Predictors of Sexual and Reproductive Self-care Among Iranian Adolescent Females

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Abstract

Background: Self-care can include the activities that individuals perform in accordance with their needs to maintain and promote their health. Puberty is the most important change that comes with adolescence, which necessitates adolescents to become aware of their sexual and reproductive health.

Objectives: The objective of the present study was to investigate the predictors of adolescent females' sexual and reproductive self-care status.

Methods: This cross-sectional study using random multistage sampling was conducted on adolescent females aged 14 - 19 years in the secondary schools of Karaj, Iran, in 2022. A total of 555 female students voluntarily completed the survey. The survey included the Female Adolescents' Sexual and Reproductive Self-care Scale (FASRSCS). Pearson's correlation coefficient and univariable and multivariable linear regression were applied.

Results: The mean score of the FASRSCS was 65.42 out of 100 (standard deviation (SD) = 10.27). The highest mean score was acquired on the Perception of Female Adolescents of Premarital Sexual Relationships subscale (85.98 (SD = 14.28)), and the lowest mean score was acquired on the Reproductive and Sexual Health Knowledge subscale (36.97 (SD = 23.58)). The total score on the FASRSCS had the strongest association with the Adolescents and Family Interaction subscale (r = 0.71, P < 0.001), and the weakest association was with the Reproductive and Sexual Health Knowledge subscale (r = 0.38, P < 0.001). Multivariable linear regression analysis showed that having very strong religious beliefs (β = 0.23, P < 0.001), receiving information regarding puberty and menstrual health from peers (β = -0.20, P < 0.001), and cold parent-child relationship (β = -0.19, P < 0.001) were independent significant predictors of good sexual and reproductive self-care among adolescent females.

Conclusions: Given the importance of religious beliefs, parent-adolescent relationships, and the sources through which adolescents receive information regarding their sexual and reproductive health self-care, it is necessary to appropriate design interventions, including the aforementioned factors, in order to optimize and promote good sexual and reproductive health among female Iranian adolescents.

Keywords: Female, Adolescent, Sexual Behavior, Reproductive Behavior, Self-care

1. Background

Self-care includes activities that individuals perform in accordance with their individual needs to maintain and promote their health (1). Orem categorized self-care activities into three categories: Universal self-care, developmental self-care, and health deviation self-care. Developmental self-care needs are related to developmental processes (2). Adolescence is a period of unique developmental period that changes the self-care needs of individuals in different domains (i.e., physical, psychosocial, sexual, and cognitive) (3).

Puberty is the most important change that accompanies adolescence, and both males and females become fertile following puberty (4). Therefore, it is an important landmark in adolescents' sexual and reproductive health and needs special attention in relation to the health of adolescent females (5). Menarche (i.e., the

first menstrual cycle in a female's puberty) is managed differently based on cultural, social, and economic contexts ([6]). Adolescent females experience many problems in relation to their first menstruation and are not usually prepared to take care of themselves ([7]). Most adolescent females do not receive accurate information regarding menstrual health due to culturally specific practices that can result in incorrect and unhealthy behaviors ([8]). Additionally, women and girls use strategies to manage their menstrual hygiene based on individual preferences, available resources, economic status, local traditions, cultural beliefs, and available knowledge ([9]). Differences in pain management and coping strategies for menstruation based on culture have also been reported ([10]).

In addition to facing the onset of puberty and menstruation, adolescent females experience the discovery of sexual desires, and the likelihood of engaging in sexual relationships increases ([11]). Ethnic, cultural, and racial contexts are important in the formation of the adolescents' sexual motivations ([12]). Responsible sexual behavior and reproductive health are major problems faced by adolescents and are priorities for any society ([13]). Adolescents are at high risk of developing sexually risky behavior for a variety of reasons, including lack of adequate knowledge and information concerning sexual and reproductive health, misconceptions about sexual function, misperceptions about risky sexual behaviors, and a lack of developing the skill of saying "no" to sex ([14]). The assessment of self-care abilities and behaviors can lead to the identification of the different dimensions of self-care ([15]).

