Effect of Girl-Centered Empowerment Program on Knowledge, Attitude and Practice of Rural Adolescents Regarding Health Consequences of Early Marriage

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Abstract

Background: Early marriage is a public health problem that violates the adolescent girl's basic human rights. The Sustainable Development Goals had incorporated early marriage in target 5.3, aiming to eliminate by 2030. **Aim of the study** was to evaluate the effect of empowerment program on knowledge, attitude and practice of rural adolescent girls regarding health consequences of early marriage. **Subjects and Method: Design:** A quasi-experimental research design was utilized. **Setting:** The study was conducted in two preparatory schools at Zagazig city. **Subjects:** A sample of 100 female students randomly selected from east and west educational administrations. **Tools of data collection:** A self-administered questionnaire consists of four parts; socio demographic characteristics, knowledge regarding health consequences of early marriage, attitude toward early marriage and healthy practices of adolescent girls. **Results:** The study results revealed that there were statistically significant improvements in knowledge, attitude and practice of adolescent girls regarding health consequences of early marriage after the program (p < .0001). The result also showed that knowledge score was positively correlated to attitude score (r = .379) and practices score (r = .399) at post program phase. **Conclusion:** The program's implementation was shown to be successful in improving adolescent girls' knowledge, attitude and practices regarding health consequences of early marriage. **Recommendations:** Further researches should continue to identify determinants of early marriage to assist in building more girl-centered interventions and norms change interventions that empower adolescent girls, particularly, in rural areas in order to advocate for themselves against child marriage.

Keywords: Girl-centered, Empowerment, Knowledge, Attitude, Practice, Health consequences, and early marriage.

Introduction

Adolescence is a crucial transitional stage between puberty and adulthood that affects a person's physical, psychological and social development. It is the period between 10 to 19 years [1]. Marriage that occurs before the age of 18, whether it be formal or informal, is called child marriage or early marriage. It is a union in which at least one of the partners is under the age of 18 years [2]. The term "early" points out that a marriage or union can disrupt adolescent girls' physical, psychological and emotional development and competes with their schooling, entry into

the workforce and also have adverse consequences at various stages of her adult life [3]. Thus, early marriage is a practice that violates adolescent girls' several human rights, including their right to education, employment, and consent to marriage, the right to sexual and reproductive health care and their right to live in violent-free environment [4].

There are about 650 million child brides globally, 40 million of these are in the Middle East and North Africa where child brides are more likely to be from low-income families, live in rural areas and have less education. Regardless the international attention paid to early marriage issue, 15 million girls get married every year, at the rate of 41,000 girls per day, or 28 girls marry every minute, making this a staggering statistic. If the child marriage practice continues unabated, 1.2 billion of the women alive in 2050 will marry in childhood [5,6]. Causes of early marriage include; some families and communities believe that early marriage will protect girls from sexual assaults and violence and that it is a way to ensure that their daughters will not become pregnant and bring shame to the family ; poor families marry their daughters so that there are fewer sons who need to be fed, clothed and educated; in some cultures, the major motive of early marriage is the money paid by the prospective husband for the young bride; social pressure of the community can push families into child marriage; and many families also regard child marriage as the only choice they know [5]. Early marriage has health consequences that differ from one girl to another. These consequences include: physical problems (risk pregnancies and births, maternal morbidity and mortality); psychological issues (depression and

emotional distress); social problems (dropping out of school, risky social behaviors, lack of access to social and health services, social isolation, lack of access to a job, and being prohibited to pursue education); family issues (dissatisfaction with married life, experience of having a lot of responsibility due to domestic work, lack of independence in family life) [7,8]. Early marriage pushes girls into adult responsibilities and that girls are not mature or skilled enough to assume, such as being wives, sexual partners, and mothers. This problem is often worsen when there is a large age difference between a child bride and her husband. In some cases, early marriage is also closely related to the possibilities of intimate partner violence, or at least verbal abuse that hurts their feelings [8,9].

