Research Article

Predictors of Puberty Health Behaviors Based on Integrated Behavioral Model Among Girl's High School Students in Birjand in 2020

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Abstract

Background: From the beginning of puberty, girls are exposed to many physical-psychological problems that experience for the first time, so it is very important to pay attention to puberty health.

Objectives: The aim of this study was to determine the predictors of puberty health behaviors based on application of the Integrated Behavioral Model (IBM) among girls' high school students.

Methods: This descriptive-analytical study was performed on 265 first grade girls' high school students in Birjand in 2020 using multi-stags sampling. Data collection tools were a researcher-made questionnaire including demographic information and questions related to IBM constructs that were completed self-administered. Data were analyzed by SPSS 19 software using Pearson correlation coefficient and linear regression analysis.

Results: Pearson correlation showed that all IBM constructs except experiential attitude and control belief had a significant correlation with puberty health behaviors (P < 0.04). In total, about 54% of the behavior variance was explained by three variables of intention, self-efficacy, and mother's job, among which intention was the strongest predictor of puberty health behaviors (P = 0.001).

Conclusions: The results of the present study indicate the high predictive power of IBM for investigating puberty health behaviors. Therefore, using this model to design educational interventions and improve behaviors in the field of maturity is recommended.

Keywords: Puberty, Health Behavior, Attitude, Integrated Behavioral Model, Students

1. Background

Adolescence is one of the most critical stages of life. Puberty is the most significant change in this period, which is of special importance and mentioned as a transition in the life of adolescents. Puberty is a process through which a child changes physically into an adult with the ability to reproduce (1). There are an estimated 1.8 billion adolescents in the world, 90% of whom live in low- and middle-income countries (2). According to the 2011 census, about 12 million of the Iranian population is in the age range of 10 - 19 years old, around 50% of whom are girls (3).

From the onset of puberty, girls are exposed to a variety of physical and psychological problems, such as iron deficiency, malnutrition, urinary tract infections, sexually transmitted infections, premenstrual syndrome, miscarriage, pregnancy at a young age, etc., experienced by them

for the first time (4). Therefore, it is very important to pay attention to puberty hygiene, including care and principles, which lead to maintenance and promotion of mental, physical, and emotional health (5). Such behaviors include puberty hygiene, genital hygiene, correct nutrition, taking iron pills, pain management strategies, sports, and physical activities, etc. (6).

Since the symptoms of puberty appear one after the other, lack of awareness about this period may cause confusion and numerous problems for adolescents (1, 5), leading to tension, anxiety, and psychological stress (7). Studies indicate the level of knowledge and awareness of girls concerning puberty has been reported to be low in other countries (8). Studies in Iran also show that the level of awareness of adolescent girls about puberty and proper health behaviors towards this phenomenon is much lower than

expected (5, 6, 8). This can be the result of parental failure to transfer accurate information to daughters, which is due to poor awareness, low level of education, and lack of proper and close communication between parents and adolescents (9). Lack of proper education, access to wrong information, embarrassment, and inattention to genital hygiene hinder the achievement of social and mental health for the young girls, making them not feel positive about themselves and their abilities (7).

Behavioral patterns that begin during adolescence have a major impact on individuals' health in later years. The development of beneficial health habits during childhood and early adolescence is very important because behaviors that begin in adolescence tend to continue into adulthood (1).

Integrated Behavioral Model (IBM) is one of the comprehensive and predictive models for the examination of health-promoting behaviors (10). According to IBM, determinants of individuals' behavioral intention are their experiential and instrumental attitudes towards the behavior, their descriptive and injunctive norms, and their perceptions about the difficulty or ease of conducting the desired behavior and perceived self-efficacy (10). Based on a researcher review, no research has previously used IBM method for puberty health behaviors, the results of studies using the theory of planned behavior and other models indicate the effectiveness of these models in the promotion of health behaviors during puberty (11-14).

2. Objectives

Given the above mentioned and considering the importance of girls' health, extensive research on puberty health and efforts to improve its level is an investment toward the improvement of individual and social health. Therefore, the aim of this study was to determine the predictors of health behaviors during puberty based on IBM in girl's secondary school students in Birjand.

3. Methods

This descriptive-analytical study was conducted on 265 first-grade girls' secondary school students in Birjand in 2020 using multi-stags sampling. According to the mean score of students' behavior in the study of Eslamimehr et al. (15) and following formula n = $Z^2.S^2/d^2$ (in which α = 0.05 and d = 0.37), sample size was determined 177 people; which according to the design effect = 1.5, 265 students were included in the study. Firstly, Birjand was divided into four regions (North, South, East, and West) based on geographical location. As in the East of Birjand, the student

population density and the number of schools were lowest; one school was selected from the East. In addition, two schools were randomly selected from each other areas (North, South, and West). Then in each school, a list of eight-grade students was obtained. Then researcher randomly called mother of each student and described the aim of the study and inclusion criteria. Then, according to mother's consent, students were invited to school and fill out the questionnaire. This process was continued until enrollment of 37 or 38 students in each school.

