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The Correlation Between Efficacy of Asthma Control and Quality of Life in Asthmatic Patients

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Abstract

Background: The improvement of self-caring and self-efficacy behaviors is vital in the successful management of asthma.
Objectives: The aim of the research is to determine the relation between self-efficacy of asthma control and quality of life in Iranian asthmatic patients.
Patients and Methods: This research represents a descriptive-analytical study. The 257 asthmatic patients referred to the clinic were selected as the research sample. The data collection instrument was a questionnaire consisting of four parts on personal-social characteristics, the asthma self-efficacy scale (ASES), asthma control questionnaire (ACQ), asthma quality of life questionnaire (AQLQ), and the parameters of spirometry. The data were collected after determining the validity and reliability of the questionnaires and analyzed by applying descriptive and analytical statics.
Results: The results indicated that ASES scores were negatively correlated with ACQ total scores (r = -0.378, P = 0.001) and individual item scores, with the exception of item 7. Moreover, they were positively correlated with the AQLQ total (r = 0.442, P = 0.001) and subscale scores.
Conclusions: The findings of this study showed that having confidence in one's abilities is related with a better quality of life and control of asthma to control the symptoms.

Keywords: Asthma, Self-Efficacy, Quality of Life

1. Background

Asthma is a chronic respiratory clinical symptom causing inflammation, reactivity, and spasm of the pulmonary airway (1). Bronchial asthma is diagnosed clinically by shortness of breath, wheezing, and a reversible obstructive airway (2). It is a major health problem worldwide, and its diagnosis and treatment represents a health challenge taking the life of thousands of people annually (3). The prevalence of asthma has increased dramatically over the past 50 years. According to the world health organization (WHO, 2007), 100 - 150 million people suffer from asthma all over the world, and this number continues to increase (2). Over the past 30 years, the prevalence of asthma has more than tripled (4). The ratio of asthma in Iran is higher than the world and region average; this has occurred because of urbanization, the industrial trend and industrial pollution in Iran, the country's specific climatic conditions, and the imbalance in development there (1). According to a report by the allergy and asthma association in Iran, the prevalence of asthma ranges from 5% to 15% and there are 5.6 million asthmatic patients in this country. More than 15 million people there are unable to work because of this disease (5). The asthma treatment guideline aims to increase control for the management of symptoms and mitigation of symptom severity. Increased asthma control promotes the patient's self-management of the disease (6).

Self-efficacy is an individual's trust in his/her ability to exhibit special behaviors in special situations (7). During the treatment of chronic diseases, increased self-efficacy is of great importance (8, 9). Low self-efficacy of asthmatic patients is associated with weak pulmonary function and low life quality (7). The improvement of self-caring and self-efficacy behaviors is vital in the successful management of asthma (10). Emotional stress affects the behavioral-cognitive field, thereby reducing self-efficacy among asthmatic patients (11). Asthma self-efficacy is considered an effective factor in dependency behaviors related to social supports (12). The high burden of asthma appears to be related to poor asthma control (13). Self-management education programs, as well as self-control, are effective in

the reduction of medication adherence and the promotion of good clinical outcomes of asthmatic patients (14). The more severe the asthma ailment, the lower the life quality in terms of daily activities, job selection, and using life facilities (15). Asthma affects various dimensions of the life of the patients; limits their physical, mental, and social activities; and changes their life quality (16). Patient education has been found to have a considerable effect on improving the physical dimension of life quality of asthmatic patients (17). Based on the increase of the number of the asthmatic patients in Iran and the world, the fact that 10% of Iranians suffer from asthma according to the asthma and allergy clinic report (3), the increased cost of treatment and its effect on the life activities of the patient (18), the low life quality of asthmatic patients (3), the association of self-efficacy and disease control (6) and the life quality of asthmatic patients (7), and the lack of research on this field, this study was carried out to evaluate the association of self-efficacy and asthma control and life quality of asthmatic patients admitted to the Sheikholraees Clinic , Tabriz University of Medical Sciences, Iran, 2011.

2. Objectives

The aim of the research was to determine the relationships between self-efficacy, asthma control, and quality of life in Iranian asthmatic patients.