Although the entire communities are negatively affected by child marriage, girls bear the greatest burden of its detrimental effects. Therefore, health programming and intervention, especially girl-centered programming, is a critical strategy to empower girls with knowledge and skills to make informed choices and effectively practice voice and agency in the empowerment process against child marriage. As well as providing girls with opportunities to access needed information and resources can improve their health knowledge and behaviors as well as build resolve related to their health desires. Therefore, health programming should target the unique needs of adolescents to ensure they have the information and skills that enable their empowerment. This information often starts with basic facts about puberty, menstruation, pregnancy, and sex, through fertility awareness or body-literacy programs [10,11].

Nurses have an important role regarding early marriage by working to improve health and well-being of female children. In order to empower the adolescent girls with knowledge regarding early marriage and its adverse health consequences, nurses can organize educational programs especially in in schools and family health centers [12]. Additionally, nurses instruct and persuade others to change their ideas regarding early marriage that will positively affect children's health and conduct school health programs regarding early marriage among all adolescent girls [13]. Nurses also have more responsibility on creating awareness among adolescent girls regarding problems of early marriage by facilitating free distribution of pamphlet, booklet, handouts, posters and showing documentary films to community peoples especially in rural areas [14].

Significance of the study

In Egypt, Child Law 126/2008 sets the minimum marriage age at 18 years for both females and males. Despite the legislation, child marriage is still being practiced in some regions of the country, especially in rural areas, and girls continue to get married without registering their marriages, or without registering children born out of these marriages [15]. According to Egypt's 2017 census, child marriage remains an issue as nearly 1 in every 20 girls between the ages of 15 to 17 are either currently married or were previously married. This also applies also to 1 in every 10 adolescent girls aged 15-19 years, with large variance between rural and urban regions [16]. Early marriage will cost developing countries trillions of dollars by 2030. Early marriage hinders the accessibility of women to

healthcare; therefore, women who are young married may be at risk of maternal mortality and morbidity as complications during pregnancy and childbirth [17]. Marriage of the girl as a child not only affects her wellbeing as an individual, but also has negative consequences on the family, community and the nation [18]. The main sequences of child marriage in Egypt are very similar to other countries, such as gender-based violence, dropping out of school, high-risk of contracting diseases, higher fertility rates, contributing to the population increase and an increase in unregistered children [16]. Therefore, there is a strong political will to end child marriage through opportunities for adolescent girl development and empowerment, particularly in the light of the prevalence levels shown by Egypt's census 2017 [18]. There are previous descriptive studies in Egypt assessing early marriage and its associated health consequences that recommended to apply health intervention programs for female adolescents to empower them by raising their awareness [20-22], but there is a scarcity on such girl-centered interventions on these issues. Thus, this study was conducted evaluate the effect of empowerment program on knowledge, attitude and practice of rural adolescent girls regarding health consequences of early marriage.

Aim of the study

The present study aimed to evaluate the effect of empowerment program on knowledge, attitude and practice of rural adolescent girls regarding health consequences of early marriage.

Research hypotheses:

Hypothesis 1: The empowerment program improves knowledge of rural adolescent girls about early marriage health consequences.

Hypothesis 2: The empowerment program improves attitude of rural adolescent girls toward early marriage.

Hypothesis 3: The empowerment program improves healthy practices of rural adolescent girls.

Subjects and method

Research Design:

A quasi-experimental pretest-and-posttest design was utilized.

Study setting:

The study was conducted at two preparatory schools in Zagazig City. These schools were Elnakaria preparatory school and Alghar preparatory school for girls which were selected randomly from Zagazig City schools.

Sample:

The subjects of this study consisted of 100 adolescent girls enrolled during the time of the study in the two selected schools and were willing to attend the program.

