Health Education and Health Promotion (HEHP) (2017) Vol. 5 (3)

Effect of Socioeconomic Factors on the Constructs of the Modified Theory of Planned Behavior in Relation to Reproductive Health in Adolescents: Cross-sectional Study

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Abstract

Aim: The aim of this study was to determine the effect of socioeconomic factors on the constructs of the modified Theory of Planned Behavior (TPB) in relation to reproductive health in adolescents.

Methods: A cross-sectional study was conducted among 578 female students aged 12-16 years, recruited through a multistage random cluster sampling method, in Tehran, Iran. A self-administered TPB-based constructed questionnaire was designed and used for data gathering. Multivariate regression analyses were conducted to examine the association between family size, number of siblings, birth rank, and family closeness, source of information, and reproductive health behavior.

Findings: The mean age of the participants was 14.1 years. None of the participants obtained a perfect score in relation to reproductive health. In addition, they achieved average scores less than half the rates. Number of siblings, family size, birth rank, mother education and information source were factors associated with TPB the constructs ($p<0.001$).

Conclusion: The results of this study emphasize that Socioeconomic factors can have an effective role in students' sexual and reproductive health behaviors.

Keywords: Reproductive health, Socioeconomic, Theory of planed behavior, Adolescents

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Introduction

The number of young people living in the world is increasing. Evidence shows that 1.8 billion young people aged 10-24 years are residing in the world [1]. Of this, 90% are living in the less developed countries [1]. In Iran, near 50% of the population are under 27 years. According to Iran's 2011 Census, 12 million adolescents (aged 10–19 years) and 21 million young (aged 10–24 years) comprise a large people of the national population [2]. Therefore, protecting and promoting the health of this large portion of the population is crucial for sustainable development of the country [3]. In particular, reproductive and sexual health of young population is an important issue across the world because they are highly vulnerable to sexual and reproductive related complications. However, in different parts of the world, the reproductive health of teenage population is often neglected [4]. According to previous studies, health complications related to adolescents' reproductive health, including sexually transmitted infections (STIs) such as acquired immune deficiency syndrome (AIDS) and early pregnancy require necessary attention [5]. Although few studies have been reported on the weakness of reproductive health-promoting behaviors, and the related determinant factors such as knowledge, attitudes, and skills among Iranian adolescents, available studies have shown the existing gap in this area [6,7]. For example, female adolescents have poor knowledge and awareness than male adolescents on sexual and reproductive health [8]. Moreover, communication about sexual and reproductive health is more taboo among female adolescents than among male adolescents [9].

Lack of education, misinformation, embarrassment and hesitation to get into public-created social discussion are imposed psychological obstacles for adolescents [10]. For example, a study by Mohammadi [3] on 1,385 male adolescents aged 15-18 years in Tehran showed that a relatively high proportion of adolescents are sexually active; however, their knowledge regarding STIs and HIV/AIDS is poor [3]. Another study also reported increasing prevalence of sexual and reproductive health problems among female adolescents [11].Thus, identifying the determinants of sexual and reproductive health behavior of female adolescents is important based on health behavior theories. Planning and implementation of appropriate interventions based on identifying determinants for improving sexual and reproductive health are important. Health behavior theories are useful for this purpose [9].

Health behavior theories are important to design studies and to guide health behavior change intervention [12]. In addition, using the

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specific theoretical framework in conducting comparative studies is recommended [11]. In this study, a modified version theory of planned behavior (TPB) was used as the theoretical framework. This theory was developed by Ajzen [13]. It has been used widely in studying and designing health behavior intervention programs including physical activity [14] and dietary behavior [15]. TPB identifies three key constructs that influence behavior: perceived behavioral control, attitudes, and subjective norms [13]. According to this theory, the main determinant of behavior is intention.

The further literature review indicated that perceived parental control also plays a great role in reproductive health behavior among adolescents. On the other hand, parental perceived control over the behavior of adolescent, reproductive health has an impact on their health behavior. Previous studies have indicated [15,16] that perceived parental control has contribution on the TPB models' constructs in predicting health behavior. Therefore, perceived parental control was added to the main domains of the TPB theory. Thus, this study was aimed to assess the socio-demographic factors on the constructs of modified TPB in relation to reproductive health in adolescents (Fig. 1).

