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The Effect of Education-Modified of Asthma Stimulants on Attitude of the Adolescents with Asthma in Respiratory Specialty Clinics of Tabriz, North West of Iran

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Abstract

Background: Asthma is the most common chronic disease of childhood and adolescents worldwide that can result in variable restriction in the physical, emotional and social aspects of the patient's life.The purpose of this study was to assess the effect of asthma stimulants modifying education program on the attitude of adolescents with asthma.

Materials and Methods: This study was based on pretest-posttest control group design. A sample of 60 adolescents from 12 to 18 years of age participated in the study. Groups were assigned randomly to intervention and control groups. Measurement of child's attitude toward illness scale (Austin and Huberty,1993) was collected prior to intervention and five weeks post intervention in both groups. The intervention group received the asthma stimulants education program and followed up by telephone. Data Analysis was conducted with SPSS 13.0. Descriptive analysis (i.e. Chi-square and t-tests) were used.

Results: The difference in scores of pre and post changes of the child's attitude toward illness between the two groups showed statistically significant differences (P<0.05). The changes resulted from the education-modification intervention of asthma triggers, was significant (P<0.001), and the mean difference of changes in the two groups was 1.87.

Conclusion: This type of educational intervention to adjust stimulants has the potential to improve the attitude toward illness in adolescents with asthma. Promoted attitude by educating adolescents about modifying asthma triggers can empower them to control the disease and reduce the participation of parents.

Key Words: Adolescent; Asthma stimulant; Attitude; Education.

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1- INTRODUCTION

Asthma is one of the most prevalent chronic disorders in children and adolescents around the world (1, 2). It is the first known cause of absence from school and the third leading cause of hospitalization of the children under 15 years (1). Asthma is one of the health problems in the community and national and global level in terms of the social and economic burden in children and adults (3, 4). According to international guidelines for the management of asthma, controlling allergies and environmental stimulants considered as the major components. Treatment also requires identification of allergens and educating patients and families about them (5). However, little attention has been drawn to develop systematic methods to identify various types of stimulants (6).

According to the study of Bryant-Stephens (2008), promoting self-care and controlling the environmental stimulants leads to a better asthma control (7). Management of asthma requires daily self-care in addition to special knowledge and skills related to it (8). Studies on self-management of asthma indicated weak compliance of patients with treatment plan and incorrect use of drugs was the main causes of failure in treatment (9). Bauman et al. (1991), indicated that only 50% of adolescents reported adherence to treatment (10). Not only it is under-diagnosed in adolescents, but also acceptance of patients and families, and adherence to treatment were very weak, which made this group at risk (11).

Since attitude is combination of beliefs, tendencies and favorable or unfavorable feelings which is defined as the one's predisposition to respond in relatively stable styles to objects, parties and special events (12); thus educating patients about modifiable triggers, life style and changing their attitude about their current status to initiate health promoting behaviors seem vital (13). Attitude also can be defined in terms of learning theories and cognitive approaches. In each of these theories attitude is defined in a different way and each emphasized different aspects of that attitude (14).

Allport (1935), defined an attitude as "a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon an individual's response to all objects and situations with which it is related". According to this issue, theories and models for planning actions and evaluation of educational interventions were used to help justify behaviors and recommend strategies to modify practices and behaviors (15). Some other studies surveyed association between lack of adherence to preventive drugs and patients' understanding toward their disease and their beliefs and attitudes toward medication (16-23). Focusing the problem of non-adherence to medication in asthma disease, would fade management experience from the patient's perspective (24). A little information about the disease management by patients and efforts to control symptoms are available (25).

Many of self-care interventions, especially individual and interactive ones for asthma, showed that these interventions can promote knowledge and attitude toward asthma and decrease admits to emergency, and they had the most effective effect on asthma control (18, 26, 27). In addition to the knowledge of patient which is fundamental basis for effective performance in different fields, attitude has a significant effect on the performance and functions (28). Considering the importance of attitudes in terms of performance, and its impact on management of asthma, we aimed to investigate the attitude of adolescents suffering asthma toward their disease, and to assess the effect of

education-modification of asthma with asthma in respiratory specialty clinics of Tabriz, Iran.

2- MATERIALS AND METHODS

2-1. Study design and Setting

This experimental study was conducted with a design of pre-test, post-test including control group. The study settings were pediatric respiratory clinic and Sheikh-ol-Raees clinic in Tabriz, North West of Iran, which are affiliated to Tabriz University of Medical Sciences.