The sample size calculation:

The sample size was calculated by using the OpenEpi free software program through estimating the differences between pre-test and the posttest of the mean of knowledge about early marriage health consequences in a study by Elsayied et al. [23], in which the mean of pretest of knowledge was 12.7 (SD = 3.3) and the mean of posttest of knowledge was 28.6 (SD = 8.2). Based on a 95% level of confidence (α error = 5%), and a study power of 80% (β error=20%), the estimated sample size was 91 subjects. After adjustment for a dropout rate of about 10%, the sample size was 100.

Sampling technique

The researchers used a multistage cluster sampling technique for recruitment of this study participants as follows;

Stage 1: This stage involved random selection of the East and West educational administrations of Zagazig city from the seven educational administration of Sharkia governorate.

Stage 2: From the two educational administrations, the researchers randomly selected two schools. These schools were Elnakaria preparatory school for girls from West educational administration and Alghar preparatory school for girls from East educational administration of Zagazig city.

Stage 3: This stage involved random selection of classes as clusters from schools in accordance with the predetermined sample size. All female students in the selected classes were included in the sample. These were as follows; Elnakaria preparatory school for girls (55 students) and Alghar preparatory school for girls (45 students). The ratio calculated from the total number of students gathered from the Zagazig city's General Department of Information and Computer affiliated to the Education Department at the Zagazig city.

Tools for Data Collection:

A self-administered questionnaire sheet was developed by the researchers guided by the studies of Joseph [24], Elsayied et al. [23], Tamilarasi [1] and Sreelekshmi et al. [25] to collect the following data:

Part I: Socio-demographic data of the adolescent girls as age, birth order, parents' educational level and occupation, mother's age at marriage, crowding index and family monthly income.

Part II: Knowledge regarding Early Marriage and its health consequences

It entails 38 items to assess the level of knowledge about early marriage (as meaning of early marriage, appropriate age for marriage and first pregnancy, suitable period between pregnancy, reasons, advantage and disadvantage and presence of a law prohibiting early marriage) and bio-psycho-social health consequences of early marriage. It also assess knowledge about female reproductive health, balanced nutrition, personal hygiene and exercise.

Scoring: the scores were one for correct response and zero for incorrect response, with the total knowledge score of 38 points. The participants were considered to have satisfactory knowledge if the total score obtained was 60% or above. While the total score less than 60% were considered unsatisfactory knowledge.

Part III: Attitude toward Early Marriage

This part consisted of 39 items used to assess the girls' attitude toward early marriage and its health consequences, including whether they supported early marriage, the right of parents to marry the girl without her consent, a law that prohibited the early marriage, and pressure to marry at a young age.

It also assess perception of bio- psycho-social health consequences of early marriage as well as preventive measures of early marriage (law enforcement, girls' education, parent education, economic empowerment of teenagers, raising community awareness, and ensuring the participation of girls).

Scoring: The rating scale was comprised of three points, with a score ranging from zero to two. The scores were 0 for "disagree", 1 for "sometimes" and 2 for "agree". The scoring was reversed for negative items. The highest score is 78 points. The final score of participants' responses was either 60% and above indicating positive attitude. The score less than 60% indicating negative attitude.

Part IV: Healthy practices for prevention of Health Consequences of Early Marriage

This part was developed to assess the girl's healthy practices that help to prevent health hazards of early marriage, which involved 28 items. It includes health behaviors related to balanced nutrition, adequate sleep & rest, personal hygiene, hygiene during menstruation, and exercise.

Scoring:

The scores of responses were one for "do" and zero for "not do". The total score of above than 60 % is considered satisfactory and the total score of 60% and less was considered unsatisfactory.

Validity and reliability:

The validity of the study tool was ascertained by a panel of experts in community health nursing, pediatric nursing and obstetric and gynecological nursing who conducted face and content validity of all the items of this tool. The panel also revised accuracy, format, consistency and relevancy of the tool. All recommended modifications were performed. Reliability testing was carried out to test the reliability in terms of the value of Cronbach's Alpha which was 0.786.

Pilot study:

The pilot study was conducted to assess the study tool's clarity, reliability and

applicability as well as to determine the exact time needed for completing it. It was carried out on a sample of 10 adolescent girl who represent 10% of the calculated total sample size at the above-mentioned schools. The participants were involved in the main study sample as there were no any modifications.

