Summer 2018, Volume 27, Issue 2

# The Impact of a School-Based Intervention Using the PBSEIM Model on Health Promoting Behaviors and Self-Care in Adolescent Females

Elahe Fahimi Rad <sup>1</sup>, Zohreh Keshavarz <sup>2,\*</sup>, Masoumeh Simbar <sup>2</sup>, Malihe Nasiri <sup>3</sup>, Hasan Mehraliyan <sup>4</sup>

<sup>1</sup> Department of Midwifery, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>2</sup> Department of Midwifery and Reproductive Health, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>3</sup> Department of Biostatistics, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>4</sup> Master of Exercise Physiology , Instructor Takestan Islamic Azad University , Qazvin, Iran

\* **Corresponding author:** Zohreh Keshavarz, Assistant professor, Department of Midwifery and reproductive health, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: z.keshavarz@sbmu.ac.ir.

DOI: 10.29252/ANM-027023

Submitted: 12.02.2017 Accepted: 16.05.2017

#### **Keywords:**

Intervention Study Health-Promoting Behaviors Self-Care Model Adolescence

How to Cite this Article:

Fahimi Rad E, Keshavarz Z, Simbar M, Nasiri M, Mehraliyan H. The Impact of a School-Based Intervention Using the PBSEIM Model on Health Promoting Behaviors and Self-Care in Adolescent Females. *Adv Nurs Midwifery*. 2017;**27**(1):15-19. DOI: 10.21859/ANM-027033

© 2017. Advances in Nursing and Midwifery

# Abstract

**Introduction:** Developing effective health habits during adolescence dramatically effects behavior formation during adulthood. Therefore, the current study was conducted with an aim to investigate the impact of school-based intervention using «Integrated Model of Planned Behavior and Self-Efficacy» (PBSEIM) on self-care and health promoting behaviors of female high school students of Abyek city, Qazvin Province (Iran), during year 2016.

**Methods:** This experimental study was conducted on 100 female public high school students aged 15 to 19 years old in Abyek city, Qazvin Province. Two schools were randomly selected between 6 high schools. One of the high schools was randomly selected as the intervention group and the other one as the control group. Three classrooms in each school were randomly selected and the necessary samples were collected from each class. Overall, 100 samples had the inclusion criteria; 50 were included in the intervention and 50 in the control group. Demographic, "Health Promoting Lifestyle Profile" (HPLP II), and "Adolescent Girl's Self-Care Questionnaire" was completed by both groups before and after the interventions. Face validity and content validity of the self-care questionnaire were assessed. Also, Cronbach's alpha coefficient for this questionnaire was obtained as 0.73. The students in the intervention group were trained using the PBSEIM model and the control group received routine training. Data was collected and analyzed using the SPSS software (version 22) and independent and paired t tests. Values lower than 0.05 were considered significant.

**Results:** There was a significant difference before and after the intervention in the average scores of health-promoting behaviors and self-care of adolescents in the intervention group in comparison to the control group (P < 0.05). Inter-group comparison demonstrated a significantly higher increase of health-promoting behaviors and self-care of adolescents in the intervention group before and after the intervention (P-value < 0.05).

**Conclusions:** School-based educational intervention using psychosocial models is effective in changing health-promoting behaviors and self-care.

