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Effect of the Orem Self-care Model on Quality of Life in Adolescents with Asthma

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Abstract

Background: Asthma is one of the chronic diseases that could affect quality of life (QOL). Therefore, one of the goals of healthcare interventions for this disease is improving the QOL. The current study aimed at determining the effect of the Orem self-care model on QOL in adolescents with asthma.

Methods: The current prospective study assigned 64 adolescents with asthma referring to Shariati Hospital into 2 groups of control and intervention by the simple random sampling method. Then, the Orem-based training was implemented through 8 sessions of 2 hours and the asthma QOL questionnaire was presented to both groups prior to and 2 months after completion of the training. The data were analyzed by descriptive and analytical statistics consisting of the paired and independent t tests with SPSS version 20.

Results: There was a significant change in the mean score of different QOL dimensions before and after the training in the intervention group by respiratory status (P = 0.001), mood functioning (P = 0.03), social functioning (P = 0.005), physical activity (P = 0.006), and general understanding of health (P = 0.004), but there was no significant difference in the mean score of different QOL dimensions before and after the training in the control group (P > 0.05).

Conclusions: Based on the contribution of the Orem self-care model to increase QOL in the adolescents with asthma, it seems better to use this model as a healthcare intervention to improve asthma control and patient adherence.

Keywords: Training, the Orem Self-care Model, Quality of Life, Adolescent

1. Background

Asthma is one of the most common diseases that affect all age groups. Asthma is the most prevalent disease in childhood, and the single largest cause of disability in children (1). Its prevalence is 6% to 8% in adults, and over 70% of them have the disease since childhood (2). In Iran, similar to other communities, asthma recently increased due to the increase of risk factors such as air pollution and growing tensions (3). By the available data, asthma causes 1.6 million emergency department visits, over 2 million hospitalizations, about 1.1 million missed school days, major activity limitations and poor student performance each year in the US children (4). If this disease occurs in adolescence, the patient faces so many problems because adolescence is the period of psychological offensive operations (1). The factors such as medical procedures, physical and psychological stress, changes in family status and roles, communications, and interactions (5) prevent the person from self-controlling, and finally these manifestations influence the quality of life (QOL). Other studies indicate that the chronic diseases such as asthma cause major psychological and physical complications for the patients (6).

World heath organization (WHO) defines QOL as a person's perception of his/her own situation in their culture, community value system, goals, expectations, and characteristics. QOL is, in fact, a personal understanding of satisfaction, physical, mental, social, and familial health, hopefulness, and etiquette. Its main dimensions comprise physical, emotional, social, and mental aspects. These dimensions can be discussed independently, but they have reciprocal relationships with each other. Physical disorders and physical signs can affect all QOL dimensions directly (7).

The activities of the patients with asthma are limited due to the respiratory difficulty. It causes such patients to have difficulty in doing individual and social responsibilities. This leads to feelings of inadequacy and disturbed self-confidence, which causes social isolation (8). Therefore, training patients is a major tool to reduce the risk of developing chronic complications, asthma attacks, and finally promoting their QOL (9).

Nurses have the position to detect the complications

and prevent their effects on daily functioning, interpersonal relationships, and QOL in the patients (10). Self-care training is one of the important methods to promote health in adolescents, with reliance on active participation (3).

Among self-care-based theories is the Orem model. This theory considers 2 factors of demand for self-care (11). Altay et al. studied the effect of the Orem model on self-care in the adolescents with asthma. They taught the proper use of medication, exercise techniques, use of action plans, careful diet, and protection against stimulants that resulted significant difference in the intervention group, compared with pre-intervention (12). In addition, Tangarayasap et al. revealed that the control of self-care behaviors in patients with asthma improves following the Orem model intervention (13).

Due to lack of studies on the Orem theory in adolescents with asthma and the high incidence of asthma and cultural differences in Iran, the current study aimed at evaluating the effect of the Orem model on QOL in adolescents with asthma referred to an asthma clinic in Isfahan. Results of the current study may improve the treatment process and promote the QOL and health status in such patients.

2. Methods

The current prospective study was conducted at Shariati hospital, asthma and allergy clinic. In the current study, sample size was calculated as 32 in each group: (d = 0.7 s2, $\alpha = 0.05$, $\beta = 0.2$) (14). Ethical approval was issued by Isfahan University of Medical Sciences (code No. 291302).