Fieldwork:

The fieldwork was carried out within the period of six months, starting from the beginning of November 2021 to the end of April 2022. The study was accomplished through consecutive phases of preparatory, assessment, planning, implementation, and evaluation.

Preparatory phase: This phase involved reviewing the recent related literature either nationally or internationally using journals, periodicals, textbooks, internet, and theoretical knowledge of the various aspects concerning early marriage and its health consequences. The researchers prepared the tools to become ready for use.

Assessment phase (Pre intervention data collection): Assessment of the adolescent girls' needs was carried out by a pretest based on the collecting data on the girls' knowledge, attitude and their practices. After obtaining all official permissions, the researchers first met with the adolescent girls to introduce themselves and gave a brief explanation of the study's purpose and obtained their consent for participation in the study. The researchers distributed the data collection questionnaire sheets to the participants and gave filling-in instructions. In order to avoid any missing data, the filled questionnaires were gathered on time and reviewed to ensure their completion. The

time consumed for answering the study questionnaire sheet ranged from 35-40 minutes.

Planning phase: The programme sessions' contents were designed by the researchers in accordance with the needs of the adolescent girls and the aim of the study, based on the results of the data analysis of the assessment phase and review of relevant literature. The empowerment program's aim and objectives were formulated based on the identified needs and deficiencies and set in the form of a booklet.

Implementation phase: The program was implemented in small groups of adolescent females (10–15) in the two schools over the course of ten sessions. Each session's duration was variable and determined by the girls' response, level of participation, available time, and the session content. However, all participants were exposed to equal learning experiences by ensuring that they received the same content using the same teaching methods and materials. Each session began with a summary of what had been given in the previous session and the objectives of the new one, taking into account the use of simple language to suit the level of understanding of the adolescent girls. Additionally, each session ended with homework that ensured application of each session's content in the participants' daily lives. The researchers used a variety of teaching methods to carry out the program, including group discussions, role playing, and brain storming to exchange ideas between the participants and the researcher. A variety of media were also used, including power point presentations

and pictures. The contents of program sessions were as follows:

First session: This is the preliminary session in which the researchers explained the program's purpose and basic rules to the participants, determined the place of sessions and the timetable that was twice per week for each study group.

Second session: This session provided an overview about the reproductive health, female reproductive system and menstruation.

Third session: This session focused on providing knowledge related to early marriage such as meaning of early marriage, suitable age for marriage and first pregnancy, suitable period between pregnancy and other pregnancy, reasons and disadvantage for early marriage.

Fourth session: This session provided knowledge related to adverse bio- psycho- social health consequences of early marriage.

Fifth session: This session provided knowledge related balanced nutrition, and how to choose a balanced palate with appropriate nutritive value.

Sixth session: This session focused on training the participants on how to practice personal hygiene, steps of hand washing, hygiene during menstruation and use sanitary napkins.

Seventh session: The focus of this session was to train the participant on how to do exercise and its importance.

Eighth session: This session emphasized on preventive measures of early marriage such as law enforcement, parent education, girls' education, improving the status of economic adolescents, increase the awareness of the community and ensure the participation of girls.

Ninth session: The focus of this session was to train the participated girls on how to say no and resist pressure to marry at an early age, how to refutes myths and misconception that contributing to early marriage and the importance of being well educated, how early marriage hinders their progress and development. The researcher prepared a scripts and encourage the participated girls to role play them. The scripts contained situations in which girls were exposed to pressure from her parents to marry and how to behalf.

Tenth session: This session was the closure of the program, the researchers made the post-test and acknowledged the participated girls for their active participation and wished all the best in their later life.

Evaluation phase: The evaluation of the effectiveness of the program was done immediately after its implementation by comparing the differences in adolescent girls' knowledge, practices and attitude regarding early marriage health consequences through applying the same tool of the pre- test.