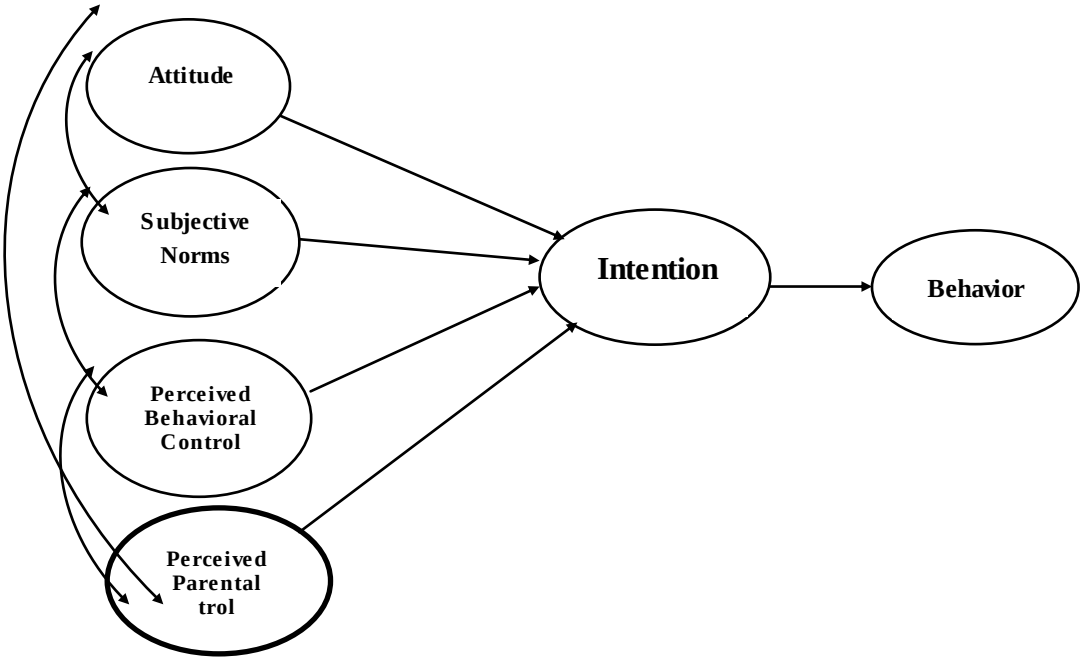


Fig. 1: The modified TPB.

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Methods

A cross-sectional study was conducted among high school female adolescents aged 12 to 16 years. The participants were selected by multi-stage random cluster sampling technique. Female adolescent aged 12 to 16 years, being single and residing in Tehran were the main inclusion criteria. The only exclusion criterion was being absent for more than one session from the school. Informed consent was obtained from all participants and their parents after providing adequate information about the significance and aim of the study. Confidentiality of information they provided was assured.

Sampling & participants

Multi-stage sampling method was used to select the schools, and simple random sampling method was employed to enroll the study participants. At first, 22 districts' education offices were selected. In the second stage, schools were selected from each district cluster. Three districts were selected using probability proportion method based on their size out of the 22 districts found in Tehran. Similarly, from each district, four schools were selected randomly using the probability proportional-to-size sampling. From each grade, one class was selected randomly with the simple random sampling method. Finally, using class attendance list, 16 students were selected with the simple random sampling method. In total, 36 classes were included in this study. From these 36 classes, a total of 578 students was recruited.

Data collection instruments

A constructed self-administered questionnaire was used to collect the data. Besides the demographic characteristics, the constructed questionnaire designed based on TPB was used to collect the data on nutritional status, physical exercise, general health status, menstrual health, and human immunodeficiency virus (HIV) -related knowledge and behavior. The scale items were completed using parting method. Some parts of this instrument were founded on the questionnaire developed by the World Health Organization (WHO) [17]. The WHO questionnaire comprised of questions about sexual and reproductive health knowledge and its sources, sexual attitudes, sexual behavior, reproductive health services, and sexual and reproductive health outcomes. Another part of the instrument was developed on the basis of the literature review and a qualitative study, which included eight focus group discussions (FGDs) with 40 participants. Each FGD lasted one hour. A detailed description of the instrument development can be found in a study reported by Darabi et al. [18]. However, a brief description is offered below.