The patients who fulfilled the inclusion criteria were divided into 2 groups by the simple random sampling method. They were assigned to the intervention and control groups.

The patients were selected by subspecialists based on GINA (global initiative for asthma) guidelines; they had moderate to severe asthma and history of one or more asthma attacks. The inclusion criteria were adolescents aged 11 to 21 years with asthma and the ability to answer the questions by themselves. Patients with other chronic disorders, mental retardation, history of taking drugs with mental effects, recent stressful insult and being absent 2 consecutive sessions were excluded from the study. To evaluate the training needs of participants before intervention, a questionnaire was designed based on the Orem self-care model.

The questions were of 3 major domains, (a) how to use asthma devices and medicines, (b) how to protect themselves against asthma attack, and (c) how to use asthma action plan. All of the questions were brief and closed ended. The contents of this form were reviewed for validity by asthma experts and a subspecialist.

The training materials consisted of the asthma controlling methods, effective breathing types (diaphragmatic and lip-bud), proper application of spray, and how to relieve stress and anxiety based on the Orem model that were educated within eight 2-hour sessions. Researchers trained patients individually, and face-to-face at clinical skills training hall of Shariati hospital. In addition, the researcher's phone number was offered to the patients for further advice and support if necessary. Two months after the intervention, the patients of both groups were requested to complete the questionnaire of asthma QOL (15). The training in the control group was limited to teaching and problem solving by physician in regular visits.

The questionnaire consisted of 2 parts: demographic characteristics and QOL questions. This 69-item self-report questionnaire was developed and codified by Marks et al. from 1991 to 1992, in order to measure the QOL in 5 dimensions: respiratory status (14 items), mood functioning (11 items), social functioning (10 items), physical activity (16 items), and general understanding of health (18 items), with Cronbach's alpha of 94% (16). The Cronbach's alpha of this questionnaire was 87% in the current study. This questionnaire was already used in the studies in Iran (17). The answer to each item in the questionnaire was scores by the 5-point Likert scale. Each item had 5 options: never, rarely, partly, much, and always. For positive items, the score 5 was given to always and 1 to never, and for negative items, the score 1 was given to always and 5 to never. Therefore, the minimum and maximum scores were considered 14 to 70, 11 to 55, 10 to 50, 16 to 80, and 18 to 90 for respiratory status, mood functioning, social functioning, physical activity, and general understanding of health, respectively.

The data were analyzed by descriptive and analytical statistics (the paired and independent t tests, the Chi-square, and the Mann-Whitney test) using SPSS version 20.

3. Results

Based on the findings of the current study, the mean age of the participants was 14.15 ± 3.12 years in the intervention group and 15.21 ± 3.09 years in the control group. Duration of asthma was 26.38 ± 19.88 months in the intervention group and 25.89 ± 23.56 months in the control group. Also, 68.8% and 59.4% of the participants in the intervention and control groups, respectively, were male.

The fathers' education level, 43.8% in the intervention group and 46.9% in the control group was diploma. The mothers' education level, 37.5% in the intervention group and 50% in the control group was diploma. Also, 75% of

the fathers in the intervention group and 71.9% in the control group were self-employed, and 93.8% of the mothers in the intervention group and 90.6% in the control group were housewives. Comparison of demographic characteristics between the 2 groups by the independent t test, analysis of variance (ANOVA), and the Mann-Whitney test indicated no significant difference in age (P = 0.21), gender (P = 0.30), duration of asthma (P = 0.94), fathers' education (P = 0.75), mothers' education (P = 0.68), fathers' occupation (P = 0.12), and mothers' occupation (P = 0.5) between the groups, and the 2 groups were matched for the above variables.

The paired t test indicated a significant change in the mean score of different dimensions of QOL (respiratory status; (P = 0.001), mood functioning (P = 0.03), social functioning (P = 0.005), physical activity (P = 0.006), and general understanding of health (P = 0.004) before and after the training in the intervention group (P < 0.05) (Table 1).

Table 1. Comparison of the Mean Scores of Different Dimensions of Quality of Life in the Intervention Group, Before and After the Training[a]

Quality of Life Dimensions	Group		Paired t Test Results
	Before	After	
Respiratory status	23.59 ± 7.18	30.90 ± 10.10	0.001
Mood functioning	18.28 ± 8.03	22.09 ± 8.34	0.03
Social functioning	13 ± 3.01	15.46 ± 5.97	0.005
Physical activity	21.15 ± 5.58	27.78 ± 12.64	0.006
General understanding of health	24.68 ± 5.17	29.59 ± 11.11	0.004

[a]Values are expressed as mean ± SD.