Administrative and ethical considerations:

The Research Ethics Committee (REC) of the Faculty of Nursing at Zagazig University gave its approval to the study proposal. Prior to collecting data, the researchers secured official approval from schools' directors. Additionally, informed consent was obtained from the participants after the researchers thoroughly explaining the aim of the study. The information was provided voluntarily and anonymously by the participated girls, and it was kept confidential and used only for research

purpose. Also, the participants are free to reject and discontinue the study at any time without any obligation.

Statistical design

All data were collected, tabulated and statistically analyzed using (IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.2015). Quantitative data were expressed as the mean ± SD & (range), and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage). Paired (t) test was used to compare between two dependent groups of normally distributed variables. Percent of categorical variables were compared using Chi-square test. Pearson' correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation. All tests were two sided. P-value < 0.05 was considered statistically significant   and p-value ≥ 0.05 was considered statistically insignificant (NS). Percentages of improvement equals pre intervention score- post intervention score / pre intervention score multiply by 100%.

Results

In terms of socio-demographic characteristics of the participants, **Table (1)** indicates that the mean age of adolescent girls was 13.6 (SD = 1.15) years. Regarding birth order, 64% of the participants had middle or last birth order ranks. Concerning fathers' education and Job, 35 % of them had university education and 66 % of them were workers. As for the mothers, 31% of mothers were university educated and 75

% of them were house wives whereas 45 % of the mothers got married before the age of 18 years. For 46 % of the participants, the family income was just sufficient to their daily needs.

According to **Table 2**, the mean score of knowledge was increased from 19.1 (SD = 5.8) in the pretest to 28.2 (SD = 5.9) after the program. The difference of knowledge in the posttest differed significantly (p < .0001), which indicates a statistically significant improvement in adolescent girls' knowledge about early marriage after the program. Regarding attitudes, **Table 2** reveals that the mean attitudes score increased from 46.3 (SD = 10.5) in the pretest to 58.3 (SD = 9.7) in the posttest. The difference of attitudes differed significantly in the posttest (p < .001), which indicates a statistically significant improvement in adolescent girls' attitudes toward early marriage after the program. Also, **Table 2** indicated that before the program, the mean practice score was 16.9 (SD = 4.9) compared to 22.1 (SD = 4.7) at the post program phase, which indicates a statistically significant improvement in adolescent girls' practices.

Figure 1 illustrates that 81% of the participants had satisfactory knowledge regarding health consequences of early marriage in post-test. Whereas, only 53% of the participants had a negative attitude regarding early marriage in the post test compared to 13 % in the pretest. As for practice, 83% of the participants reported satisfactory practice in post program compared to 49% in the pre-program phase.

Table 3 shows that practice score was positively correlated to knowledge score (r

= .42) and attitude scores (r = .494) at the pre-program. As for knowledge score at the post program, it was positively correlated to attitude score (r = .379) and practices score (r = .399).

Table 1: Socio-demographic characteristics of the studied girls (n=100)

Variables	No	Percent
Age per years		
≤ 13	57	57.0
≥14	43	43.0
Mean ±SD	13.6±1.15	
Range	12-19	
Girls order in family		
Only	3	3.0
First child	33	33.0
middle child order	29	29.0
Last child order	35	35.0
Fathers education		.
Read& write	23	23.0
Secondary education	42	42.0
University education	35	35.0
Father job		.
Employee	34	34.0
Workers	66	66.0
Mothers education		
Read& write	29	29.0
Secondary education	40	40.0
University education	31	31.0
Mothers job		
House wives	75	75.0
Working	25	25.0
Age of mother at marriage		.
more than 18	45	45.0
Less than 18	55	55.0
Family income		.
Insufficient	24	24.0
Just sufficient	46	46.0
Sufficient and Saving	30	30.0

Table (2): Comparison knowledge, attitude and practice of adolescent girls regarding health consequences of early marriage at pre and post program (n=100)