# INTRODUCTION

Adolescence and youth are critical periods in the development and establishment of healthy or high-risk behaviors [1]. Although, teenagers, between 10 to 19 years old, are often considered healthy, many adolescents will have early death as a result of accidents, suicide, violence, pregnancy-related complications, and other diseases that can be prevented or treated. A considerable number of serious diseases in adulthood take root in the adolescence period. For instance, drug abuse, sexually transmitted diseases, including Human Immunodeficiency Virus (HIV) and poor eating, and exercising habits lead to illness or early mortality later in life [2]. Consideration for adolescents' health, particularly adolescent females, is one of the goals of the Millennium Development and among the missions of members of the World Health Organization [3]. Although adolescence is short for females, this period is the foundation and beginning of their later periods in adulthood and old age and has a direct impact on their family, children, future, and the whole society [4]. A great number of adolescent males and females in developing countries have malnutrition. Numerous adolescents in both low-income and high-income countries are overweight. Iron deficiency anemia has affected female and male adolescents, which is considered as the cause of onethird of mortalities and disabilities. The existing data reflects that fewer than 1 out of 4 adolescents practice according to the recommended guidelines for physical activity; 60 minutes of moderate to severe physical activity every day [5]. Health promotion empowers people to determine factors affecting personal and social health and to make accurate decisions about selecting health-related behaviors and thereby following a healthy lifestyle. Health-promoting programs stress on corrective behaviors such as regular exercise, eating nutritious foods, overcoming stress, avoiding narcotics, alcohol and drugs, establishing satisfactory relationships with friends, living in areas with clean weather, and having goals in life [6]. The majority of health-promoting programs for adolescents have been regarded for application in schools, as complementary programs along with courses of study [7, 8]. Positive changes in school environment with its educational framework can improve health. Supporting the school personnel by healthcare providers, through offering education and health facilities, could be helpful in this respect [9]. In a study intended to evaluate the impact of education on promotion of healthy lifestyle behaviors in adolescent females, the average scores of students' awareness and performance after training courses for healthy nutrition and physical activity showed a significant increase compared to the pre-intervention scores [10, 11]. One of the most important ways to promote health is to improve self-care, which may be achieved through education of health [12]. Self-care leads to a significant cost reduction both for the public and the government because people less frequently become sick and recovery from diseases is faster and needs less medical intervention [13, 14]. In order to avoid an unhealthy lifestyle, health-promoting programs are run at schools [15]. Education is a crucial factor in promoting health, quality and standards of a healthy life, and increasing public participation in welfare, physical, psychological, and social activities [16]. The Planned Behavior Model (PBM) is an appropriate psychosocial model for planning educational programs [17]. Some researchers believe that adding the self-efficacy construct to PBM could increase the predictability of the model [18, 19]. As more than 90% of children and adolescents spend a significant amount of time at school and it is not possible to have such regular and constant contact with adolescents anywhere else, schools could play a critical role in provision of health programs. In Iranian schools, the main methods for health education and training are lectures and pamphlets. Therefore, this study was conducted at high schools using the "Integrated Model of Planned Behavior and Self-Efficacy" (PBSEIM) to investigate the impact of school-based intervention on health-promoting behaviors and self-care of adolescent females.

# **METHODS**

This experimental study was carried out on 100 adolescent females, studying at public high schools, aged 15 to 19 years old in Abyek City, Qazvin province, Iran, during year 2016. After approval of the research by Ethics Committee of Shahid Beheshti University of Medical Sciences and receiving an introduction letter from the aforementioned university and presenting it to the General Office of Education in Qazvin (Abyek), the research objectives were examined, and informed consent of authorities of the engaged schools and students was acquired. Through 6 public high schools for adolescence females in Abyek city, two public high schools were randomly selected, one of which was considered as the intervention group and the other as the control group. Three classrooms in each school were randomly selected and necessary samples were collected from each class. Overall, 100 samples had the inclusion criteria, 50 were included in the intervention and 50 in the control group. Inclusion criteria for both groups were as follows, Iranian females aged 15 to 19 years old and living in Abyek. Exclusion criteria were the adolescent's refusal to continue participation in the research, failure to fill in the questionnaires completely, and adolescent's absence in one of educational classes.

Data collection tools included a demographic questionnaire (age, menarche age, body mass index, educational level, parents' age, and economic status), Health-Promoting Lifestyle Profile (HPLP II) in 6 dimensions (nutrition, interpersonal relationship, spiritual growth, stress management, physical activity, and health responsibility) with 52 items that was designed based on a 4-point Likert scale ranging from never to always, to which scores between 1 and 4 were assigned. Higher scores indicated that adolescent females had a more optimal health-promoting lifestyle. Self-administered questionnaire for self-care contained 25 items related to reproductive health (menstrual health, gynecological cancers, and sexually-transmitted diseases) and was developed according to a 4-point Likert scale ranging from never to always, to which scores ranging from 1 to 4 were assigned. Scores ranging from 75 to 90 suggested a strong self-care, 50 to 74 indicated a moderate self-care, and 25 to 49 reflected a poor self-care. Validity and reliability of HPLP II has been demonstrated in several literature reports [20-22]. In order to assess the validity of the self-administered questionnaire for self-care, face validity and content validity approaches were used, and Cronbach's Alpha was used for evaluation of reliability. Cronbach's alpha coefficient for this questionnaire was obtained as 0.73, which was acceptable. The researcher attended the classrooms and after a brief introduction gave the information pertaining to the research methodology and objectives. If the students were interested in participation, the questionnaires were submitted to them.