2-2. Methods

Among 84 adolescents with asthma who were referred to these two clinics within two months (August-September), 14 patients were excluded from the study because of dissatisfaction (n=2) and living in other cities (n=12), and a pilot study was carried out with eligible 10 patients. According to the results of the pilot study the sample size was calculated 30 participants in each group. Thus the main study was conducted on 60 patients, which were randomly allocated into two groups each containing 30 participants. The power of test was calculated, 0.8.

All the participants answered the pre-test questionnaire before the start of educational sessions and after five weeks of intervention, the participants had a phone called to come to the clinics and the attitude questionnaire was completed once more. No attrition had occurred in any groups and each of 30 participants who completed pre-test form, also completed the post-test form in each group.

2-3. Measuring tools; validity and reliability

A questionnaire containing two sections was used for data collection. In addition to the socio-demographic characteristics, children's attitude toward their disease was scaled using the questionnaire developed by Austin and Hubert in 1993, Child stimulants on attitude of the adolescents Attitude Toward Illness Scale (CATIS) (29). In our study, the modified scale had 9 options in the case of positive and negative attitudes of the children toward the disease. The tool was scored from 1 to 5. Higher scores indicate more positive attitude. After translation of the original tool, the accuracy of the translation was assessed and approved by two experts in English language and two specialists familiar with English who were expert in the field of coordination between English and Persian versions. The validity was reviewed by 10 professors of nursing and medicine and their comments were applied. Cronbach's Alpha reliability was determined involving 10 adolescents with asthma; the Cronbach's alpha for the attitude tool was 0.65.

2-4. Intervention

After the completion of data collection in the pre-intervention period, the educational intervention was performed in the experimental group, using the asthmatic children's booklet (30). Considering the age range of the participants, they were placed into two groups of 12-15 and 16-18 years of age and the educational sessions were designed based on it. The educational sessions contained these headings: a brief, simple introduction about physiology, symptoms, medical treatment, asthma attack and how to manage it, how to use sprays and spacer, Triggers of asthma, how to identify stimulants in indoor environments and outdoors, stimulants at school and how to avoid triggers. The adolescents were asked to identify the possible stimulants in their daily life and necessary recommendations were given to control them.

The sessions were held twice a week (within 2 months), lasting 20-30 minutes, followed by 10-15 minutes answering questions. Education was provided by a nurse of our team. Delay in or failure to

come to the sessions at the determined time was expected; therefore, this was controlled through phone call reminders before sessions.

2-5. Inclusion criteria

The inclusion criteria were adolescents aging between 12 to 18 years old with moderate to severe asthma diagnosed by a specialist, since one year ago or more, living in Tabriz, who were capable of reading and writing.

2-6. Exclusion criteria

The participant students were excluded if they had any other acute disease, gastro esophageal reflux, rhinitis, sinusitis or any mental problem.

2-7. Ethical consideration

This study reported the results of a proposal submitted in Islamic Azad University of Tabriz with the ID code: 51021910501008.

Eligible parents and adolescents who were willing to participate were enrolled in the study after explaining the confidentiality of information and obtaining written informed consent form. Participating in the study was optional and they could quit the study whenever they disagreed. For ethical purposes also the control group received the asthmatic children's booklet and they were taught about modifying asthma triggers.

2-8. Statistical analyses

To access the results of the study, after data entry to SPSS software version 13.0, analytical tests were performed. Data of the study were analyzed by descriptive tests for frequency, percentage, mean and standard deviation and analytical tests of student T-test or paired t-test and Chi-square. For age, asthma duration and number of days of absence from school, t-test was used and the rest variables were analyzed by the Chi-square test. If no response achieved the mean values were replaced.

3- RESULTS

The mean age of participants was 14.13± 2.38 years. The total number of girls was 28 (46.7%) and boys was 32 (53.3%). The mean period of suffering from asthma was 3.13 ± 4.25 years and 42% of all participants had a history of allergies. All of the participants were students (9 [15%] elementary, 28 [46.7 %] middle and 23 [38.3 %] high school students). 33.3% of fathers and 28.3% of mothers had a university degree.

Statistical tests (t-test for ratio variables and Chi-square for nominal ones), showed that two groups in terms of socio-demographic variables were not significantly different and the two groups were almost similar (**Table.1**).