Parameters	Pre-Intervention		Post-Intervention	
	No	%	No	%
Knowledge				
Satisfactory	23	23.0	81	81.0
Unsatisfactory	77	77.0	19	19.0
Knowledge score **Mean± SD** **range**	19.1±5.8 (0-30)		28.2±5.9 (15-38)	
Paired t **p- value** **% of improvement**	13.9 **0.0001** 47.6%			
Attitude				
Negative	47	47.0	87	87.0
Positive	53	53.0	13	13.0
Attitude score **Mean± SD** **range**	46.3±10.5 (17-74)		58.3±9.7 (38-78)	
Paired t **p- value** **% of improvement**	11.1 **0.0001** 25.7%			
Practice				
Satisfactory	49	49.0	83	83.0
Unsatisfactory	51	51.0	17	17.0
Practice score **Mean± SD** **range**	16.9±4.9 (7-28)		22.1±4.7 (9-28)	
Paired t **p- value** **% of improvement**	11.6 **0.0001** 30.5			

Paired t test   significant =$p<0.05$ % of improvement= percent of improvement score after intervention
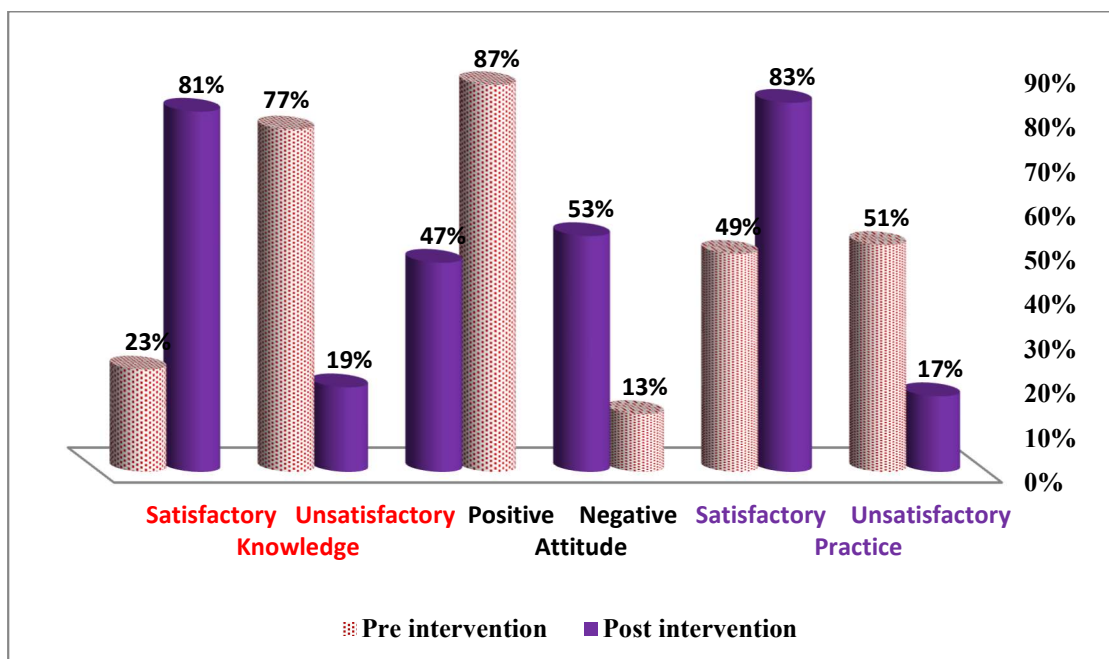
Figure (1): Knowledge, attitude and practice of adolescent girls regarding health consequences of early marriage pre & post program

Table 3: Correlation matrix between knowledge, attitude and practice of adolescent girls regarding health consequences of early marriage pre and post program (n=100)