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Knowledge section

A questionnaire with 28 items was used to measure the participants' knowledge about reproductive health. Each item was scored using three categories, namely *"True," "False,"* and *"I do not know."* The internal consistency of the item was assessed with Cronbach's alpha coefficient (0.86).

Modified TPB section

One hundred four items were used to collect the information of the TPB constructs. The scale was scored based on a five-point Likert scale, ranged from *"totally disagree"* option with a score of 1 to the *"totally agree"* option with a score of 5. To assess the validity of the scale, face, content and construct validities were assessed. To assess the reliability of the scale, the internal consistency and stability of the scale were measured.

In the qualitative face validity, the participants stated that they have had no problems in reading and understanding the items. The mean of the content validity ratio was 0.64. Also the mean of the content validity index (CVI) was 0.74.

Exploratory factor analysis (EFA) was used to evaluate the construct's validity. The Bartlett's test and KMO illustrated that the data were appropriate for factor analysis (KMO=0.83, P<0.001). Principal component analysis with Varimax rotation identified six factors with Eigenvalues greater than 1 and factor loading equal to or greater than 0.4, accounting for 67% of the variance observed. CFA results confirmed the exploratory six-factor construct. In addition, the Cronbach's alpha coefficient showed an excellent internal consistency (0.92). Moreover, the test-retest of the scale with a 2-week interval indicated an appropriate stability of the scale (ICC =0.86).

Statistics and data analysis

Descriptive statistics including frequency, percentage, mean and standard deviations were used to present the data. To evaluate the effect of each variable on the structural TPB variables, we used univariate (simple) multi-level analysis [15]. Although this is a kind of regression analysis, we used it to consider the clustering effect of area, schools and classes. Therefore, only one variable in the first step was included into this model. It has been mentioned that when there is clustering of sample selection, there is a need for a special statistical method to handle the clustering effect, otherwise the statistical inference would not be proper [19]. In this multilevel analysis, the number of levels used to consider the probable clustering effect was achieved with Akaike information criterion (AIC) statistics. It was for their used to check the convenience of multi-level compared to the classical regression model. The preferred levels selected by this analysis were determined to be 3. The first level was measurement of each

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variable, the second was school and the third was area (districts). Including class as an extra level did not improve the model based on AIC. Data analysis was undertaken using SPSS (ver. 23.0).

The variables, which showed P-value less than 0.2 on univariate analysis, were entered into a multivariate multilevel analysis model. Backward deletion method was used to exclude the insignificant variables. Variables with P-value more than 0.1 in the model were excluded sequentially.

Results

Table 1 shows the demographic characteristics of the participants. The mean age of the participants was 14.1 years; 77 (24%) participants were living in the family of 4 to 5 people, and 41 (1%) were the first child in the family; 66% of the participants were siblings. In addition, 60.52% of the fathers and 60.56% of the mothers attained below diploma level. For 86.5% of the students, the most important source of information in relation to the reproductive health was their mothers.

Table 1: Frequency distribution, percent and demographic characteristics of the participants (n=578)

Characteristics	Description	NO (%)
Family size	2-3	104 (17.91)
	4-5	446 (77.24)
	>5	28 (4.82)
Number of siblings	1	102 (17.61)
	2	350 (60.61)
	3	98 (17)
	4+	28 (4.73)
Birth rank	1	278 (48.1)
	2	222 (38.4)
	3	56 (9.7)
	4+	24 (3.7)
Area_ SES	2	196 (33.9)
	4	190 (32.9)
	10	192 (33.2)
Father's education	<6	150 (26)
	12-6	350(60.52)
	>12	78 (13.51)
Mother's education	<6	180 (31.13)
	12-6	350 (60.56)
	>12	48 (8.31)
Source of information	Mother	500(86.5)
	Sister	26 (4.5)
	Other family	16(2.8)
	Paired group	16 (2.8)
	Teacher/advisor	8 (1.3)
	Doctor	6 (1)
	Internet	6 (1)

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Based on this study, the highest average total score of attitude was 45.22, and the lowest average total score of behavioral intention was 36.31. In addition, none of the students gained perfect score.