3. Patients and Methods

This descriptive-analytic study was conducted on asthmatic patients admitted to Sheikholraees clinic affiliated to Tabriz University of Medical Sciences in 2011. This clinic was chosen because the majority of the patients were admitted to it. The inclusion criteria were as follows: a, a physician diagnosis of asthma based on the global initiative for asthma (GINA) criteria, namely a history of respiratory symptoms, such as wheezing, shortness of breath, chest tightness, and coughing, that vary over time and in intensity, as well as variable expiratory airflow limitation; b, age 18 - 55 years, because many people with obstructive airway disease are affected with asthma and chronic obstructive pulmonary disease (COPD) after 55 ages; and c, no other acute or serious illness that might cause inaccurate responses. The exclusion criteria included suffering from chronic diseases like depression and receiving medication treatment.

In total, 257 asthmatic patients were selected using the convenience sampling method. The data collection instrument was a questionnaire consisting of four parts covering personal-social characteristics, the asthma self-efficacy scale (ASES), the asthma control questionnaire (ACQ), the asthma quality of life questionnaire (AQLQ), and the parameters of spirometry. The ASES includes five dimensions, namely asthma control (5 questions), managing an acute attack (6 questions), regular controller medicine use (1 question), emotions and environment (4 questions), and doctor relationship (4 questions). The responses are scored based on a 5-point Likert scale. The ACQ includes seven dimensions, as follows: waking at night due to symptoms, waking in the morning with symptoms, limitation of daily activities, shortness of breath, wheezing, number of spray puffs, and 1 sec forced expiratory volume (FEV1%) in the past week. The responses are scored on a 7-point scale ranging from 0 to 6. The AQLQ is a 20-item self-report instrument evaluating life quality on four dimensions, including shortness of breath, mood, social issues, and concerns. The responses are evaluated based on a 5-point Likert scare.

The questionnaire was designed following the designs of the ASES, AQLQ , and ACQ. For the validity of the questionnaire, content validity was applied. To evaluate the content and formal validity, the questionnaire was distributed among 10 faculty members at the medical sciences university of Tabriz and pulmonary physicians, and their comments were applied. To evaluate reliability, the questionnaire was given to 20 asthmatic patients. The Cronbach's alphas of the ASES, ACQ , and AQLQ were 0.87, 0.80, and 0.93, respectively. The questionnaires have been reported to have good reliability in other studies (19-21).

The researcher referred to the clinic during the working hours of the Sheikholraees Clinic; interviews were performed by the physicians when asthmatic patients meeting the inclusion criteria visited the clinic, and then the spirometry test was conducted and FEV1% was recorded on the questionnaire (before starting treatment). Finally, the data were collected and analyzed using SPSS 17. For the descriptive data of the quantitative variables, mean and standard deviation (SD) were used, while for qualitative variables, frequency and percent were applied. To investigate the relationship between the variables, the Pearson correlation coefficient was used and significance was set at the $P < 0.05$ level.

The study was approved by the ethics committee of Tabriz university of medical sciences on 2012/1/2 (ethics code: 9070). To comply with ethical principles, participants were free to accept or withdraw from participation. Informed consent was obtained from participants in the study and the results were recorded in such a way that respondents remain completely anonymous. The privacy and confidentiality of the study participants were upheld, and participants were assured that the data and results obtained would be used for research purposes only.

4. Results

The results of the study showed that the mean and SD of the patients' age was 48.9 ± 15.9. The highest proportions of patients were male (51.8%), married (87.2%), illiterate (37.7%), and housewives (33.9%). The mean of asthma duration was 54.3 months (SD = 61.9). Furthermore, 82.1% of the patients were non-smokers; among the smokers, the mean smoking duration was 19.1 years (SD = 15.4). Finally, 68.9% of the patients applied spray, and 90.2% of the patients did not use pulmonary medications (except for the spray).

Table 1 shows the mean and SD of self-efficacy and its dimensions in the subjects. The highest self-efficacy mean (4 ± 0.6) represented regular daily medication, and the lowest (2.7 ± 0.7) related to the patient's relationship with the physician.

Table 1. Mean and Standard Deviation of Self-Efficacy and its Dimensions

Asthma Self-Efficacy Dimension	Mean ± SD
Asthma control	3.6 ± 0.5
Managing an acute attack	3.5 ± 0.7
Regular controller medicine use	4 ± 0.6
Emotions and environment	3.7 ± 0.5
Doctor relationship	2.7 ± 0.7
ASE-Total	3.4 ± 0.5

Table 2 shows the mean and SD of asthma control and its dimensions in the subjects. The highest asthma control mean (3 ± 1.1) represented the limitation of activity due to the disease in the past week, while the lowest mean (1.5 ± 1.2) related to the number of spray puffs being used during the day in the past week.