Kolmogorov–Smirnov test confirmed the normality of the data. Independent t-test indicated that there was no significant difference between attitude of the intervention and control group before the intervention. Comparing attitude and its change before and after the intervention, the mean difference in the control group was -0.67 with the 95% confidence interval (CI) of (-0.80 to -0.47); and in the experimental group, the mean difference was 1.23 with the confidence interval of (1.08 to 1.39).

The changes resulted from the intervention was significant ($P<0.001$) and the mean difference of changes in the two groups was 1.87. Thus, the attitude of adolescents in the experimental group before and after intervention was significantly improved 0.46 ±2.28 before versus 0.20 ± 4.06 after the intervention ($p<0.001$) (**Table.2**).

Table-1: Demographic information of adolescents in control and experimental groups

Variables		Group	Number (Percentage)	Mean ± SD	P-values
Age (years)		Control		14.43±2.40	0.33
		Experimental		13.83±2.37	
Gender	Girl	Control	16 (53.3)		0.30
	Boy		14 (46.7)		
	Girl	Experimental	12(40)		
	Boy		18(60)		
Duration Of Suffering From Asthma (Years)		Control		4.06±3.03	0.65
		Experimental		4.43±3.27	
Education	Elementary	Control	3 (10)		0.51
		Experimental	6 (20)		
	Middle School	Control	15 (50)		
		Experimental	13(43.3)		
	High School	Control	12 (40)		
		Experimental	11 (36.7)		
History Of Allergies In The Adolescent	Yes	Control	21 (70)		1.00
		Experimental	21 (70)		
	No	Control	9 (30)		
		Experimental	9 (30)		
History Of Allergies In The Family	Yes	Control	12 (40)		0.59
		Experimental	10 (33.3)		
	No	Control	18 (60)		
		Experimental	20 (66.7)		
History Of Asthma In The Family	Yes	Control	7(23.3)		0.39
		Experimental	10(33.3)		
	No	Control	23 (76.7)		
		Experimental	20 (66.7)		
Absence From School	Yes	Control	9 (30)		0.78
		Experimental	10 (33.3)		
	No	Control	21 (70)		
		Experimental	20(66.7)		
Number Of Absence Days From School		Control		1.70 ±0.46	0.78
		Experimental		1.66 ± 0.47	

SD: Standard deviation.

Table-2: Attitude and changes of attitude before and after intervention in control and experimental group

Variables	Group	Time	Mean ± SD	Statistical indicators
Attitude	Control	before	2.98±0.53	P<0.001
		after	2.34± 0.37	
	Intervention	before	2.28 ±0.46	P<0.001
		after	0.20 ± 4.06	
Changes in attitude	Control	Before-after*	-0.64 ± 0.43	P<0.001
	Intervention	Before-after*	1.23 ± 0.41	P<0.001

*For calculating changes of variable in a group, post intervention results were

4- DISCUSSION

Since the attitude and practice of patients play an important role in the management of asthma, this study aimed to investigate the effect of education about adjusting asthma triggers on the attitude of asthmatic adolescents referred to respiratory clinics Tabriz, Iran. Greer (2009) studied the effect of computer games on educating middle school adolescents with asthma and showed positive effect of intervention on attitude of adolescents (31). Study of Shaw et al (2005) with nonequivalent groups on the effect of classroom based asthma education in two schools and measuring their attitude before intervention and one week, three weeks and six weeks after the intervention showed a decline in attitude scores comparing before the intervention and it was significant only in the first week (P<0.05). The reason was not stated clearly and studies with larger sample size and equivalent groups was recommended (11). Reduction in the attitude level of the control group was seen in our study. In the idea of researchers sudden climate change and cold weather between data collection before and after intervention which was out of control was the confounding factor. This factor worsened the disease in whole the sample and in the control group decline in psychosocial variables was prominent. According to the study of Pichora, assessing the effect of educational program on the attitudes of adolescents with asthma, the mean scores of attitude were increased after training, but there was no significant statistical difference (32). Rhee et al. (2011), designed a randomized controlled trial and studied the effects of asthma self-management education program by peers in adolescents and indicated an increase in positive attitudes in young children in the experimental group after the intervention (mean difference, 4.11; 95% CI, 0.65-7.56) (33).