Adolescent females' sexual and reproductive self-care in Iran (where the present study was carried out) is a multidimensional concept based on adolescent-family interactions, perception of premarital sexual relationships, enabling factors for sexual and reproductive self-care, understanding behaviors and interaction with the opposite sex, communication barriers with parents, and reproductive and sexual health knowledge ([16]). Moreover, services provided by healthcare systems and strengthening user-friendly adolescent health services can empower adolescent females to take care of their reproductive and sexual health ([16]). In Iran, due to cultural, historical, social, legal, and religious considerations, the assessment of sexual issues has been taboo, especially for teenagers, and less attention has been paid to this category ([17]). For these reasons, research in the field of sexual issues has always faced problems, and as a result, few studies in this field have been conducted in Iran ([18]), most of which focused on high-risk sexual behaviors among teenagers and young individuals ([19],

[20]). Since the concept of reproductive and sexual self-care is multidimensional, previous studies did not use the specific tool of this concept and only examined high-risk sexual behavior, one dimension of this concept. Therefore, the assessment of this concept using a specific measure can help in understanding adolescents' self-care behaviors and the factors affecting their formation. This can help healthcare professionals identify potentially harmful or ineffective behaviors and help them design better and more appropriate training and care programs.

2. Objectives

The objective of the present study was to investigate the predictors of adolescent females' sexual and reproductive self-care status.

3. Methods

3.1. Design

This cross-sectional study was conducted with the participation of adolescent females aged 14 - 19 years in the secondary schools of Karaj, Alborz province, Iran, in 2022.

3.2. Ethics

The study protocol was approved by the Research Council and the Ethics Committee of Alborz University of Medical Sciences (IR.ABZUMS.REC.1400.225). Required permission was acquired from the General Department of Education. Written informed consent was obtained from school managers and students before conducting the survey.

3.3. Participants

Adolescent females in secondary schools participated in the study. The inclusion criteria were age range of 14 - 19 years, a student of secondary school, and presence in school on the day of data collection. The exclusion criterion was the unwillingness to participate in the study.

3.4. Sample Size Estimation

The sample size for multivariable linear regression was estimated based on the rule suggested by Green ([21]). Considering approximately 30 predictive variables (k) and using a standardized formula ($n = 50 + 8 K$), the minimum sample size was 290 subjects. Due to the use of cluster sampling, the minimum sample size was calculated to be 435 subjects, considering a clustering effect of 1.5.

3.5. Sampling Method

The participants were recruited using multistage random sampling. Karaj has four districts of education. In total, there are 52 public female high schools in the four districts of Karaj. Three schools in each district were randomly selected using a random number table. One class was randomly selected from each school, representing each grade. The students were invited to participate in the survey if they voluntarily wanted to.

3.6. Measures

Information regarding various sociodemographic characteristics, including age, parents' age, birth order, number of siblings, educational grade, parents' educational level, type of relationship within the family, family structure, most influential individuals in decisions and behaviors (e.g., parents, siblings, peers, and others), whether they had adult supervision, adolescents perception regarding their and their families religious beliefs (assessed on a Likert scale: "Very strong", "strong", "fair", "weak", and "very week"), information sources regarding puberty/menstrual health and sexual health, and whether they had access to social media, were collected.

The Female Adolescents' Sexual and Reproductive Self-care Scale (FASRSCS), developed and psychometrically assessed by Alimoradi et al. (22), was included in the survey. The FASRSCS comprises seven sections as follows:

Section 1: Adolescent and family interaction (17 items: e.g., "I feel that the family values me and my conversations").

Section 2: Perceptions of premarital sexual relationships (13 items: e.g., "having sexual relationships causes dangers, such as unwanted pregnancy, loss of virginity, and sexually transmitted diseases, for my physical health").

Section 3: Enabling factors for sexual and reproductive health self-care (8 items: e.g., "providing the opportunity to receive sexual and reproductive health services from the appropriate person with a good attitude will make me more capable of reproductive and sexual health self-care").

Section 4: Understanding and behaviors of interaction with the opposite sex (7 items: e.g., "having a relationship with a boy is against my religious teachings").

Section 5: Parent-adolescent communication barriers (7 items: e.g., "I am embarrased to raise some issues with my parents").

Section 6: Reproductive and sexual health knowledge (10 items: e.g., "condoms are an effective way to protect against sexually transmitted diseases, such as AIDS, genital herpes, and hepatitis").

