

## Original Article

**The effect of sociodemographic factors on constructs of modified theory of planned behavior in relation to reproductive health in adolescents: Cross-sectional study**Mehdi Yaseri<sup>1</sup>, Fatemeh Darabi<sup>2\*</sup>, Mohammad Hossein Kaveh<sup>3</sup>, Farideh Khalajabadi-Farahani<sup>4</sup><sup>1</sup> Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran<sup>2</sup> Department of Health Education and Health Promotion, Asadabad School of Medical Sciences, Asadabad, AND Department of Health Education and Health Promotion, School of Public Health, Kermanshah University of Medical Sciences, Kermanshah, Iran<sup>3</sup> Department of Health Education and Health Promotion, School of Health, Shiraz University of Medical Sciences, Shiraz, Iran<sup>4</sup> Department of Population Health and Family Planning, National Institute for Population Research, Tehran, Iran

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## ABSTRACT

**Background & Aim:** Identification of factors influencing reproductive health-related behavior among adolescent students is an important issue to plan effective intervention. Therefore, this study was aimed to determine the effect of sociodemographic factors on constructs modified theory of planned behavior (TPB) in relation to reproductive health in adolescents.

**Methods & Materials:** A cross-sectional study was conducted among 578 female students aged 12-16, 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 association between family size, number of siblings, birth rank, and family closeness, source of information, and reproductive health behavior.

**Results:** The mean age of participants was 14.1 years. None of participants were not obtained a perfect score in relation to reproductive health. In addition, they were achieved scores average less than half the rates. Number of siblings, family size, birth rank, mother education, and information source were factors associated with TPB constructs ( $P < 0.001$ ).

**Conclusion:** The results of this study were emphasized sociodemographic factors can have an effective role in students' Sexual and reproductive health behaviors.

**Introduction**

The number of people living in the world is increasing. Evidence show that 1.8 billion young people aged from 10 to 24 are residing in the world (1). Of this 90% are living in less developed countries (1). In Iran, near 50% of the population are under 27 years old. According to

2011 census, 12 million adolescent (aged 10-19) and 21 million young (aged 10-24) comprise a large people of national population (2). Therefore, protecting and promoting health of this large portion of 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 for sexual and reproductive-related complications. However, in different part of the world, the reproductive health of teenager population is often neglected (4). According to the previous

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studies, health complications related to adolescent 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 reproductive health-promoting behaviors weakness, and its determinant factors such as knowledge, attitudes, and skills among Iranian adolescents, available studies were shown the existing gap (3, 6-8). For example, female adolescents have poor knowledge and awareness than male adolescents on sexual and reproductive health (9). Moreover, communication about sexual and reproductive health is more taboo among female adolescents than male adolescents (10).

Lack of education, misinformation, embarrassment, and hesitation to get into public created social discussion is imposed psychological obstacles for adolescent (11). For example, study reported by Mohammadi (3) on 1385 male adolescents aged 15-18 in Tehran showed that relatively high proportion of adolescents are sexually active. In addition, their knowledge regarding to STIs and human immunodeficiency virus (HIV)/AIDS is poor (3). Another study also reported increasing prevalence of sexual and reproductive health problems among female adolescents (12). Thus identifying the determinants of sexual and reproductive health behavior of female adolescent is important based on health behavior theories. Planning and implementation of appropriate interventions based on identified determinants for improving sexual and reproductive health are important. Health behavior theories are useful for this purpose.