Put et al. (2003), evaluated the effect of an individualized directed asthma program on behavioral change of 23 patients with mild to moderate asthma. After 3 months the effect of educational program on their cognition was measured with knowledge, attitude and self-efficacy asthma questionnaire and the results showed significant improvement in the attitude of participants comparing the control waiting group (p<0.0001) (34). A randomized controlled trial, which was done by Herny et al. studied the effect of teacher-led asthma education program using a three lesson package on the adolescents and showed improvements in attitudes of intervention students which was seen in both males and females (35). The results of our study is consistent with the study of Greer (31), Pichora (32), Rhee et al.(33), Put et al.(34), Henry et al. (35), and all indicated positive effect of education on the attitude toward asthma whereas the

study of Shaw indicated the negative effect of education on participants which was significant in the first week. In our, study a decline in scores of the control group was reported which the possible reason was stated above. In the current study the self-reporting of adolescents might not be completely consistent with the reality, and it is a feature of questionnaires and we tried to minimize it by explaining the aim of the study clearly. Also, the sudden climate change and cold weather affected the results as a confounding factor and similar future studies in different weathers is recommended.

5- CONCLUSION

In the current study, the hypothesis of "attitude in the experimental and control groups after the intervention is different" was confirmed. There has been promising results of attitude in the experimental group and educational intervention and adjustment of asthma triggers were effective in promoting the attitude. Since this intervention has the potential to promote the attitude of asthmatic adolescents, it is recommended to train adolescents about triggers of asthma and adjusting triggers involving them directly and to decrease parent-centeredness.

Also, the importance of such intervention is emphasized in clinics and outpatient settings. It is suggested that further studies identify and follow-up asthma trigger and their adjustment by home visits and study them in terms of cost-effectiveness. The results of this study can be used to apply effective interventions to promote attitudes of adolescents with asthma and a consequent reduction in emergency visits and hospital admissions by planners and decision-makers of health care system.

6- CONFLICT OF INTEREST: None.

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8- REFERENCES

1. Wong D, Hockenberry M, Wilson D. Essentials Pediatric Nursing Children. Mosby Elsevier, ST Louis. 2009:783-94.

2. Orrell-Valente JK, Jarlsberg LG, Hill LG, Cabana MD. At what age do children start taking daily asthma medicines on their own? Pediatrics 2008;122(6):e1186-e92.

3. Anandan C, Nurmatov U, Van Schayck O, Sheikh A. Is the prevalence of asthma declining? Systematic review of epidemiological studies. Allergy 2010;65(2):152-67.

4. Moin M, Fatehi Khamene M. Asthma (Basic and Clinical Science). 1st. Tehran: Tehran University Publishing Press; 2003.

5. Milligan KL, Matsui E, Sharma H. Asthma in Urban Children: Epidemiology, Environmental Risk Factors, and the Public Health Domain. Current allergy and asthma reports 2016;16(4):1-10.

6. Wood BL, Cheah PA, Lim J, Ritz T, Miller BD, Stern T, et al. Reliability and validity of the Asthma Trigger Inventory applied to a pediatric population. Journal of pediatric psychology 2007;32(5):552-60.

7. Bryant-Stephens T. Outcomes of a home-based environmental remediation for urban children with asthma. Journal of the National Medical Association 2008;100(3):306.

8. Shegog R, Bartholomew LK, Parcel GS, Sockrider MM, Mâsse L, Abramson SL. Impact of a computer-assisted education program on factors related to asthma self-management behavior. Journal of the American Medical Informatics Association 2001;8(1):49-61.

9. Salmeron S, Liard R, Elkharrat D, Muir J-F, Neukirch F, Ellrodt A, et al. Asthma severity and adequacy of management in accident and emergency departments in France: a prospective study. The Lancet 2001;358(9282):629-35.

10. Forero R, Young L, Bauman A. Asthma among adolescents: a new issue? The Medical journal of Australia 1991;155(1):63-4.

11. Shaw SF, Marshak HH, Dyjack DT, Neish CM. Effects of a classroom-based asthma education curriculum on asthma knowledge, attitudes, self-efficacy, quality of life, and self-management behaviors among adolescents. Journal of Health Education 2005;36(3):140-7.

12. Vogel T, Wanke M. Attitudes and attitude change: Psychology Press; 2016.

13. Tawalbeh LI, Ahmad MM. The effect of cardiac education on knowledge and adherence to healthy lifestyle. Clinical Nursing Research 2014;23(3):245-58.

14. Eagly AH, Chaiken S. The advantages of an inclusive definition of attitude. Social Cognition 2007;25(5):582.

15. Førland G, Ringsberg KC. Implementation of a Standardised Health Education in a local context. A case study. Scandinavian journal of caring sciences 2013;27(3):724-32.