Parameters	Knowledge score		Attitudes score	
	(r)	P	(r)	P
Pre intervention				
Knowledge score				
Attitude score	0.435**	0.0001		
Practice score	0.42**	0.0001	0.494**	0.0001
Post intervention				
Knowledge score				
Attitude score	0.379**	0.0001		
Practice score	0.339**	0.001	0.315**	0. 001

 r = Correlation coefficient   *p<0. 05 significant   **p<0.01 significant

Discussion

In the Arab world, early marriage is a serious social, health, and development concern. The practice infringes on the human rights of girls, has a negative impact on families and societies, and continues a generational cycle of poverty, inadequate education, early childbearing, and ill health. Unfortunately, the majority of child brides in the Arab region occur in Egypt that considered the most populous Arab country. In Egypt, 23% of girls were married before the age of 18, notwithstanding legislative amendments. In addition, early marriage was more prevalent in rural communities than in urban ones [9] [6]. Thus, the present study was conducted in rural area due to reasons as limited educational opportunities, low socioeconomic status, low levels of awareness in the laws of the country, and low levels of awareness of the harms and negative consequences of child marriage.

The findings of the current study showed that slightly less than half of the mothers of the studied girls married before the age of 18 years, and majority of them were house wives. These findings are of great importance as the early married mothers might have the culture that support the marriage of girls as early as possible even under the legal age of marriage. So some rural Egyptian families still had incorrect beliefs that the women's primary role is to get married to get rid of their responsibilities without considering their age, education,

the consequences of early marriage and the ability of girls to become mothers and having children, as well as the reality of marriage and its responsibilities. This is supported by the previous Egyptian study by **Hegazy and Elsadek** [21], which found that the majority of early married female children had previous early married cases in their families.

In a similar vein, the study of **Suyanto et al.** [8] in Indonesia demonstrated that females who grew up in communities where the majority of their peers and family members have early marriage are somewhat encouraged to do the same. Similarly, the study conducted by **Nasrullah et al.** [26] in Pakistan revealed that the majority of women supported early marriage practices and intended to marry their daughters before the age of 18 years, and the participant girls were satisfied by the decision of their parents to marry them before the age of 18 years, and they disagreed with the country's ban on child marriages. Thus, the practice of child marriage may continue due to certain factors including the strong influence of culture and societal perceptions, different interpretations of religion, and protecting family honor.

This study revealed that the majority of the participants had unsatisfactory knowledge regarding early marriage before the program. This might be due to inadequate education of girls by parents and teachers about early marriage and its health consequences. In agreement with

this finding, the Indian study by **Vandana et al.** [27] revealed that 59.6% of the schoolgirl students have little information regarding early marriage and early pregnancy, and the study by **Hegazy and Elsadek** [21] found that the majority of early married females did not have sufficient knowledge about marriage prior to their early marriage. In addition, the Egyptian study by **Sabola et al.** [20] found that more than three-quarters of the studied women in Menofia governorate's rural and urban areas showed they were unaware of meaning of early marriage and the legal age of marriage in Egypt.

On contrary, the study conducted by **Babiker et al.** [28] in Sudan, revealed that the majority of the participants (77.4%) had satisfactory knowledge about the negative consequences of early marriage. In addition, the study of **Naghizadeh et al.** [29] in Iran and **Most and Zebunnesa** [30] in Bangladesh showed that nearly half of the girls had good knowledge about early marriage. This discrepancy might be due to regional and cultural variation.

The current study findings revealed that more than half of the participants had a positive attitude toward early marriage prior to implementing the program. This finding may be related to the rural community's customs and tradition that supporting early marriage of girls as well as a lack of their knowledge about the detrimental effects of early marriage and pregnancy on one's biopsychosocial health. Similarly, the study by **Vandana et al.** [27] revealed that more than half of school girls (52.5%) had positive attitude toward early marriage. However, the study conducted by **Gulema et al.** [31] in Ethiopia, showed that almost 87.0% of girls had positive attitude towards early marriage.

In contrast to this finding, the studies of **Naghizadeh et al.** [29] in Iran and **Sumalatha et al.** [32] in India demonstrated that the majority of girls disagreed with marriage before the age of 18 years old. Furthermore, **Sabola et al.** [20] found that the majority of the studied women were not satisfied with early marriage and reported that child marriage had negative consequences on the girls, increase their responsibility after marriage and wastes their rights. This discrepancy can be due to regional and cultural differences.