Sampling was done during three months from December 2020 to February 2021 after obtaining the consent of the parents and students (individuals who met the inclusion criteria). Individuals were reassured about the confidentiality of information and the anonymity of the questionnaires. Inclusion criteria were informed consent to participate in the study, menarche experience, lack of physical and mental disability, eighth-grade student (range of 13 - 14 years), and residence in Birjand. Exclusion criteria were defects in the completion of the questionnaire. The data collection tool was a researcher-made questionnaire organized in two sections. The first section included questions on demographic information (age, mother and father's level of education, mother and father's job, birth rank, number of sisters), and the second section included 54 questions related to IBM constructs (awareness, experiential attitudes, instrumental attitudes, injunctive Norm, descriptive Norm, Control beliefs, behavioral intention, self-efficacy, and behavior). The questions related to the awareness and behavioral intention were of the yes-no type, and the 3-score Likert scale was used at a range of agree to disagree for the rest of the sections.

Content validity of the questionnaire [content validity ratio (CVR) and the Content Validity Index (CVI)] was verified by 10 experts in the field of health education and health promotion. For evaluating the CVR, participating experts rated each item on a 3 point Likert format (i.e., necessary, helpful but not necessary, and not necessary). Based on the numbers given in the Lawsche table, the item was considered necessary, if the CVR value was greater than 0.62 (16). The pattern described by Lynn was used for calculating the CVI. For this reason, the experts rated each item concerning its clarity [1 ("not clear") to 4 ("strongly clear")], simplicity [ranging from 1 ("not simple") to 4 ("strongly simple")], and relevance [ranging from 1 ("not relevant") to 4 ("highly relevant")]. Items that received a score of more than 0.78 were retained in the questionnaire (17).

A pilot study was conducted on 20 students who matched the study sample but did not participate in the study to evaluate the reliability of the questionnaire. The questionnaire was completed twice with an interval of one week, and its correlation was 0.602 - 0.847 in two stages.

Table 1. Frequency Distribution of Demographic Information of the Subjects

Variables	Frequency	Percentage
Educational status of Mother		
Elementary and less	96	36.2
Middle , high school, and diploma	134	50.6
Above the diploma	35	13.2
Educational status of father		
Elementary and less	63	23.8
Middle , high school and Diploma	158	59.6
Above the diploma	44	16.6
Mother's job		
Housewife	223	84.2
Employee	21	7.9
Freelance	21	7.9
Father's job		
Employee	71	26.8
Freelance	165	62.3
Other jobs	29	10.9
Birth rank		
One	119	44.9
Two	81	30.6
Three and more	65	24.5
Number of sisters		
Zero	69	26
One	125	47.2
Two and more	71	26.8

Table 2. Minimum, Maximum, Mean, and Standard Deviation of Integrated Behavioral Model Constructs in the Studied Students

Variables	Number of Items	Response Range	Minimum	Maximum	Mean	Std. Deviation
Awareness	12	0 - 12	0.00	12.00	6.76	2.17
Experiential attitude	5	5 - 15	6.00	15.00	12.12	2.18
Instrumental attitude	7	7 - 21	11.00	20.00	15.26	1.97
Injunctive norm	6	6 - 18	6.00	18.00	11.69	2.45
Descriptive norm	5	5 - 15	5.00	15.00	10.80	1.95
Control beliefs	6	6 - 18	6.00	17.00	11.49	1.93
Self-efficacy	5	5 - 15	7.00	15.00	11.24	1.57
Behavioral intention	4	0 - 4	0.00	4.00	2.66	0.92
Behavior	4	4 - 12	4.00	12.00	9.17	1.53

icant factor for adolescents smoking habits (21). Ziapour et al. found that increasing self-efficacy increased health behaviors (9). Also, Chan et al. reported that self-efficacy predicted healthy eating (22). Baji et al. also showed that self-efficacy had the highest correlation with students' nutritional intentions and behaviors (20). Self-efficacy is a behavioral perception that increases commitment to a work plan and plays a key role in the acceptance, maintenance, and persistence of health behaviors, representing the most important personal factor in behavioral changes (23). Perceived self-efficacy refers to a person's ability to perform the behavior successfully and achieve the expected results. This concept overshadows the individual's level of effort and level of performance. Self-efficacy is the mediator between knowledge and practice (10). People with high self-efficacy are more inclined to participate in challenging behaviors and provide a better interpretation of health behaviors, and can easily control their behaviors. On the other hand, in adolescence, a person faces new challenges. How to cope with these challenges is partly influenced by one's self-efficacy beliefs.