Health behavior theories are important to design studies and to guide health behavior change intervention (13). In addition, using specific theoretical framework in conducting comparative studies is recommended (14). In this study, a modified version theory of planned behavior (TPB) was used as the theoretical framework. This theory was developed by Ajzen (15). This theory has been used widely in studying and designing health behaviors intervention programs including physical activity (16) and dietary behaviors (17). TPB

identifies three key constructs that influence behavior: perceived behavioral control, attitudes, and subjective norms (18). According to this theory, the main determinates of behavior is intention. Further, literature review indicated that perceived parental controls are also played a great role in reproductive health behavior among adolescents. In another direction parental perceived control over the behavior of adolescent reproductive health has impact on healthy behavior. Previous studies indicated (17, 19) that perceived parental control has contribution on TPB model constructs in predicting health behavior. Therefore, perceived parental control was added to the main domains of TPB theory. Thus, this study was aimed to assess the sociodemographic factors on constructs of modified TPB in relation to reproductive health in adolescents (Figure 1).

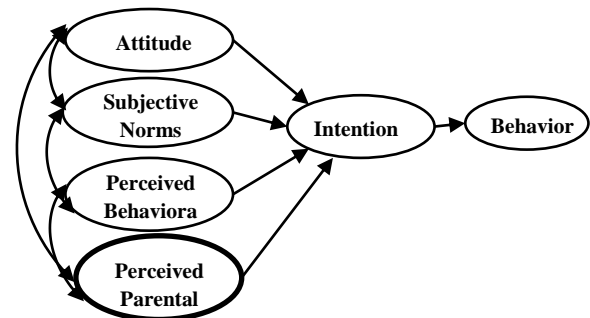


Figure 1. The modified theory of planned behavior

## Methods

A cross-sectional study was conducted among high school female adolescents aged 12-16 23 ft rugs. Participants were selected by multistage random cluster sampling technique. Female adolescent aged 12-16, being single and residing in Tehran were the main inclusion criteria. The exclusion criteria were being absent for more than one session from school. Informed consent was obtained from participants and their parents after providing adequate information about the significance, and the aim of the study confidentiality of information they provided was assured.

Multistage sampling method was used to select the schools, and simple random sampling

method was employed to enroll study participants. In the first stage, 22 districts education office were selected. In the second stage, schools were selected from each districts cluster. Three districts were selected using probability proportion method based on their size out of 22 districts found in Tehran. Similarly, from each district, 4 schools were selected randomly using the probability proportional to size sampling. From each grade one class was selected randomly with simple random sampling method. Finally, using class attendance list, 16 students were selected with simple random sampling method. In total 36 classes were participated in this study. From these 36 classes, a total of 578 students were recruited.

A constructed self-administered questionnaire was used to collected data. Beside, demographic characteristics, constructed questionnaire designed based on TPB were used to collect data on nutritional status, physical exercise, general health status, menstrual health, and 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) (20). The WHO questionnaire comprised questions about sexual and reproductive health knowledge and its sources, sexual attitudes, sexual behavior, reproductive health services, and sexual and reproductive health outcomes (21). Another part of the instrument was developed on the basis of the literature review and a qualitative study which included 8 focus group discussions (FGDs) with 40 participants. Each FGD lasted 1 hour. A detailed description of instrument development can be found in a study reported by Darabi et al. (22). However, a brief description is offered below.

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).

One hundred four items were used to collect 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, participants stated that they have had no problems in reading and understanding the items. The mean of content validity ratio was 0.64. Furthermore, the mean of the content validity index was 0.74.

Exploratory factor analysis was used to evaluate construct 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  $>1$  and factor loading equal to or  $> 0.4$ , accounting for 67% of 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).

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) multilevel analysis (23, 24). 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 included in this model. It has been mentioned that when there is clustering of sample selection there need a special statistical method to handle the clustering effect otherwise the statistical inference would not be proper (25). In this multilevel analysis, the number of levels used to consider the probable clustering effect was achieved with Akaike information criterion (AIC) statistics. This test was also used to check the convenience of multilevel compared to classic regression model. The preferred levels selected by this analysis determined to be three. The first level was a measurement of each variable, the second school and the third area

(districts). Including class as an extra level did not improve the model based on AIC. Data analysis was undertaken using SPSS (version 23.0, IBM Corporation, Armonk, NY, USA).