16. Denning DW, Pleuvry A, Cole DC. Global burden of allergic bronchopulmonary aspergillosis with asthma and its complication chronic pulmonary aspergillosis in adults. Medical mycology 2013;51(4):361-70.

17. Roncada C, de Oliveira SG, Cidade SF, Sarria EE, Mattiello R, Ojeda BS, et al. Burden of asthma among inner-city children from Southern Brazil. Journal of Asthma 2016;53(5):498-504.

18. Gardner A, Kaplan B, Brown W, Krier-Morrow D, Rappaport S, Marcus L, et al. National standards for asthma self-management education. Annals of Allergy, Asthma & Immunology 2015;114(3):178-86. e1.

19. Federman AD, Wolf MS, Sofianou A, Martynenko M, O'Connor R, Halm EA, et al. Self-Management Behaviors in Older Adults with Asthma: Associations with Health Literacy. Journal of the American Geriatrics Society 2014;62(5):872-9.

20. Kirby S, Miles C, Arden-Close E, Yardley L, Bruton A, Hankins M, et al. P51 Barriers And Facilitators To Effective Self-management Of Asthma–A Systematic Review And Thematic Synthesis. Thorax 2014;69(Suppl 2):A96-A.

21. Van Gaalen JL, Beerthuizen T, van der Meer V, van Reisen P, Redelijkheid GW, Snoeck-Stroband JB, et al. Long-term outcomes of internet-based self-management support in adults with asthma: randomized controlled trial. Journal of medical Internet research 2013;15(9):e188.

22. Janson SL, Fahy JV, Covington JK, Paul SM, Gold WM, Boushey HA. Effects of individual self-management education on clinical, biological, and adherence outcomes in asthma. The American journal of medicine 2003;115(8):620-6.

23. Asher MI, Montefort S, Björkstén B, Lai CK, Strachan DP, Weiland SK, et al. Worldwide time trends in the prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in childhood: ISAAC Phases One and Three repeat multicountry cross-sectional surveys. The Lancet 2006;368(9537):733-43.

24. Le TT, Bilderback A, Bender B, Wamboldt FS, Turner CF, Rand CS, et al. Do asthma medication beliefs mediate the relationship between minority status and adherence to therapy? Journal of Asthma 2008;45(1):33-7.

25. Pinnock H, Epiphaniou E, Pearce G, Parke H, Greenhalgh T, Sheikh A, et al. Implementing supported self-management for asthma: a systematic review and suggested hierarchy of evidence of implementation studies. BMC medicine 2015;13(1):1.

26. Zeni MB. Systematic review of health literacy in Cochrane database studies on paediatric asthma educational interventions: searching beyond rigorous design. International Journal of Evidence-Based Healthcare 2012;10(1):3-8.

27. Kintner EK, Cook G, Marti CN, Allen A, Stoddard D, Harmon P, et al. Effectiveness of a school-and community-based academic asthma health education program on use of effective asthma self-care behaviors in older school-age students. Journal for Specialists in Pediatric Nursing 2015;20(1):62-75.

28. Shaw E. An Investigation into the Level of Knowledge and Attitude Toward Science in an American College Population. 2014. 29. Austin JK, Huberty TJ. Development of the child attitude toward illness scale. Journal of Pediatric Psychology 1993;18(4):467-80.

30. Parsikia A, Delavari A, Moin M. Asthma In Children (Tom Kovesi). Tehran, Iran: Rezvan; 2001.

31. Greer MZ. Effect of a CD-ROM Game to Teach School-age Children about Asthma: ProQuest; 2009.

32. Pichora DL. A program evaluation: Knowledge, attitudes, self-efficacy and quality of life in adolescents with asthma.1998.

33. Rhee H, Belyea MJ, Hunt JF, Brasch J. Effects of a peer-led asthma self-management program for adolescents. Archives of pediatrics & adolescent medicine 2011;165(6):513-9.

34. Put C, Van den Bergh O, Lemaigre V, Demedts M, Verleden G. Evaluation of an individualised asthma programme directed at behavioural change. European Respiratory Journal 2003;21(1):109-15.

35. Henry RL, Gibson PG, Vimpani GV, Francis JL, Hazell J. Randomized controlled trial of a teacher-led asthma education program. Pediatric pulmonology 2004;38(6):434-42.