Also, Mother's job was a predictor of puberty health be-

Table 3. Correlation Coefficients Between the Structures of the Integrated Behavioral Model in the Studied Students

Variables	Awareness	Experiential Attitude	Instrumental Attitude	Injunctive Norm	Descriptive Norm	Control Beliefs	Self-efficacy	Behavioral Intention
Experiential attitude	0.199 [a]							
P-value	0.001							
Instrumental attitude	0.224 [a]	0.246 [a]						
P-value	0.001	0.001						
Injunctive norm	0.260 [a]	0.043	0.211 [a]					
P-value	0.000	0.490	0.001					
Descriptive norm	0.262 [a]	0.037	0.279 [a]	0.550 [a]				
P-value	0.001	0.548	0.001	0.001				
Control beliefs	-0.030	-0.165 [a]	-0.102	0.067	-0.005			
P-value	0.628	0.007	0.098	0.275	0.940			
Self-efficacy	0.286 [a]	0.154 [b]	0.276 [a]	0.335 [a]	0.324 [a]	-0.203 [a]		
P-value	0.001	0.012	0.001	0.001	0.001	0.001		
Behavioral intention	0.225 [a]	0.003	0.207 [a]	0.481 [a]	0.484 [a]	-0.016	0.419 [a]	
P-value	0.001	0.966	0.001	0.000	0.001	0.792	0.001	
Behavior	0.171 [a]	0.004	0.204 [a]	0.351 [a]	0.372 [a]	-0.031	0.576 [a]	0.650 [a]
P-value	0.005	0.942	0.001	0.001	0.001	0.615	0.001	0.001.

[a] Correlation is significant at the 0.01 level (2-tailed).
[b] Correlation is significant at the 0.05 level (2-tailed).

Table 4. Estimation of Linear Regression Coefficients of Intent, Self-efficacy, and Maternal Occupation Structures for Puberty Health Behaviors

Variables	Unstandardized Coefficients		Standardized Coefficients Beta	t	P-value	95.0% Confidence Interval for B (Lower Bound - Upper Bound)
	B	Std. Error				
Behavioral intention	0.806	0.077	0.484	10.446	0.000	0.648 - 0.953
Self-efficacy	0.352	0.045	0.362	7.844	0.000	0.267 - 0.444
Housewife mothers (baseline: freelance)	-0.416	0.178	-0.099	-2.33	0.020	0.766 - 0.065
	P = 0.001		F = 103.817			$R^2 = 0.54$

haviors in this study, and girls who had housewife mothers showed a lower behavior score than others. However, this finding was not consistent with a study conducted by Kashefi et al. (24) on students in Bojnourd. This issue needs a more comprehensive investigation. However, by educating mothers and increasing their knowledge, we can see the improvement of their daughters' awareness and practice towards puberty health.

The most important strength of this study is its focus on puberty. Given that half of Iran's adolescent population is girls; however, the basic issues of this vulnerable group - for cultural and social reasons- have been neglected. In this article, researchers have addressed one of the most important issues of adolescents, namely puberty.

Several limitations in this study should be acknowledged. The first limitation relates to the fact that the sample of this study was composed solely of girls' high school students of the Birjand city. So, the results of this study should be generalized with caution since they were developed based on a regional sample. In addition, collection of data in this study was based on the researcher-made questionnaire and self-report. So, the possibility of over-report or under-report by the samples should be taken into account (of course, this limitation was addressed to some ex-

tent by stating the objectives of the study and assuring students regarding confidentiality of their information).

5.1. Conclusion

According to the results of this study, the integrated behavioral model can be used as a suitable model to predict adolescent health behaviors in girl's students. The constructs of intention, self-efficacy and maternal occupation were the most important predictors of adolescent health behaviors in the present study. Therefore, it seems necessary to pay attention to the intention to perform behaviors and self-efficacy in line with puberty health behaviors. It is also important to consider the above factors in educational and research planning.

Acknowledgments

Footnotes

Authors' Contribution: EN, MRM, and KA designed the study. AAR analyzed and interpreted the data. KA participated in data collection and data management. EN, MRM and KA were major contributors to the writing of the manuscript. All authors read and approved the final manuscript.

Conflict of Interests: The authors claim no conflict of interests in the present study.

Ethical Approval: All procedures were approved by the Ethics Committee of Birjand University of Medical Sciences (Ir.bums.rec.1399.368).

Informed Consent: The study was described to participants and they were assured that their participation was voluntary. Written informed consent was provided by all the participants.

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