (18.3%)	2.64	0.267
	No	362 (30.1%)	316 (26.3%)		
Force and cruelty by the parents	Yes	356 (29.7%)	262 (21.8%)	3.72	0.056
	No	303(25.3%)	279(23.4%)		
Fear of spinsterhood	Yes	477 (39.8%)	415 (34.6%)	2.92	0.089
	No	182 (15.2%)	126 (10.5%)		
Establishing a good maternal relationship between the child and the mother	Yes	444 (37%)	408 (34%)	9.33	0.002
	No	215 (17.9%)	133 (10%)		
Early marriage leads to family bonding	Yes	355 (29.6%)	242 (20.2%)	9.92	0.002
	No	304 (25.3%)	299 (24.9%)		
The influence of early married friends	Yes	426 (35.5%)	308 (25.7%)	7.43	0.006
	No	233 (19.4%)	233 (19.4%)		
Prolonging the childbearing period	Yes	299 (24.9%)	177 (14.8%)	19.88	0.0004
	No	360 (30%)	364 (30.3%)		

3.2. Logistic Regression Model

In this part, the study applied multiple logistic regression to assess the relationship between early marriage and the independent variables. This result indicated that participants who lived in rural areas were more likely to be married early (OR = 0.259, 95% CI 0.324–0.637).

The results showed that those in the top wealth index quintile were less likely to be married early (OR = 0.454, 95% CI 0.164–0.407). Also, the variable unemployment influences early marriage positively (OR = 0.540, 95% CI 0.379–0.771). The odd ratio of 0.540 indicated that females who were not in employment were more likely to have early marriage 0.54 times than those who were in employment.

Table 3. Results of the multiple logistic regression model.

Variable	Classification	B	S. E	Wald test	p-value	OR	95% C.L for OR
Place of residence	Rural	-0.79	0.172	20.98	0.0002	0.259	0.324-0.637
	Urban	ref	-	1	-	1	-
Wealth Index Quantile	First class	-1.35	0.232	34.10	0.0001	0.259	0.164-0.407
	Second to third class	ref	-	1	-	1	-
Unemployment	yes	-0.62	0.181	11.55	0.001	0.540	0.379-0.771
	No	ref	-	1	-	1	-
The low financial condition leads to early marriage	yes	0.071	0.197	0.130	0.718	1.07	0.729-1.581
	No	ref	1	-	-	1	-
Early marriage is one of the signs of urbanization	yes	-0.10	0.184	0.299	0.584	0.904	0.630-1.297
	No	ref	-	1	-	1	-
Immigrant cultures support early marriage	yes	-0.024	0.187	0.016	0.899	0.977	0.677-1.408
	No	ref	-	1	-	1	-
Reading newspapers and magazines	yes	-0.884	0.271	10.66	0.001	0.413	0.234-0.702
	No	ref	-	1	-	1	-
Watching TV	yes	0.000	0.349	0.000	1.000	1.000	0.505-1.982
	No	ref	-	1	-	1	-
Listen to the radio	yes	0.753	0.347	4.701	0.030	2.124	1.075-4.197
	No	ref	-	1	-	1	-
Establishing a good maternal relationship between the child and the mother	yes	0.081	0.172	0.221	0.638	1.084	0.774-1.519
	No	ref	-	1	-	1	-
Early marriage leads to family bonding	yes	0.643	0.174	13.579	0.0003	1.902	1.351-2.678
	No	ref	-	1	-	1	-
The influence of early married friends	yes	-0.114	0.176	0.419	0.517	0.892	0.632-1.260
	No	-	-	-	-	-	-
Prolonging the childbearing period	yes	-0.280	0.183	2.327	0.127	0.756	0.528-1.083
	No	ref	-	1	-	1	-

The result of the model confirmed the impact of reading newspapers and magazines and listening to the radio on early marriage (OR = 0.413, 95% CI 0.234–0.702); (OR = 0.303, 95% CI 1.075–4.197) . Also, the factor "early marriage leads to family bonding" influences early marriage (OR = 1.902, 95% CI 1.351–2.678). The result of the odd ratio of 1.902 indicated that the sample members who agreed with the factor (early marriage leads to family bonding) were more likely to get early marriage 1.902 times than those who did not agree with this factor.

The results of the estimated model revealed that there is an insignificant association between early marriage and the factors such as low financial condition leading to early marriage, early marriage is one of the signs of urbanization, immigrant cultures support early marriage, establishing a good maternal relationship between the child and the mother, the influence of early married friends, and prolonging the childbearing period (Table **3**).

4. DISCUSSION

Early marriage is a risky phenomenon that spreads in societies, including Sudan, without finding appropriate solutions to this phenomenon, which claims many human lives and deprives many girls of their childhood, dreams, and right to education, and destroys many families that still marry off girls who have not reached the age of eighteen under the name of customs and traditions.

This study showed that the rate of early marriage in Gezira state was 54.9%, which is very high. This prevalence of early marriage is higher than that obtained by the Sudan Multiple Indicator Cluster Survey 2014 (MICS), which recorded a rate of 34.3%. This high rate may be due to the community values in Gezira state.

Regarding the area of respondents, the prevalence of early marriage among rural areas was 57.3% which indicated that the prevalence of early marriage in rural areas in Gezira state was higher than that in urban areas [9, 16].

The results showed that early marriage correlated with unemployment, this may be due to the participant's economic status; they think about the situation of being without work, they have no job obligations, so they decided to get married. This result agrees with the study conducted in Indonesia [19] where they found that early marriage in Indonesia is determined by social and economic aspects within and surrounding the girls. The low financial condition leads to early marriage, and this gives women motivation to get early marriage to improve their financial status.

On the other side, the study found that the factor of exposure to mass media like newspapers and magazines, watching TV and listening to the radio had an impact on early marriage. This result indicated that exposure to mass media influences the girl's decision about getting early marriage.

The result found there was a relationship between early

marriage and the factors such as area, wealth index quantile, unemployment, reading newspapers and magazines, watching TV and listening to the radio. This result was in the same line as the results obtained by [10 - 12].

CONCLUSION

This study assessed the prevalence and determinants of socioeconomic and sociocultural factors associated with early marriage in Gezira State in Sudan. Early marriage in Gezira state in Sudan is associated with place of residence, wealth index quantile, unemployment, and exposure to mass media.

LIMITATIONS OF THE STUDY

The study met problems and obstacles, such as the distance between the localities of the participants in the study being too long, so the data collection process was very hard. Also, some of the citizens were afraid to participate in the study.

LIST OF ABBREVIATIONS

| MICS | = | Multiple Indicator Cluster Survey |
| UNICEF | = | United Nations Children's Fund |

ETHICS STATEMENT

This study was approved by the faculty of Economics and Rural Development, Department of Applied Statistics and Demography, University of Gezira, Sudan.

HUMAN AND ANIMAL RIGHTS

No human or animal was used for the studies that are the basis of this research.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIAL

All the data and supportive information are provided within the article.

CONFLICT OF INTEREST

The authors declare no conflict of interest financial or otherwise.

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