Section 7: Self-care for reproductive health and menstruation (12 items: e.g., "in the menstrual period, I change my sanitary pad at intervals before it becomes completely wet").

The response scale, range of scores for each subscale, and how to normalize the scores in a dataset to be within the range of 0 and 100 for each subscale were based on the method proposed by Alimoradi et al. Higher scores (in subscales and the total score) indicate better sexual and reproductive self-care behavior (22). In the present study, the Cronbach's alpha was 0.90.

3.7. Statistical Analysis

Statistical analysis was performed using SPSS software (version 24). Means and standard deviations were employed to describe the ordinal variables and frequencies. Linear regression analysis was used to explore the predictive role of different variables in sexual and reproductive health self-care. Categorical variables were defined as dummy variables and were entered into the regression analysis. The assumptions of linear regression included the normal distribution of the outcome variable. The absence of the outliers was assessed and confirmed based on the Shapiro-Wilks test and the centrality and dispersion indicators. Moreover, after performing the regression analysis, collinearity between the variables was assessed using a variance inflation factor (VIF) or the tolerance indices. Given that VIF < 2, tolerance < 1, and Durbin Watson statistic equal to 1.78, this condition was met. Univariate and multivariate linear regressions were performed. In the univariate linear regression, the relationship between all sociodemographic variables and the total score of the FASRSCS was assessed, and the significant variables were identified. The variables showing a significant relationship in the univariate linear regression were entered into the multivariate regression analysis using the stepwise method. The significance level was set at $P < 0.05$.

4. Results

A total of 555 female students participated in the study. The individual characteristics and their relationships with sexual and reproductive self-care are provided in Table 1. In the univariate regression analysis, the factors significantly correlated with sexual and reproductive health self-care were maternal age, father's educational level, type of relationship within family and family structure, most influential individuals in decisions and behaviors, monitoring person, adolescent religious beliefs, family religious beliefs, and sources of receiving information regarding puberty and menstrual health.

The results of multivariate regression analysis demonstrated that having very strong religious beliefs (β = 0.23) and strong religious beliefs (β = 0.17) were the most important predictive variables and were positively correlated with reproductive and sexual health self-care among adolescent females. Additionally, receiving information regarding puberty and menstrual health from peers (β = -0.20) and having a cold parent-adolescent relationship (β = -0.19) were also important predictive variables and were negatively associated with the sexual and reproductive health self-care among adolescent females (Table 2).

The highest mean score was acquired on the Perception of Female Adolescents of Premarital Sexual Relationships subscale, and the lowest mean score was acquired on the Reproductive and Sexual Health Knowledge subscale. The Pearson's correlation coefficient results showed that there was a statistically significant relationship between the scores of all subscales and the total score of the FASRSCS (Table 3). The total score of the FASRSCS had the strongest association with the Adolescents and Family Interaction subscale (r = 0.71, P < 0.001) and the weakest association with the Reproductive and Sexual Health Knowledge subscale (r = 0.38, P < 0.001).

5. Discussion

The present study investigated sexual and reproductive self-care and its predictors among female Iranian adolescents. The mean score of the FASRSCS was 65.42 (out of 100) for the whole scale (which can be considered fair as a mid-range score was acquired), with the highest mean score on the Perception of Female Adolescents of Premarital Sexual Relationships subscale and the lowest mean score on the Reproductive and Sexual Health Knowledge subscale. The total score of the FASRSCS had the strongest association with the Adolescents and Family Interaction subscale and the weakest association with the Reproductive and Sexual Health Knowledge subscale.

Fair sexual and reproductive health knowledge among adolescent females is a finding that is consistent with the findings of previous studies. Adolescent females' limited knowledge and awareness regarding sexual and reproductive health and misconceptions about contraceptives could prevent adolescents from using them (23). In a qualitative study from Ghana, low knowledge of reproductive health choices was observed among adolescents (13). A study on newly entered students at the University of Tehran, Iran, in 2013 reported that students had an acceptable level of knowledge about HIV/AIDS, which is one of the most important areas concerning sexual and reproductive health knowledge; however, this alone is not enough, and there are misconceptions in their sexual health-related knowledge (24). Additionally, limited or no information regarding sexual health, sexually transmitted diseases, and their method of transmission was reported by college students in Tabriz, Iran (25). Low sexual and reproductive knowledge should be addressed because it can put adolescents at risk of different sexual and reproductive health concerns, including unwanted pregnancy, unsafe abortion, and sexually transmitted diseases (26).