The variables which showed  $P < 0.200$  on univariate analysis were entered into a multivariate multilevel analysis model. Backward deletion method was used to exclude the insignificant variables. Variables with  $P > 0.100$  in the model were excluded sequentially.

## Results

Table 1 summarizes demographic characteristics of participants. The mean age of participants was 14.1 years. Seven (24%) participants were lived in the family between 4 and 5 person, and 41 (1%) were first child in the family. 60.6% of participants were siblings. In addition, 60.52% of fathers and 60.56% of mothers were attained below diploma level. For 86.5% of students, the most important source of information in relation to the reproductive health was their mothers.

**Table 1.** Frequency distribution and percent subjects and demographic characteristics of the participants (n = 578)

Characteristics	Description	n (%)
Family size	3	104 (17.91)
	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 education	< 6	150 (26)
	6	350 (60.52)
	> 12	78 (13.51)
Mother education	< 6	180 (31.13)
	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)	

Based on this study, the highest average total scores of attitude was 45.22, and the lowest average total scores of behavioral intention was 36.31. In addition, none of the students were not a perfect score and less than half the rates.

There was a significant relationship between family size with behavioral intention construct ( $P = 0.030$ ). This means that students who are members of their families from 4 to 5 people have more behavioral intention ( $37.00 \pm 9.82$ ) score average toward reproductive health behavior (Tables 2-4).

Furthermore, behavior ( $P < 0.010$ ), behavioral intention ( $P < 0.010$ ), attitude ( $P = 0.050$ ), subjective norm ( $P < 0.010$ ), and perceived parental control ( $P = 0.040$ ) were significantly associated with number of siblings. The students who were two siblings more score average gained of behavior ( $37.41 \pm 10.00$ ), behavioral intention ( $37.63 \pm 9.16$ ), attitude ( $46.12 \pm 6.13$ ), subjective norm ( $42 \pm 8$ ), and perceived parental control ( $45.36 \pm 10.91$ ), toward reproductive health behavior (Tables 2-4).

There was significant relationship between birth rank with perceived behavioral control ( $P = 0.020$ ), subjective norm ( $P < 0.010$ ), and attitude ( $P = 0.030$ ). The students who the second children of the family were more score average gained of perceived behavioral control ( $38.45 \pm 8.62$ ), subjective norm ( $41.83 \pm 9.63$ ), and attitude ( $45.67 \pm 6.19$ ), toward reproductive health behavior (Tables 2-4).

Attitude ( $P = 0.050$ ) and behavioral intention ( $P < 0.010$ ) were significantly associated with mothers' education levels. Students who were education levels of mothers below diploma more score average of attitude ( $47.55 \pm 5.00$ ) and behavioral intention ( $38.32 \pm 7.54$ ) toward reproductive health behavior (Tables 2-4).

Furthermore, between information source and perceived behavioral control ( $P < 0.010$ ), perceived parental control ( $P < 0.010$ ) and subjective norm ( $P < 0.010$ ) there was significantly associated. Students who had been the doctor as their information source in relation to sexual and reproductive health, more score average of perceived behavioral control ( $45.79 \pm 6.73$ ), perceived parental control ( $47.46 \pm 14.00$ ), and subjective norm ( $59.98 \pm 22.11$ ) toward reproductive health behavior (Tables 2-4).

**Table 2.** The relation of reproductive health behavior and behavioral intention with sociodemographic variables of students, based on univariate and multivariate multilevel model