There was a significant relationship between family size and behavioral intention construct (p=0.03). This means that students, who are members of the families of 4 to 5 people, have more behavioral intention (37±9.82) average score towards reproductive health behavior (Tables 2, 3 and 4).

In addition, behavior (p<0.01), behavioral intention (p<0.01), attitude (p=0.05), subjective norm (p<0.01) and perceived parental control (p=0.04) were significantly associated with the number of siblings. The students who were two siblings gained a more average score of behavior (37.41 ± 10), behavioral intention (37.63 ± 9.16), attitude (46.12 ± 6.13), subjective norm (42 ± 8) and perceived parental control (45.36 ± 10.91) towards reproductive health behavior (Tables 2, 3 and 4).

There was a significant relationship between birth, rank and perceived behavioral control (p=0.02), subjective norm (p<0.01) and attitude (p=0.03). The students who were the second children of the family gained a more average score of perceived behavioral control (38.45 ± 8.62), subjective norm (41.83 ± 9.63) and attitude (45.67 ± 6.19) towards reproductive health behavior (Tables 2, 3 and 4).

Attitude (p=0.05) and behavioral intention (p<0.01) were significantly associated with the mothers' education level. Students who had mothers with education levels below diploma gained a more average score of attitude (47.55 ± 5) and behavioral intention (38.32 ± 7.54) towards reproductive health behavior (Tables 2, 3 and 4).

Furthermore, information source and perceived behavioral control (p<0.01), perceived parental control (p<0.01) and subjective norm (p<0.01) were significantly associated. Students whose information source in relation to sexual and reproductive health was the doctor gained a more average score of perceived behavioral control (45.79 ± 6.73), perceived parental control (47.46 ± 14) and subjective norm (59.98 ± 22.11) towards reproductive health behavior (Tables 2, 3 and 4).

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Table 2: The relationship of reproductive health behavior and behavioral Intention with the socio-demographic variables of students based on univariate and multivariate Multi-level model

Effective factors		Behavior						Behavioral Intention					
		Mean± SD	Unadjusted†		Adjusted backward‡			Mean± SD	Unadjusted†		Adjusted backward‡		
			β	P	β (SE)	P1	P2		β	P	β (SE)	P1	P2