The initiation of sexual activity varies considerably based on the social context of the country and related perceived norms (27). Regarding female adolescents' perceptions of premarital sexual relationships, the results of the present study are consistent with a previous study's results, which reported that 97.3% of Indonesian students in 2019 had positive attitudes toward preventing premarital sexual behavior and 98.7% of students had behavioral control over premarital sexual behavior (28). One of the reasons for the necessity of sexual health education for adolescents is the existence of harmful social conditions caused by recent social and cultural developments and the growing prevalence of premarital sexual relationships, which present challenges to adolescent females about how to minimize the problems of such relationships (29). It has been consistently observed that Iranian adolescent females' sexual perceptions can motivate them to abstain from premarital sexual relationships (30).

Moreover, adolescents are aware of double standards in social norms and attitudes toward open relationships with the opposite sex. More specifically, their families and schoolteachers inhibit them from open relationships with the opposite sex; nevertheless, their peers encourage them to have opposite-sex relationships. These different viewpoints necessitate the importance of establishing and consolidating parent-adolescent communication regarding sexual issues (30). Due to the early onset of puberty and delay in marriage in most parts of the world, there are large numbers of young individuals who are sexually active before marriage and are exposed to sexually transmitted diseases due to high-risk sexual relationships (27). Therefore, having positive attitudes toward not engaging in premarital sex can be a protective factor for adolescents' sexual and reproductive health.

The results of the multivariate regression analysis showed that having strong and very strong religious beliefs was the most important predictor of better sexual and reproductive self-care among adolescent females. Based on different systematic reviews, spirituality has been considered to be a protective factor for different aspects

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Table 2. Results of Multivariable Linear Regression Regarding Predictors of Female Adolescents' Sexual and Reproductive Self-care Scale

	Unstandardized Coefficients		Standardized Beta Coefficient	Sig.	Collinearity Statistics	
	B (95% CI)	SE			Tolerance	VIF
Information sources regarding puberty and menstrual health						
Peers	-5.79 (-8.04, -3.54)	1.15	-0.20	< 0.001	0.95	1.05
Internet and social media	-3.66 (-7.06, -0.26)	1.73	-0.08	0.035	0.95	1.06
Most influential individuals: Parents	2.10 (0.49, 3.70)	0.82	0.11	0.011	0.87	1.15
Monitoring person: Parents	3.55 (1.40, 5.70)	1.09	0.13	0.001	0.96	1.04
Type of relationship within the family						
Family with cold relationships between parents and children	-7.93 (-11.21, -4.65)	1.67	-0.19	< 0.001	0.96	1.04
Family with warm relationships between parents but cold relationships with children	-5.60 (-9.76, -1.45)	2.11	-0.10	0.008	0.95	1.05
Family with cold relationships between parents but warm relationships with children	-3.24 (-6.08, -0.39)	1.45	-0.09	0.026	0.96	1.04
Information sources regarding sexual health						
Mothers	2.37 (0.68, 4.07)	0.86	0.11	0.006	0.93	1.07
Adolescent religious beliefs						
Very strong	6.42 (3.43, 9.40)	1.52	0.23	< 0.001	0.52	1.93
Strong	3.86 (1.53, 6.20)	1.19	0.17	0.001	0.52	1.92
Model summary	$R^2 = 0.23$; adjusted $R^2 = 0.22$; Durbin Watson = 1.78					

Abbreviations: CI, confidence interval; SE, standard error; VIF, variance inflation factor.