But, no significant change was observed in the mean score of different dimensions of QOL before and after the training in the control group (P > 0.05) (Table 2).

Table 2. Comparison of the Mean Scores of Different Dimensions of Quality of Life in the Control Group, Before and After the Training[a]

Quality of Life Dimensions	Group		Paired t Test Results
	Before	After	
Respiratory status	29.93 ± 8.87	28.12 ± 10	0.62
Mood functioning	24.65 ± 9.70	31.43 ± 10.93	0.56
Social functioning	15.31 ± 6.72	16.59 ± 7.62	0.49
Physical activity	26.56 ± 12.97	21.15 ± 5.58	0.10
General understanding of health	28.21 ± 9.99	32.31 ± 9.60	0.13

[a]Values are expressed as mean ± SD.

4. Discussion

Today, chronic diseases are considered as the most important health challenge the community faces and the responsible for over 80% of mortalities (17). Asthma, a chronic disease in adolescence, is the most important reason for missed school days due to hospitalization. Development of a chronic disease causes complicated problems in adolescents and the experience of therapeutic procedures, numerous physical and psychological tensions, change in family status, relationships and interactions, and finally affects the QOL (1).

The current study findings indicated no significant difference in the demographic data between the 2 groups prior to the intervention. In the current study, the QOL significantly changed in all dimensions in the intervention group before and after the training. As a result, patients with asthma have psychological problems, which in turn affect social interactions and cause social isolation. Asthma limits the patients' physical and psychosocial activities and, therefore, affects the QOL (18).

The implementation of self-care-based interventions could greatly assist their QOL. The current study findings could confirm this argument. The study by Hoover, focusing on the Orem self-care model, demonstrated that the level of knowledge was directly associated with the self-care ability and hospitalization rate for asthma and its complications in children (19). This study revealed that attendance of parents with their children in the training sessions increased the efficacy of this plan.

The study findings demonstrated improvement of QOL after the training, with significant difference in various dimensions of QOL between the 2 groups of the adolescents with asthma. This could be attributed to the Orem model-based self-care training, as there was no significant difference in the demographic data and QOL prior to the intervention between the 2 groups.

The current study findings were consistent with those of the study by Altay et al. on the effect of the Orem model on self-care in the adolescents with asthma (12). In addition, Matyt reported that QOL and knowledge of the disease in 10- to 14-year-old individuals promoted after intervention, using the Orem model, which confirmed the current study findings (20). Since self-care by the adolescents could stimulate regressive and forgotten abilities and support them to eliminate inabilities, implementation of self-

care programs could reinforce motivation and self-esteem in the patients with asthma; therefore, they improve their deficits and inabilities through assuming responsibility for self-care and use the ability of self-care.

Baker et al. showed that intervention based on the Orem model in adolescents with cystic fibrosis can improve ego strength, attention to health, health knowledge, and decision-making capability, and consequently, a resultant advance in health and self-care (21).

Kaur et al. conducted supportive interventions on self-care in the patients with asthma and demonstrated that emotional reactions and illness rates decreased in the intervention group, compared with the control group after the intervention.

Consistently, there was a significant difference in the mood after intervention in the adolescents in the case group, compared with the adolescents in the control group. In the study by Kaur et al., the patients' knowledge increased after the intervention, and in the current study the increased knowledge led to promoted self-care ability and QOL (22). All measured outcomes in the study by Kaur et al. could overlap with the QOL, which confirmed the current study findings. The findings of Tangaryasap et al. on the effect of a supportive-educative program based on the Orem theory, on knowledge, asthma control, and self-care behaviors in the adolescents with asthma were consistent with those of the current study, because any changes in self-care behaviors could promote QOL in adolescents (13).

Overall, the current study confirmed the results of other studies. As a result, nurses are recommended to implement this healthcare-nursing model in hospitals, schools, colleges, and other training centers to promote self-care behaviors and help the patients enjoy a better QOL.

4.1. Conclusions

Since the training based on the Orem self-care model contributed to improve all the dimensions of QOL in adolescents with asthma, the nurses that spend many hours on adolescents with asthma may play a significant role in self-care teaching and patient adaptation with his/her disease and adherence to treatment plans.

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Footnote

Conflict of Interest: Authors declared no conflict of interest.

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