In the intervention group, a total of 50 students experienced model-based health education using PBSEIM. Educational content was health-promoting behaviors (nutrition, physical activity, health management, and coping with stress)

Table 1: A Comparison of Mean Percentage of Health Promoting Lifestyle Profile II and Self-Care Behaviors in the Two Groups Before
and After the Interventions $(n = 100)$ .

Variables	Intervention group		<b>Control group</b>		Independent t test		Paired t test	
	Before After		Before After				Interventio trol	
Nutrition	$25.18\pm3.43$	$28.38\pm3.52$	$25.60\pm3.82$	$26.18 \pm 4.35$	P = 0.565	P = 0.007	P < 0.001	P = 0.313
Health responsibility	$21.56\pm4.39$	$26.08 \pm 4.53$	$21.12\pm5.37$	$20.98 \pm 4.39$	P = 0.99	P < 0.001	P < 0.001	P = 0.393
Stress management	$21.54\pm3.33$	$24.26\pm3.42$	$21.12\pm4.93$	$21.54\pm4.88$	P = 0.619	P = 0.002	P < 0.001	P = 0.553
Physical activity	$17.46\pm4.62$	$20.92\pm5.60$	$17.18 \pm 4.91$	$17.06\pm4.85$	P = 0.770	P < 0.001	P < 0.001	P = 0.850
Spiritual growth	$24.94 \pm 5.71$	$28\pm5.74$	$26.92 \pm 5.64$	$26.64\pm6.13$	P = 0.085	P < 0.001	P < 0.001	P = 0.714
Interpersonal rela- tionships	$28.02\pm4.05$	$30.52\pm3.90$	$27.54\pm5.08$	$27.32\pm5.64$	P = 0.603	P < 0.001	P < 0.001	P = 0.743
Self-care	$64.82 \pm 6.25$	81.14 ± 6.15	65.18 ± 6.37	65.16 ± 6.11	P = 0.776	P < 0.001	P < 0.001	P = 0.799

and self-care (menstrual health, STD/HIV prevention, and screening of female's cancer), using the integrated model of planned behavior and self-efficacy constructs (attitude, subjective norms, perceived behavioral control, self-efficacy, and intention) as the frame-work. The students of the intervention group were educated in 12 sessions, three sessions a week, and each session was about 2 hours long and involved giving a speech using learning aids (power point, whiteboard, and markers) and group discussions. The intervention lasted one month, during, which the researcher attended the school every day to answer any question or resolve any ambiguity they would possibly face regarding the educational content related to self-care and health-promoting behaviors. A total of 50 students in the control group from another school received routine health education training at their school, yet in order to observe the ethics of the research, educational packages were provided for them. One week after the intervention, HPLP II and self-care questionnaires were recompleted by both groups. Data analysis was performed using the SPSS 22.0 software. P-values less than 0.05 were considered significant.

# RESULTS

Two groups were the same regarding their demographic characteristics. The average age of the participants in the intervention and control group was 16.39  $\pm$  1.99 and 16.57  $\pm$ 1.01, respectively and their ages ranged from 15 to 19 years old (P > 0.05). No significant difference was found between the intervention and control groups in terms of personal variables, such as the adolescent's age, body mass index, their parents' education, job, and income (P > 0.05). According to the independent *t* test, there was no significant difference between the 2 groups in the mean scores of health-promoting and self-care behaviors before the intervention (P-value > 0.05), while the same test indicated that there was a significant difference between the 2 groups in the mean scores of health-promoting and self-care behaviors after the intervention (P < 0.05). Also, paired t test showed a significant difference in the mean scores of health-promoting and self-care behaviors in the intervention group before and after the intervention (P = 0.001) while the control group did not show any significant difference before and after the intervention (P > 0.05) (Table 1).