Effective factors	Behavior						Behavioral intention					
	Mean ± SD	Unadjusted <sup>†</sup>		Adjusted backward <sup>‡</sup>			Mean ± SD	Unadjusted <sup>†</sup>		Adjusted backward <sup>‡</sup>		
		β	P	β (SE)	P1	P2		β	P	β (SE)	P1	P2
Total												
Family size	36.41 ± 10.24						36.31 ± 10.00					
03	34.53 ± 10.52	2.41	0.268	-	-	-	33.33 ± 10.83	-1.52	0.483	2.08 (6.03)	0.997	-
05	37.00 ± 10.21	4.59	0.017	-	-	-	37.00 ± 9.82	1.83	0.360	-5.02 (5.11)	0.326	0.030*
> 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		32.76 ± 11.21	-2.24	0.291	-14.10 (4.01)	< 0.001	
2	37.41 ± 10.00	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	<0.01*	35.33 ± 11.33	0.41	0.842	-1.03 (1.83)	0.574	< 0.001*
4+	34.41 ± 8.65	Reference		Reference			37.00 ± 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	36.00 ± 10.23	5.93	0.002	-	-	-	31.81 ± 9.13	-0.61	0.822	-	-	-
4+	33.11 ± 9.00	Reference					34.84 ± 8.00	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	-	-	-	39.00 ± 9.91	2.61	0.010	-	-	-
10	37.00 ± 10.32	Reference					35.91 ± 9.71	Reference				
Father education												
< 6	39.54 ± 7.21	1.78	0.029				38.12 ± 8.00	0.69	0.673		-	
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 education												
< 6	37.61 ± 7.23	1.00	0.515				38.32 ± 7.54	2.51	0.086	5.39 (2.04)	0.008	
12	36.52 ± 10.74	0.00	0.983	-	-	-	36.67 ± 10.14	2.00	0.045	4.36 (1.36)	0.001	< 0.010*
> 12	35.78 ± 10.32	Reference					34.62 ± 10.72	Reference		Reference		
Information source												
Mother	36.38 ± 9.85	0.84	0.936				36.00 ± 9.72	-6.51	0.094	1.39 (5.04)	0.783	
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 ± 15.00	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 ± 6.00	-1.52	0.747	13.46 (5.93)	0.023	< 0.010*
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	41.00 ± 18.81	0.38	0.885				52.55 ± 14.00	9.52	0.084	20.39 (7.02)	0.004	
Internet	35.61 ± 12.85	1.41	0.528				42.80 ± 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: The P value for the level compared to reference level. P2: The P value of the variable. <sup>†</sup>Based on simple multilevel linear model. <sup>‡</sup>Simultaneous effect, based on multivariate multilevel model.

\*Statistical significant (P < 0.050), SD: Standard deviation

**Table 3.** The relation of reproductive health perceived behavioral control and perceived parental with sociodemographic variables of students, based on univariate and multivariate multilevel model

Effective factors	Perceived behavioral control						Perceived parental control					
	Mean ± SD	Unadjusted <sup>†</sup>		Adjusted backward <sup>‡</sup>			Mean ± SD	Unadjusted <sup>†</sup>		Adjusted backward <sup>‡</sup>		
		β	P	β (SE)	P1	P2		β	P	β (SE)	P1	P2
Total	38.0 ± 9.2						44.90 ± 11.15					
Family size												
03	36.00 ± 11.43	0.29	0.897	-	-	-	45.25 ± 11.00	4.28	0.076	-	-	0.070
05	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				44.81 ± 11.37	4.00	0.097	-10.78 (6.37)	0.091	
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	-		0.060	44.85 ± 11.58	3.93	0.112	-10.78 (6.47)	0.096	0.040*
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		46.13 ± 10.62	5.31	0.032			
2	38.45 ± 8.62	3.81	0.059	8.02 (4.78)	0.093	0.020*	43.93 ± 11.35	3.12	0.208			0.090
3	35.47 ± 9.95	1.59	0.485	3.95 (4.97)	0.427		44.55 ± 12.00	3.71	0.195	-	-	
4+	36.94 ± 5.22	Reference		Reference			41.29 ± 12.00	Reference				
Area_SES												
2	35.44 ± 8.53	-3.69	0.114				43.61 ± 11.27	-2.79	0.032			
4	39.42 ± 9.45	0.21	0.802	-	-	-	44.25 ± 11.92	-2.27	0.054	-	-	0.060
10	39.21 ± 9.23	Reference					46.43 ± 10.56	Reference				
Father education												
< 6	42.62 ± 6.59	4.23	0.005				43.68 ± 12.92	-1.71	0.371			
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 education												
< 6	40.62 ± 7.33	2.32	0.091				43.56 ± 12	-2.41	0.150			
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		45 ± 11	-1.62	0.727	-47.38 (8.54)	< 0.001	
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)	< 0.001	
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)	< 0.001	
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)	< 0.001	
Teacher/advisor	38.65 ± 3.29	1.83	0.708	3.44 (5.74)	0.549	< 0.010*	50.84 ± 13.49	4.31	0.470	-45.60 (10.50)	< 0.001	< 0.010*
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			
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				0.090
Coefficient of determination				0.502						0.515		