Table 3. Mean Scores and Intercorrelation of Subscales and Total Scores of Female Adolescents' Sexual and Reproductive Self-care Scale

	Subscales	Mean ± SD	Intercorrelation of Subscales and Total Scores						
			1	2	3	4	5	6	7
1	Adolescents and family interaction	72.27 ± 20.43	1						
2	Perception of female adolescents of premarital sexual relationships	85.98 ± 14.28	0.16 [a]	1					
3	Enabling factors for sexual and reproductive self-care	80.59 ± 18.07	0.18 [a]	0.34 [a]	1				
4	Understanding and behaviors of female adolescents of the interaction with the opposite sex	59.92 ± 19.28	0.41 [a]	0.46 [a]	0.19 [a]	1			
5	Parent-adolescent communication barriers	57.14 ± 24.86	0.38 [a]	-0.08	0.00	0.11 [a]	1		
6	Reproductive and sexual health knowledge	36.97 ± 23.58	-0.004	0.01	0.16 [a]	-0.10 [b]	0.06	1	
7	Self-care for reproductive health and menstruation	64.70 ± 15.78	0.49 [a]	0.07	0.09 [b]	0.28 [a]	0.19 [a]	0.07	1
	Total score	65.42 ± 10.27	0.71 [a]	0.44 [a]	0.49 [a]	0.59 [a]	0.53 [a]	0.38 [a]	0.56 [a]

Abbreviation: SD, standard deviation.
[a] P < 0.001.
[b] P < 0.05.

of health (including sexual health) among adolescents and youth (31-33). In addition, religious leaders can have a role in protective and preventive effects in promoting adolescents' sexual and reproductive health by increasing information-sharing (34). This can be considered when designing educational programs by the reinforcement of religious beliefs related to sexual behavior (35).

The results of the present study demonstrated that receiving information regarding puberty and menstrual health from peers and having a cold parent-adolescent relationship were the most important predictive variables of poor sexual and reproductive health because these two variables were negatively associated with sexual and reproductive health self-care among adolescent females. In a qualitative study from Ghana, a majority of participants relied on their peers for information concerning sexual and reproductive health (13). Good adolescent reproductive and sexual behaviors are associated with some parenting factors, including conversations, values, monitoring, warmth, acceptance, and parental support (36). Parent-adolescent communication regarding sexual reproductive health has been identified as a protective factor for adolescents' sexual and reproductive health by preventing them from engaging in high-risk sexual behaviors. Parent-adolescent communication regarding sexual issues can promote responsible sexual behavior (37). In addition to providing information, good parent-adolescent sexual communication can be a way to convey parental values (e.g., use of condoms, limiting substance abuse, delaying sexual activity, and reducing the number of sexual partners) to adolescents. The values to which parents adhere can play a decisive role in adolescents' sexual behavior (38).

5.1. Strengths and Limitations

The present study investigated sexual and reproductive health among adolescent females using a valid and reliable psychometric instrument. Other strengths of the present study include the appropriate sample size and the use of multivariate regression analysis. However, when interpreting the research findings, it is important to consider the present study's limitations. Firstly, the sample comprised female students aged 14 - 19 years attending public schools from urban areas; therefore, the findings cannot be generalized to adolescent females who are in the early stages of adolescence (below 14 years), those who attend non-governmental schools, those who do not go to school at all, and rural girls. Secondly, all the study data were self-reported and are therefore subject to various methods biases (e.g., social desirability and memory recall).

Thirdly, the study was cross-sectional, and therefore, it is not possible to determine the causal relationships between variables. Most of these limitations could be overcome by carrying out longitudinal studies with more representative samples of the target population.

5.2. Conclusions

Adolescent females had moderate scores regarding different aspects of reproductive and sexual health self-care, with the lowest scores in reproductive and sexual health knowledge. Therefore, designing educational courses in Iranian schools on these topics is paramount in increasing such knowledge. Given the importance of religious beliefs, parent-adolescent relationships, and the sources through which adolescents receive information regarding their sexual and reproductive health self-care, it is necessary to appropriately design interventions, including these factors, in order to optimize and promote good sexual and reproductive health among female Iranian adolescents.

Footnotes

Authors' Contribution: ZA and FA designed and conducted the study. All authors approved the manuscript.

Conflict of Interests: The authors declared no conflict of interest.

Data Reproducibility: The dataset presented in the study is available on request from the corresponding author during submission or after publication.

Ethical Approval: The study protocol was approved by the Research Council and the Ethics Committee of Alborz University of Medical Sciences (ethics code: IR.ABZUMS.REC.1400.225).

Funding/Support: There was no funding/support.

Informed Consent: Written informed consent was obtained from school managers and students before performing the survey.