Family size	**Total**	36.41 ± 10.24						36.31 ± 10					
	2-3	34.53 ± 10.52	2.41	0.268	-	-	-	33.33 ± 10.83	-1.52	0.483	2.08 (6.03)	0.997	0.03*
	4-5	37 ± 10.21	4.59	0.017				37 ± 9.82	1.83	0.360	-5.02(5.11)	0.326	
	>5	34.42 ± 8.67	Reference					37.15 ± 8.57	Reference		Reference	-	
Number of siblings	1	33.74 ± 10.64	1.52	0.491	3.36(2.67)	0.208	0.01*<	32.76 ± 11.21	-2.24	0.291	-14.10(4.01)	0.000	0.01*<
	2	37.41 ± 10	4.68	0.015	7.63(2.43)	0.002		37.63 ± 9.16	2.00	0.287	-1.07(1.93)	0.579	
	3	36.51 ± 10.61	4.54	0.037	7.02(2.68)	0.009		35.33 ± 11.33	0.41	0.842	-1.03(1.83)	0.574	
	4+	34.41 ± 8.65	Reference		Reference			37 ± 8.55	Reference		Reference	-	
Birth rank	1	35.72 ± 9.82	4.35	0.041	-	-	-	36.51 ± 9.91	3.12	0.148	-	-	-
	2	37.77 ± 10.72	6.69	0.002				37.44 ± 10.39	4.39	0.043			
	3	36 ± 10.23	5.93	0.020				31.81 ± 9.13	-0.61	0.822			
	4+	33.11 ± 9	Reference					34.84 ± 8	Reference				
Area_ SES	2	34.51 ± 9.84	-2.39	0.406	-	-	-	34.87 ± 10.28	-1.33	0.636	-	-	-
	4	38.13 ± 10.28	1.55	0.166				39 ± 9.91	2.61	0.01			
	10	37 ± 10.32	Reference					35.91 ± 9.71	Reference				
Father's education	<6	39.54 ± 7.21	1.78	0.290	-	-	-	38.12 ± 8	0.69	0.673	-	-	-
	6-12	36.24 ± 10.82	-0.62	0.542				36.35 ± 10.34	0.52	0.608			
	>12	36.11 ± 9.61	Reference					35.97 ± 10.24	Reference				
Mother's education	<6	37.61 ± 7.23	1.00	0.515	-	-	-	38.32 ± 7.54	2.51	0.086	5.39(2.04)	0.008	0.01*<
	6-12	36.52 ± 10.74	0.00	0.983				36.67 ± 10.14	2.00	0.045	4.36(1.36)	0.001	
	>12	35.78 ± 10.32	Reference					34.62 ± 10.72	Reference		Reference		
Information source	Mother	36.38 ± 9.85	0.84	0.936	-	-	-	36 ± 9.72	-6.51	0.094	1.39(5.04)	0.783	0.01*<
	Sister	36.76 ± 13.41	Reference	0.973				36.21 ± 13.34	-6.24	0.152	-1.00(5.58)	0.858	
	Other family	37.31 ± 15	0.32	0.927				33.23 ± 13.41	-8.81	0.054	-8.40(6.00)	0.162	
	Paired group	37.91 ± 5.63	0.38	0.758				41.55 ± 6	-1.52	0.747	13.46(5.93)	0.023	
	Teacher/Advisor	38.23 ± 8.34	-0.23	0.832				32.52 ± 2.71	-12.00	0.019	-1.69(6.58)	0.797	
	Doctor	41 ± 18.81	0.38	0.885				52.55 ± 14	9.52	0.084	20.39(7.02)	0.004	
	Internet	35.61 ± 12.85	1.41	0.528				42.8 ± 6.92	Reference		Reference		
Education grade	First year guidance	37.44 ± 12.61	1.13	0.535	-	-	-	38.92 ± 12.71	-0.32	0.933	-	-	-
	Secondary year guidance	37.39 ± 10.16	4.00	0.078				33.83 ± 10.86	-4.00	0.215			
	Third year guidance	36.35 ± 10.43	Reference					37.16 ± 9.62	Reference				
Coefficient of determination		0.455											0.313