B: Regression coefficients. P1: The P value for the level compared to reference level. P2: The P value of the variable. <sup>†</sup>Based on simple multilevel linear model. <sup>‡</sup>Simultaneous effect, based on multivariate multilevel model. \*Statistical significant (P < 0.050), SD: Standard deviation

**Table 4.** The relation of reproductive health perceived behavioral subjective norms and attitude with Socio - demographic variables of students, based on univariate and multivariate multilevel model

Effective factors	Subjective norms						Attitude					
	Mean± SD	Unadjusted <sup>†</sup>		Adjusted backward <sup>‡</sup>			Mean± SD	Unadjusted <sup>†</sup>		P-adjusted backward <sup>‡</sup>		
		β	P	β (SE)	P1	P2		β	P	β (SE)	P1	P2
Total												
Family size	41.34 ± 8.61						45.22 ± 6.23					
02	38.81 ± 6.74	-1.58	0.367	-			43.21 ± 6.12	0	0.976	-		-
04	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		43.22 ± 6.17	-0.13	0.927	-7.64 (5.25)	0.146	
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	< 0.010*	43.66 ± 6	0.12	0.957	-2.97 (5.02)	0.554	0.050*
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)	0.010		45.58 ± 6.23	2.63	0.073	11.03 (5.60)	0.049	
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)	0.010	0.030*
3	38.12 ± 8.52	-1.42	0.522	3.79 (4.89)	0.438	< 0.010*	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 education												
< 6	42.32 ± 8.86	-0.29	0.838				47.54 ± 6.17	2.12	0.054			
06	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 education												
< 6	42.94 ± 7.21	0.91	0.465				47.55 ± 5	1.78	0.058	4.48 (1.98)	0.024	
06	41.28 ± 8.29	-0.21	0.825	-	-	-	45.14 ± 6.23	0.00	0.940	3.69 (1.31)	0.005	0.050*
> 12	40.83 ± 10.27	Reference					44.51 ± 6.31	Reference		Reference		
Information source												
Mother	40.86 ± 8.12	-11.1	0.001	-	-		45.32 ± 6.2	1.8	0.493			
Sister	39.74 ± 7.21	-12.43	0.001	-11.49 (4.24)	0.007	< 0.010*	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)	0.040		43 ± 6.51	2.00	0.519			
Teacher/advisor	41.47 ± 6.15	-11.72	0.006	-0.47 (4.94)	< 0.001		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				45.75 ± 6.83	1.53	0.550			
Secondary year guidance	39.75 ± 9.31	-4.22	0.090	-	-	0.060	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: The P value for the level compared to reference level. P2: The P value of the variable. <sup>†</sup>Based on simple multilevel linear model. <sup>‡</sup>Simultaneous effect, based on multivariate multilevel model. \*Statistical significant (P < 0.050), SD: Standard deviation