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Table 1. Distribution of Sociodemographic Variables Among Female Adolescents and Results of Univariable Logistic Regression Analyses Considering Female Adolescents' Sexual and Reproductive Self-care Scale Total Score as Dependent Variable

	Range	Mean ± SD or No. (%)	Results of Univariable Linear Regression Analyses		
			B	SE	P-Value
Adolescent's age (y)	13 - 19	16.23 ± 1.17	-0.14	0.37	0.71
Father's age (y)	32 - 75	46.3 ± 5.95	-0.12	0.07	0.11
Mother's age (y)	29 - 60	41.07 ± 5.35	-0.19	0.08	0.02
Birth order	1 - 10	1.96 ± 1.27	-0.57	0.34	0.10
No of sisters	0 - 6	0.84 ± 0.97	-0.06	0.45	0.90
No of brothers	0 - 5	0.78 ± 0.76	-0.97	0.57	0.09
Adolescent's educational grade	8th	46 (8.3)	0.03	2.13	0.99
	9th	42 (7.6)	2.77	2.18	0.21
	10th	204 (36.8)	-1.09	1.66	0.51
	11th	216 (38.9)	-0.16	1.65	0.92
	12th	47 (8.5)	RG*		
Father's educational level	Illiterate	9 (1.6)	-1.73	3.55	0.63
	Elementary	60 (11)	-4.35	1.72	0.01
	Below diploma	136 (24.9)	-2.09	1.41	0.14
	High school diploma	259 (47.4)	-0.76	1.28	0.56
	University degree	82 (15)	RG		
Mother's educational level	Illiterate	15 (2.7)	-2.88	2.84	0.31
	Elementary	76 (13.8)	-1.44	1.65	0.38
	Below diploma	122 (22.1)	-2.18	1.50	0.15
	Diploma	269 (48.7)	1.68	1.34	0.21
	University degree	70 (12.7)	RG		
Type of relationship within the family	Family with warm relationships between children and parents	457 (82.3)	RG		
	Family with cold relationships between parents and children	34 (6.1)	-10.53	1.73	< 0.001
	Family with cold relationships between parents but warm relationships with children	43 (7.8)	-5.79	1.57	< 0.001
	Family with warm relationships between parents but cold relationships with children	21 (3.8)	-6.75	2.20	0.002
Family structure	Living with both parents	502 (90.5)	RG		
	Living with one parent due to the death of the other parent	19 (3.4)	-5.26	2.38	0.03
	Living with one parent due to parental divorce	34 (6.1)	-4.63	1.81	0.01
Most influential individuals in decisions and behaviors	Parents	297 (53.5)	RG		
	Relatives	13 (2.3)	-5.10	2.83	0.07
	Peers	101 (18.2)	-6.45	1.15	< 0.001
	Others	144 (26)	-3.05	1.02	0.003
Monitoring person	Parents	466 (84.1)	6.83	1.69	< 0.001

	Siblings	48 (8.6)	1.36	2.18	0.53
	Others	341 (7.3)	RG		
Adolescent religious beliefs	Too strong	78 (14.1)	9.35	2.889	0.001
	Strong	403 (72.6)	6.03	2.706	0.03
	Fair	60 (10.8)	-0.55	2.955	0.85
	Weak	14 (2.5)	RG		
Family religious beliefs	Too strong	133 (24.0)	4.35	2.13	0.04
	Strong	394 (71.0)	3.04	2.01	0.13
	Fair	28 (5)	RG		
Information sources regarding puberty and menstrual health	Mothers	261 (47.0)	2.04	1.02	0.05
	Teachers	42 (7.6)	-3.10	1.73	0.07
	Peers	77 (13.9)	-6.25	1.39	< 0.001
	Internet and social media	30 (5.4)	-5.11	1.97	0.01
	Others	145 (26.1)	RG		
Information sources regarding sexual health	Mothers	161 (29.0)	1.88	1.15	0.10
	Teachers	33 (5.9)	-2.45	1.92	0.20
	Peers	144 (25.9)	-4.46	1.18	< 0.001
	Internet and social media	76 (13.7)	-4.52	1.42	0.001
	Others	141 (25.4)	RG		
Having social media	Yes	467 (84)	-1.54	1.19	0.20
	No	87 (16)	RG		

Abbreviations: SD, standard deviation; SE, standard error; RG, reference group.