### DISCUSSION

Healthy lifestyle of adolescents has turned out to be one of research priorities all around the world and their presence at schools is a good opportunity to stabilize health-promoting behaviors in this age group [23]. The strength of this study was using a model (PBSEIM) and a frame-work for schoolbased intervention in adolescent females. Results of the study demonstrated that before the intervention there were no significant differences in health promotion behaviors between the intervention and control group. However, after the model-based intervention, there were significant differences in health promotion behaviors of the intervention group in dimensions of nutrition, physical activity, stress management, spiritual health, and interpersonal relationships. However, the most significant difference was in the heath responsibility dimension. In a study performed by Raayat et al. (2011), students' health-promoting behaviors were at a moderate level in dimensions of nutrition, physical activity, stress management, and interpersonal relationships, and at a weak level in health responsibility and at strong level in spiritual growth [24]. In contrast, the study conducted by Tavafiyan and Aghamolayi (2012) revealed that students' health-promoting behaviors were weak, in which the lowest score was associated with physical activity and health responsibility [25]. In the present study, the results demonstrated that using a model-based intervention (PBSEIM) was effective on promotion of healthy behaviors of adolescent females. In a similar study by Simbar et al. (2017), an educational intervention based on life skills was effective on promoting physical activity of adolescent females [26]. Also, there are similar studies, which revealed that using an integrated model of planned behavior and self-efficacy had an effective impact on health promoting behaviors of female workers [27-30]. Other similar studies showed the effective impact of theory-based interventions on promoting healthy behavior and lifestyle [31, 32].

Adolescents need an acceptable level of knowledge based on reproductive health to perform self-care behaviors regarding accurate reproductive health so that they require changes in their knowledge and performance to show correct self-care behaviors. The results of the present study demonstrated that adolescents' self-care before the intervention was at a moderate level. In a study performed by Adika et al. (2013), selfcare activity concerning menstrual health among adolescent female students was at a moderate level [14]. Likewise, in the study conducted by Olfati and Aligholi (2005), adolescent females had weak awareness of reproductive health [33]. Therefore, adolescents need to develop acceptable knowledge on reproductive health to accurately perform corresponding self-care behaviors. Moreover, after using the model based intervention (PBSEIM) as a frame-work for training self-care, the results revealed effective impact on reproductive health self-care behaviors of females in the intervention group. In the study carried out by Shirazi et al. (2009), educating selfcare program was effective in improving the performance and knowledge of diabetic adolescent females [34]. There are similar studies on the positive impact of education on modification of self-care behaviors for several diseases [35-37]. Finally, concerning the findings of the current study and the positive impact of education on adolescents' performance and knowledge about healthy behaviors and self-care, it could be concluded that such interventions at schools will probably have an effective impact on promoting healthy life style and self-care behaviors in the long term. It is suggested that educational school-based interventions should be performed constantly during a longer term.

# ETHICAL CONSIDERATIONS

This article was based on an MSc thesis by Elaheh Fahimi Rad, approved by the Ethics Committee of Shahid Beheshti University of Medical Sciences with registration code IR.SB-MU.PHNM.1394, 253.

# ACKNOWLEDGEMENTS

Hereby, the researchers would like to appreciate all colleagues and respectful authorities at Shahid Beheshti University of Medical Sciences and Chairmen of Qazvin and Abyek education departments and principals of the respective schools, their coworkers, and students, who participated in this study.

#### **CONFLICTS OF INTEREST**

The authors announce that there is no conflict of interests.

#### FUNDING

This study was funded by The research deputy of Shahid Beheshti Medical Science University.