## **Discussion**

According to the results of this study, for adolescence, the most important information source in relation to sexual and reproductive health was their mothers that in line with the results of other studies within and outside the country (26-28). This result was confirmed by a similar finding in a study among African American adolescents aged 14-16 and their mothers. The mothers' were the most important information source in relation to sexual and reproductive activities and high-risk behaviors for teens. The study shown necessary of raising the mother's education in relation to sexual and reproductive health, STD/HIV prevention issues, high-risk behaviors and should be more attention to mothers that are the first transferring health behaviors to their adolescents. Hence, in addition to the mother's education, should use of specialized and training facilities other such as managers, schools health providers, educational authorities, the mass media in accordance with the cultural special sensitivities and educational (29), that is consistent whit Feldman and Brown (30) and Anderssen et al. (19) study. Studies in developing countries underlining the fact that, information about sexual and reproductive health rarely is transmitted by teachers or health professionals and parents in most studies are the first source of information (31).

One of the most important findings of this study is the significant relationship between family sizes with behavioral intention. Students who have more family size than five persons, they have more behavioral intention toward high-risk behaviors prevention, sexual and reproductive health skills. Based on results this study it can be concluded that the function of family members including family connections and beliefs of parents and children has been effective on attitudes and intentions of adolescents. Family members should be advised to build a good and satisfactory with adolescents, to maintain a close family-adolescent communication, and to discuss moral 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 toward the adolescents' needs for receiving appropriate information and services on the issue of AIDS/HIV, reproductive health and high-risk behaviors (32).

In this study, there was a significant relationship between number of siblings and 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 subjective norm toward reproductive health. Likely siblings had an influential role to find out ways that can be effective in reducing the risky sexual behaviors and knowledge raising of the young. This result was confirmed by a similar finding (33).

Students who were the second child in the family, had a good perceived behavioral control, subjective norm and attitude toward sexual and reproductive health. In this study, the role of their older siblings in the process of decision-making for learning of the adolescents is often underestimated, and adolescents were placed under the protection of from them (34). Furthermore, have positive effect on self-efficacy, beliefs adolescents in relation to learning reproductive health behavior and ways to prevention of high-risk behaviors (32).

The results of the present study showed, adolescents that their mothers education was under diploma, had a positive attitude and behavioral intention toward sexual and reproductive health. Because lack mothers appropriate skills and reliable knowledge in relation with STD/AIDS/HIV prevention and transmission ways and risky sexual behaviors, this reflects the fact that the awareness of parents about AIDS/HIV/STD and high-risk behaviors in relationship with reducing high-risk behaviors (35).

Educated parents who earned a higher income and access to satellite programs and internet and those who reported drinking alcohol indicated a significantly more agreement to provide sexual and reproductive health information to adolescents (35, 36). 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 linked with having liberal attitudes and having a greater likelihood of premarital friendships (16).

In the other hand, the parents' perception of HIV/AIDS risk and risky behavior among the adolescents is not realistic. One justification for 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 suggest the reverse. On the other hand, parents may think that talking about STIs and HIV or pregnancy may encourage pre-marital sexual relations among adolescents.

In this study, students who put doctor's as their information source relation with sexual and reproductive health, have good score average of subjective norm, perceived behavioral control, perceived parental control, and behavioral intention. Likely students to follow the action prescribed further more willing to reproductive health behavior. The results of the study with Montazeri (37) the transmission of AIDS is changing over time. Accordingly, the changes in education due to changes over time caused the whole audience, and monitoring programs compiled by doctors and health workers to assess the awareness of these groups should be developed. As well as warnings and threats to the issues associated with the transfer of students should be considered by physicians.

The limitation of this study was using samples as students just in schools, and also. It is suggested that another study should be conducted to use male adolescents in public environment, not just 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 the study most important demographic variables affecting the reproductive health of adolescents.

## **Conclusion**

The results of this study were emphasized kind

of demographic factors can have an effective role in students' reducing STD/HIV and sexual and reproductive health behaviors. Furthermore, recommended with other educational theories similar studies conducted in schools.

## **Conflict of Interests**

Authors have no conflict of interests.

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