The present study also showed that more than half of the participants were incompetent in healthy practices regarding health consequences of early marriage as healthy nutrition, physical exercise and proper menstrual hygiene in the pre intervention phase which is consistent with the previous Egyptian studies of **Elsayied et al.** [23] and **Ahmed and Elsayied** [22].

In this study, it was hypothesized that after implementation of the empowerment program, adolescent girls' knowledge, attitudes, and practices regarding health consequences of early marriage would be improved. The study findings supported these hypotheses as the program demonstrated effectiveness

in improving knowledge, attitudes, and practices regarding health consequences of early marriage in the posttest compared with the pretest, which confirmed the study intervention was effective for the prevention of adverse health consequences of early marriage among rural adolescent girls.

According to the present study findings, knowledge score was increased in posttest than in pretest, which indicates a statistically significant improvement in adolescent girls' knowledge about health consequences of early marriage after the program. This result confirmed the first study hypothesis. These findings are in agreement with the previous Egyptian study of **Elsayied et al.** [23] which revealed that few of the female adolescents had satisfactory knowledge about early marriage prior to the program's implementation, but all of them having satisfactory knowledge after the program's implementation. According to **Sreelekshmi et al.** [25], the knowledge level of the participants statistically significantly increased by 35.7% after the planned teaching program. Similarly, **Joseph** [24] and **Tamilarasi** [1] also found that the structured teaching program was successful in improving adolescent girls ' knowledge regarding of the adverse effects of early marriage on their health.

The current study also proved the second hypothesis that after the implementation of the program, attitude of adolescent girls toward health consequences of early marriage was improved. These

findings are in cognizance with the previous Egyptian study of **Elsayied et al.** [23] which demonstrated that primary prevention program reported a remarkable improvement in female students' perception of early marriage health consequences. Furthermore, the study by **Sreelekshmi et al.** [25] in India showed that the adolescent girls' attitude toward health consequences of early marriage had improved by 21.8% after planned teaching program

The current third hypothesis was supported by the current study results which indicated that the program was successful in increasing healthy practices of adolescent girls regarding health consequences of early marriage when comparing pre-program with post-program mean scores, which indicates a statistically significant improvement in adolescent girls' practices. This finding is consistent with **Elsayied et al.** [23] who found a highly statistically significant difference between pre and post primary prevention program implementation regarding female students' health practices related to early marriage health consequences.

According to the current study finding, knowledge score was positively correlated to attitude and practices score at the post intervention phase. This may be due to that people who are knowledgeable about something tend to justify their related-practices through the acquired information. As well as, when girls were more knowledgeable and more oriented with early marriage and

its consequences, this was reflected on their better perception and practices. This is in accordance with **Vandana et al.** [27] and **Ahmed and Elsayied** [22] found a statistically significant positive correlation between female students' knowledge and attitude score. Additionally, **Naghizadeh et al.** [29] showed that the girls who opposed child marriage were significantly more knowledgeable than the girls who supported it. Thus, by empowering rural girls and their families with the needed information and skills regarding health consequences of early marriage and developing the culture for correcting the wrong cultural beliefs and societal attitude toward early marriage, this threat can be lessen to a great extent.

Conclusion

The study results concluded that there were statistically significant differences in adolescent girls' total knowledge, attitude and practices scores in post-test when compared with pre-test. Therefore, the implementation of the empowerment program was shown to be successful in improving knowledge, attitude and practices of the rural adolescent girls regarding health consequences of early marriage.

Recommendations

- Implementing the developed program in the study settings or in similar ones on a larger scale for more generalization of the findings and to prove its positive effects.
- Further researches should continue to identify determinants of early marriage to assist in building more girl-centered

interventions and norms change interventions that empower adolescent girls, particularly, in rural areas in order to advocate for themselves against child marriage.

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