#### **AUTHOR CONTRIBUTIONS**

Fahimi Rad E.: Data collection, Analysis, Dr Keshavarz Z.: Study design,Supervisor, Dr Simbar M., Mehraliyan H.: Study design,Advisor, Dr Nasiri M.: Statistics advisor

#### REFERENCES

- WHO. Adolescent job aid: a handy desk reference tool for primary level health workers: WHO; 2010 [updated 2016]. Available from: <u>http://www.who.int/maternal\_child\_adolescent/documents/9789241599962/en/</u>.
- WHO. Health topics: Adolescent Health: WHO; 2016 [updated 2016]. Available from: <u>http://www.who.int/topics/adolescent\_health/en/</u>.
- Ippolito DL, Xu M, Bruchas MR, Wickman K, Chavkin C. Tyrosine phosphorylation of K(ir)3.1 in spinal cord is induced by acute inflammation, chronic neuropathic pain, and behavioral stress. J Biol Chem. 2005;280(50):41683-93. DOI: 10.1074/jbc.M507069200 PMID:

<u>16223722</u>

- Maleki A, Delkhoush M, Ebadi A, Ahmadi K, Ajali A. Effect of puberty health education through reliable sources on health behaviors of girls. Int J Behav Sci. 2010;4(2):155-61.
- WHO. Media centre> Fact sheets: Adolescents: health risks and solutions: WHO; 2014. Available from: <u>http://www.who.int/mediacentre/factsheets/fs345/en/</u>.
- Bagherzadeh Z, Shirazi M, Rasouli Z. Comparative study of health promoting behaviors among nursing, midwifery and operating room students in Nursing and Midwifery School of Isfahan University of Medical Sciences. J Health Promot Manage. 2016;5(2):31-41.
- Lee A, Keung M, Tsang C. Difficulties faced by health educators in Hong Kong: from barriers to strategies. J Prim Care Health Promot. 2004;1:17-22.
- Leurs MT, Jansen MW, Schaalma HP, Mur-Veeman IM, De Vries NK. The tailored Schoolbeat-approach: New concepts for health promotion in schools. Evaluation Pract. 2005:89-107.
- D. Lee A, Cheng FF, Yuen H, Ho M, Lo A, Fung Y, et al. Achieving good standards in health promoting schools: preliminary analysis one year after the implementation of the Hong Kong Healthy Schools Award scheme. Public Health. 2007;121(10):752-60. <u>DOI: 10.1016/j.</u> puhe.2007.01.014 PMID: 17548097
- Peyman N, Mahdizadeh M, Mahdizadeh M. Evaluation of education in promoting healthy lifestyle behaviors among adolescent girls, according to the Health Belief Model. Q J Sabzevar Univ Med Sci. 2014;21(1):164-74.
- Arabi Z. Evaluating the effects of health education based on life skills on knwledge,attitude and behaviors of health among 12-14 years old girls in Tehran. Tehran: Shahid Beheshti University of Medical Scienses; 2013.
- Whitehead D. Health promotion and health education: advancing the concepts. J Adv Nurs. 2004;47(3):311-20. <u>DOI: 10.1111/j.1365-2648.2004.03095.x</u> <u>PMID: 15238126</u>
- Ory M. The resurgence of self-care research: addressing the role of context and culture: Springer; 2008.
- Adika A. Self care practices of menstrual hygiene among adolescents school going girls in Amassoma Community, Bayelsa State. Int J Nurs Midwifery. 2013;5(5):99-105. <u>DOI: 10.5897/ijnm2013.0102</u>
- Dobbins M, DeCorby K, Robeson P, Husson H, Tirilis D, Dobbins M. School-based physical activity programs for promoting physical activity and fitness in children and adolescents aged 6-18. Inf Syst Res. 2009;6(2):144-76. DOI: 10.1002/14651858.cd007651
- Zareian A, Ghofrani P, Ahmadi F, Kazemi N, Akhtar D, Mohammadi E. Conceptual explanation of male adolescents lifestyle a qualitative research. 2008:73-84.
- Ajzen I. The theory of planned behavior. Organ Behav Hum Proc. 1991;50(2):179-211. <u>DOI:</u> 10.1016/0749-5978(91)90020-t
- Peterson S, Berdew T. Middle range theories: application to nursing research. Philadelphia: Lippincott Williams and Wilkins CO; 2004.
- Keshavarz Z, Simbar M, Ramazankhani A, Alavi H, Nasiri M. Assessing the relationship between health promoting behaviors and the integrated model of planned behavior and self-efficacy of female workers at reproductive age. Mod Care J. 2015;11(4):293-303.
- Mohamadian H, Ghannaee M, Kortdzanganeh J, Meihan L. Reliability and Construct Validity of the Iranian Version of Health-promoting Lifestyle Profile in a Female Adolescent Population. Int J Prev Med. 2013;4(1):42-9. <u>PMID: 23412661</u>
- Mohammadi Zeidi I, Pakpour Hajiagha A, Mohammadi Zeidi B. Reliability and validity of Persian version of the health-promoting lifestyle profile. J Mazandaran Univ Med Sci. 2012;21(1):102-13.
- Hosseini M, Yaghmaei F, Hosseinzade S, Alavi Majd H, Sarbakhsh P, Tavousi M. Psychometric evaluation of the Health Promoting Life Style Profile 2. Payesh. 2012;11(6):856-94.
- Pender NJ, Barkauskas VH, Hayman L, Rice VH, Anderson ET. Health promotion and disease prevention: toward excellence in nursing practice and education. Nurs Outlook. 1992;40(3):106-12; 20. <u>PMID: 1614893</u>
- Raiyat A, Nourani N, Samiei Siboni F, Sadeghi T, Alimoradi Z. Health Improving Behaviors in students of Qazvin Secondary schools in 2011. J Health. 2012;3(3):46-53.
- Tavaffian S, Molaei T. Assessing Lifestyle of high school students in Bandar Abbas, Iran. J Health Instit Health. 2013;11(3):83-93.
- Simbar M, Aarabi Z, Keshavarz Z, Ramezani-Tehrani F, Baghestani AR. Promotion of physical activity of adolescents by skill-based health education. Health Educ. 2017;117(2):207-14. <u>DOI: 10.1108/ he-09-2016-0037</u>