B: Regression coefficients. P1: P-value for the level compared to the reference level. P2: P-value of the variable.
† Based on simple multi-level linear model.
‡ Simultaneous effect based on multi-variate multi-level model.
*Statistical significance ($p<0.05$)

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Table 3: The relationship of reproductive health perceived behavioral control and perceived parental with the socio-demographic variables of students based on univariate and multi-variate multi-level model

Effective factors		Perceived behavioral control						Perceived parental control					
		Mean± SD	Unadjusted†		Adjusted backward‡			Mean± SD	Unadjusted†		Adjusted backward‡		
			β	P	β (SE)	P1	P2		β	P	β (SE)	P1	P2
	Total	38 ± 9.2						44.9 ± 11.15					
Family size	2-3	36 ± 11.43	0.29	0.897	-	-	-	45.25 ± 11	4.28	0.076	-	-	0.07
	4-5	38.41 ± 8.75	2.41	0.165				45.11 ± 11.12	4.32	0.049			
	>5	38.32 ± 5.31	Reference					41.34 ± 11.93	Reference				
Number of siblings	1	35.53 ± 11.43	-0.43	0.854	-	-	0.06	44.81 ± 11.37	4.00	0.097	-10.78(6.37)	0.091	0.04*
	2	38.81 ± 8.65	2.51	0.153				45.36 ± 10.91	4.52	0.041	2.20(3.09)	0.476	
	3	37.62 ± 9.11	2.22	0.264				44.85± 11.58	3.93	0.112	-10.78(6.47)	0.096	
	4+	38.35 ± 5.35	Reference					41.31 ± 11.97	Reference		Reference		
Birth rank	1	38.22 ± 9.66	3.22	0.104	9.85(4.88)	0.044	0.02*	46.13 ± 10.62	5.31	0.032	-	-	0.09
	2	38.45 ± 8.62	3.81	0.059	8.02(4.78)	0.093		43.93 ± 11.35	3.12	0.208			
	3	35.47 ± 9.95	1.59	0.485	3.95(4.97)	0.427		44.55 ± 12	3.71	0.195			
	4+	36.9 4± 5.22	Reference		Reference			41.29 ± 12	Reference				
Area_ SES	2	35.44 ± 8.53	-3.69	0.114	-	-	-	43.61 ± 11.27	-2.79	0.032	-	-	0.06
	4	39.42 ± 9.45	0.21	0.802				44.25 ± 11.92	-2.27	0.054			
	10	39.21 ± 9.23	Reference					46.43 ± 10.56	Reference				
Father's education	<6	42.62 ± 6.59	4.23	0.005	-	-	-	43.68 ± 12.92	-1.71	0.371	-	-	-
	6-12	38 ± 9.52	0.4	0.650				45.13 ± 10.97	0.00	0.994			
	>12	36.85 ± 8.76	Reference					44.85 ± 11.22	Reference				
Mother's education	<6	40.62 ± 7.33	2.32	0.091	-	-	-	43.56 ± 12	-2.41	0.150	-	-	-
	6-12	37.85 ± 9.63	-0.39	0.963				45.14 ± 11.12	-0.42	0.702			
	>12	36.92 ± 8.83	Reference					45.18 ± 11	Reference				
Information source	Mother	37.54 ± 9.23	2.00	0.585	5.74(4.33)	0.185	0.01*<	45 ± 11	-1.62	0.727	-47.38(8.54)	0.000	0.01*<
	Sister	40.32 ± 6.62	4.61	0.242	8.69(4.83)	0.072		42.13 ± 10.23	-4.82	0.344	-42.55(8.87)	0.000	
	Other family	38.93 ± 11.88	2.22	0.601	6.30(5.07)	0.214		39.56 ± 11	-7.49	0.160	-35.28(9.73)	0.000	
	Paired group	44.71 ± 9.22	9.83	0.020	15.00(5.06)	0.003		46.54 ± 10.93	-0.12	0.978	-37.64(9.51)	0.000	
	Teacher/Advisor	38.65 ± 3.29	1.83	0.708	3.44(5.74)	0.549		50.84 ± 13.49	4.31	0.470	-45.60(10.50)	0.000	
	Doctor	45.79 ± 6.73	10.32	0.040	17.36(5.99)	0.004		47.46 ± 14	-0.24	0.980	-38.48(11.09)	0.001	
	Internet	35.82 ± 8.96	Reference		Reference			46.94 ± 14.73	Reference		Reference		
Education grade	First year guidance	39.44 ± 9.11	-0.31	0.912	-	-	-	44.73 ± 12	-0.38	0.785	-	-	0.09
	Secondary year guidance	37.23 ± 9.48	-4.32	0.132				45 ± 11.4	1.43	0.337			
	Third year guidance	38.74 ± 9.73	Reference					44.34 ± 9.42	Reference				
Coefficient of determination		0.502						0.515					

B: Regression coefficients. P1: P-value for the level compared to the reference level. P2: P-value of the variable.
† Based on simple multi-level linear model.
‡ Simultaneous effect based on multi-variate multi-level model.
*Statistical significance ($p<0.05$)

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Table 4: The relationship of reproductive health perceived behavioral subjective norms and attitude with the socio-demographic variables of students based on uni-variate and multi-variate multi-level model.

Effective factors		Subjective norms						Attitude					
		Mean± SD	Unadjusted†		Adjusted backward‡			Mean± SD	Unadjusted†		P-Adjusted backward‡		
			β	P	β (SE)	P1	P2		β	P	β (SE)	P1	P2
Family size	Total	41.34 ± 8.61						45.22 ± 6.23					
	2-3	38.81 ± 6.74	-1.58	0.367	-		-	43.21 ± 6.12	0.00	0.976	-		-
	4-5	41.84 ± 8.92	1.21	0.464				45.65 ± 6.24	1.73	0.177			
	>5	42.11 ± 8.71	Reference					46.74 ± 5.43	Reference				
Number of siblings	1	38.85 ± 7	-1.69	0.365	-12.8(4.48)	0.004	0.01*<	43.22 ± 6.17	-0.13	0.927	-7.64(5.25)	0.146	0.05*
	2	42 ±8	1.23	0.480	-7.75(4.25)	0.068		46.12 ± 6.13	2.00	0.188	-2.16(5.00)	0.666	
	3	41.19 ± 11.35	0.93	0.607	-5.55(4.30)	0.197		43.66 ± 6	0.12	0.957	-2.97(5.02)	0.554	
	4+	42.13 ± 8.73	Reference		Reference			46.78 ± 5.43	Reference		Reference		
Birth rank	1	41.67 ± 7.61	1.31	0.498	12.50(4.85)	0.01	0.01*<	45.58 ± 6.23	2.63	0.073	11.03(5.60)	0.049	0.03*
	2	41.83 ± 9.63	1.73	0.366	10.95(4.73)	0.021		45.67 ± 6.19	3.15	0.034	9.01(5.49)	0.01	
	3	38.12 ± 8.52	-1.42	0.522	3.79(4.89)	0.438		42.16 ± 5.43	0.12	0.958	4.63(5.70)	0.417	
	4+	41.44 ± 9.81	Reference		Reference			45.71 ± 5.52	Reference		Reference		
Area_ SES	2	39.59 ± 9.52	-2.62	0.230	-	-	-	43.92 ± 6.15	-2.00	0.379	-	-	-
	4	42.57 ± 7.77	0.45	0.644				46.93 ± 6	1.24	0.074			
	10	42.13 ± 8.11	Reference					45.35 ± 6.13	Reference				
Father's education	<6	42.32 ± 8.86	-0.29	0.838	-	-	-	47.54 ± 6.17	2.12	0.054	-	-	-
	6-12	41.35 ± 8.13	-0.42	0.627				45.31 ± 6.28	0.83	0.213			
	>12	41.12 ± 9.57	Reference					44.59 ± 6.15	Reference				
Mother's education	<6	42.94 ± 7.21	0.91	0.465	-	-	-	47.55 ± 5	1.78	0.058	4.48(1.98)	0.024	0.05*
	6-12	41.28 ± 8.29	-0.21	0.825				45.14 ± 6.23	0.00	0.940	3.69 (1.31)	0.005	
	>12	40.83 ± 10.27	Reference					44.51 ± 6.31	Reference		Reference		
Information source	Mother	40.86 ± 8.12	-11.1	0.001	-	-	0.01*<	45.32 ± 6.2	1.8	0.493	-	-	-
	Sister	39.74 ± 7.21	-12.43	0.001	-11.49(4.24)	0.007		44.45 ± 5.42	1.74	0.558			
	Other family	41 ±8	-11.72	0.002	-12.56(4.72)	0.008		44 ± 7.75	1.41	0.661			
	Paired group	48.22 ± 6	-3.39	0.366	-10.29(5.00)	0.04		43 ± 6.51	2.00	0.519			
	Teacher/Advisor	41.47 ± 6.15	-11.72	0.006	-.47(4.94)	0.000		46 ± 3.48	2.00	0.570			
	Doctor	59.98 ± 22.11	8.1	0.081	-13.12(5.52)	0.017		48.64 ± 8.31	5.82	0.121			
	Internet	51.12 ± 11	Reference		Reference			43.82 ± 3.95	Reference				
Education grade	First year guidance	44.13 ± 12	-0.27	0.902	-	-	0.06	45.75 ± 6.83	1.53	0.550	-	-	-
	Secondary year guidance	39.75 ± 9.31	-4.22	0.090				43.83 ± 6.13	-2.81	0.267			
	Third year guidance	42.51 ± 8.62	Reference					46 ± 7.66	Reference				
Coefficient of determination		0.497						0.301					

B: Regression coefficients. P1: P-value for the level compared to the reference level. P2: P-value of the variable.
† Based on simple multi-level linear model.
‡ Simultaneous effect based on multi-variate multi-level model.
*Statistical significance ($p<0.05$)

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Discussion

According to the results of this study, for adolescents, the most important information source in relation to sexual and reproductive health is their mothers. This finding is in line with the results of other studies within and outside the country [3,20]. This result was confirmed by a similar finding in a study among African American adolescents aged 14-16 years and their mothers [21]. The mothers' were the most important information source in relation to sexual and reproductive activities and high risk behaviors for teens. The study showed the necessity of raising the mother's education in relation to sexual and reproductive health, STD/HIV prevention issues and high risk behaviors. There should be more attention paid to mothers who are the first source of transferring health behaviors of their adolescents. So, in addition to the mother's education, we should use specialized and training facilities such as managers, school health providers, educational authorities, and the mass media in accordance with the cultural and educational sensitivities [22]; this finding is consistent with Feldman [23] and Anderson [16] study. Studies in the developing countries underline the facts that information about sexual and reproductive health rarely is transmitted by teachers, and health professionals and parents in most studies are the first source of information.