- 27. Hazavehei SMM, Taghdisi MH, Mohaddes HR, Hasanzadeh A. The effects of three teaching methods of lecture, training game and role playing on knowledge and practice of middle school girls in regard to puberty nutrition. Strides Dev Med Educ. 2007;3(2):126-33.
- Keshavarz Z, Simbar M, Ramezankhani A. Effective Factors on exercise behavior of Female Workers: A Qualitative Approach based On Integrated Model of Planned Behavior and Self-efficacy. J Mashhad Sch Nurs Midwifery. 2010;10(2):19-30.
- Dobbins M, Husson H, DeCorby K, LaRocca RL. School-based physical activity programs for promoting physical activity and fitness in children and adolescents aged 6 to 18. Cochrane Database Syst Rev. 2013(2):CD007651. DOI: 10.1002/14651858.CD007651.pub2 PMID: 23450577
- Keshavarz Z, Simbar M, Ramezankhani A, Alavi Majd H. The Impact of Educational Interventions Based on "Integrated Model of Planned Behavior and Self-Efficacy" on Health Promotion Behaviors of Female Workers in Reproductive Age. J Knowledge Health. 2014;9(3):54-61.
- Azadi A, Anoshe M, Alhani F, Hajizadeh E. The effect of health promotion programs in schools to control risk factors for obesity in adolescents. Iranian South Med. 2008;11(2):153-62.

- Jafarzadeh S, Mohammad Khane Kermanshahi S, Hajizadeh E. Effect of health promotion program with collaborative approach on physical activity of overweight school-age girls. Evidence Based Care. 2014;4(3):65-76.
- Olfati F, Aligholi S. A study on educational needs of teenager girls regarding the reproductive health and determination of proper strategies in achieving the target goals in Qazvin. J Qazvin Univ Med Sci. 2008;12(2):80-2.
- Shirazi M, Anousheh M, Rajab A. The effect of self care program education through group discussion method on knowledge and practice in diabetic adolescent girls referring to Iranian Diabetes Society. Iranian J Med Educ. 2011;10(5):982-93.
- Asgarpour H, Mohammadi I, Memarian R. Effects of Self Care Program on quality of life in adolescents with hemophilia. Med J. 2007;14-69(1-8).
- Rezai Loya H, Dalvandi A, Hosseini M, Rahgozar M. Effect of selfcare education on quality of life in patients with heart failure. Rehabil J. 2009;10-2(21-26).
- Jalilian F, Zinat Motlagh F, Solhi M. The effect of the increasing selfcare educational program for patients with type II diabetes. J Ilam Univ Med Sci. 2011;20(1):26-34.