One of the most important findings of this study is the significant relationship between family sizes and the students' behavioral intention. Students, who have more than five family members, have more behavioral intention toward high risk behaviors' prevention, as well as sexual and reproductive health skills. Based on the results this study, it can be concluded that the function of family members, including family connections and beliefs of parents and children are effective on the attitudes and intentions of adolescents. Family members should be advised to build a good and satisfactory relationship with their adolescents to maintain a close family-adolescent communication, and to discuss moral issues with adolescents. Filling the gap between the family members' perception of the adolescents' sexual and reproductive health behavior and the reality may have important implications for the improvement of their attitudes towards the adolescents' needs for receiving appropriate information and services on the issue of AIDS/HIV, reproductive health, and high risk behaviors [24].

In this study, there was a significant relationship between the number of siblings and the mean score of attitude, perceived behavioral control, perceived parental control and subjective norm. Students, who were 4-5 siblings, had more perceived behavioral control, perceived parental control and

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subjective norm toward reproductive health. Parents usually influence their children's reproductive health behavior through care and restraint. Also perceived behavioral control contains self-efficacy. Self-efficacy is the most robust structural in the prediction of behavior. So the self-efficacy change occurs seeking active participation of individuals in order to maintain healthy behavior, and usually people who show the greatest change in behavior enjoy higher self-efficacy levels for a particular behavior. This outcome was corroborated by a similar finding [25].

Students, who were the second child in the family, had a good perceived behavioral control, subjective norm and attitude toward sexual and reproductive health. Attitude towards an important issue such as sexual and reproductive health can be imagined as perceived sensitivity. This attitude to encourage and motivate people to adopt preventive behaviors is a critical factor, and educational programs should be part of their activities to raise people's perceived vulnerability (26).

The results of the present study showed the adolescents whose mothers' education was under diploma had positive attitude and behavioral intention toward sexual and reproductive health. Because mothers lack of appropriate skills and reliable knowledge in relation with STD/AIDS/HIV prevention and transmission ways and risky sexual behaviors reflects the poor awareness of parents about AIDS/HIV/STD and high risk behaviors in relationship with reducing high-risk behaviors that should be considered seriously in the intervention and educational programs [27].

Educated parents who earned a higher income and had access to satellite programs and the Internet, and those who reported drinking alcohol indicated a significantly more agreement to provide sexual and reproductive health information to adolescents [27,28]. In contrast, young girls who have better educated parents might be more likely than other girls to have liberal peers and easy access to the Internet and satellite television-factors. In addition, they have liberal attitudes and a greater likelihood of pre-marital friendships [14].

On the other hand, the parents' perception of HIV/AIDS risk and risky behavior among the adolescents is not realistic. One justification for the parents who do not recognize a need for adolescents to receive information, services or preventive skills is that they think it is highly unlikely that the adolescents get involved in sexual and STD activities; however, some evidence suggests the reverse. Additionally, parents may think that talking about STIs and HIV or pregnancy may encourage pre-marital sexual relations among adolescents [15].

In this study, students who put doctors as their

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information source in relation to sexual and reproductive health had a good score average of subjective norm, perceived behavioral control, perceived parental control and behavioral intention. The findings of Montazeri et al. [29] showed that the transmission of HIV/AIDS is changing over time. Monitoring programs compiled by doctors and health workers to assess the awareness of these groups should be developed. Talk about sexual and reproductive health should be taken seriously by both parents and physicians.

The limitation of this study was using samples as students just in schools. It is suggested that other studies should be conducted using male adolescents in a public environment, not just in schools. Moreover, these findings are based on the students' self-reporting. Despite these limitations, the present study had several important strengths, including the use of a standard questionnaire for gathering data, and most importantly, the demographic variables affecting the reproductive health of adolescents.

Conclusion

The results of this study emphasized the demographic factors can have an effective role in reducing students' STD/HIV and sexual and reproductive health behaviors. We also recommend conducting studies using other educational theories in schools.

Acknowledgements

We would like to express our gratitude to all those who helped us to carry out this study.

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