Table 2. Mean and Standard Deviation of Asthma Control and its Dimensions

Asthma Control Dimension	Mean ± SD
Woken at night by symptoms during the past week	2.7 ± 1.2
Severity of asthma symptoms when you woke up in the morning during the past week	2 ± 1
Limitation of daily activities during the past week	3 ± 1.1
Shortness of breath during the past week	2.7 ± 0.8
Wheezing during the past week	2.7 ± 1.1
Number of spray puffs used during the past week	1.5 ± 1.2
FEV1 (%Pred.)	2 ± 1.3
AC-Total	2.4 ± 0.7

Table 3 shows the mean and SD of life quality and its dimensions in the subjects. The highest life quality mean (3.4 ± 0.7) represented the social dimension, and the lowest mean (2.7 ± 0.6) related to shortness of breath.

Table 3. Mean and Standard Deviation of Quality of Life and its Dimensions

Asthma Quality of Life Dimension	Mean ± SD
Breathlessness	2.7 ± 0.6
Mood	3.3 ± 0.6
Social support	3.4 ± 0.7
Concerns	3.3 ± 0.6
AQL-Total	3.1 ± 0.6

Table 4 shows the association between self-efficacy and asthma control. There was a significant association between these parameters (r = -0.378, P = 0.001) and life quality (r = 0.442, P = 0.001). There was a significant correlation between self-efficacy with all dimensions of asthma control except for item 7 (FEV1%). There was a negative relationship between self-efficacy and asthma control, including waking at night due to symptoms, waking in the mornings with symptoms, limitation of daily activities, shortness of breath, and wheezing; meanwhile, there was a positive relationship with the number of spray puffs during the day. Table 5 shows the association between self-efficacy and life quality, which was revealed to be significant association (r = 0.442, P = 0.001). There was a significant correlation between self-efficacy and all dimensions of life quality (shortness of breath, mood, social issues, and concerns).

Table 4. Association Between Self-Efficacy and Asthma Control

Self-Efficacy	r	P-Value
Woken at night by symptoms during the past week	-0.423	0.001
Severity of asthma symptoms when you woke up in the morning during the past week	-0.363	0.001
Limitation of daily activities during the past week	-0.463	0.001
Shortness of breath during the past week	-0.417	0.001
Wheezing during the past week	-0.356	0.001
Number of spray puffs used during the past week	0.145	0.02
FEV1 (%Pred.)	-0.055	0.376
AC	-0.378	0.001

5. Discussion

The results of the present study showed that among the self-efficacy dimensions, regular daily medication use had the highest mean, while the patient's relationship

Table 5. Association Between Self-Efficacy and Quality of Life

Self-Efficacy	r	P-Value
Breathlessness	0.386	0.001
Mood	0.447	0.001
Social support	0.499	0.001
Concerns	0.297	0.001
AQL	0.442	0.001

with the physician had the lowest mean. Since asthma patients suffer from physical symptoms, including shortness of breath, wheezing, and chest tightness, for symptom control, managing regular daily medication should be carefully considered.

As mentioned above, the present study showed that the relationship between the patient and physician had the lowest mean. This is due to existing problems in referring patients to physicians. Based on the high cost of patients' visits to clinics, the overcrowding in state hospitals and clinics, the increasing number of patients admitted to these centers, and the lack of adequate time for physicians to carry out interviews, the self-efficacy of the asthmatic patients was low in terms of their relationship with physician. Adherence to treatment regimens is generally affected by health beliefs such as self-efficacy (22, 23).

Among the dimensions of asthma control, the limitation of activity due to asthma during the past week had the highest mean, while the number of spray puffs during the past week had the lowest mean. It seems that asthma symptoms led to the limited activities of the patients. Based on the low self-efficacy among the asthmatic patients and the reduction of self-confidence and efficiency in daily activities, their activities were limited. In the study performed by Lavoie, the highest mean of asthma control was dedicated to FEV1%, and the lowest mean was for the number of spray puffs (6).

Among the life quality dimensions, shortness of breath had the lowest mean, and the social dimension had the highest mean. It seems that low score on the shortness of breath dimension was related to asthma complications. Based on the time of the study, severe heat, air pollution, and dust all exacerbated the participants' asthma and related complications, reducing life quality in the shortness of breath dimension. In the study performed by Yekke, social performance had the highest score and physical activity had the lowest score; these findings are consistent with the results of the current study (24).

Ford conducted a study on asthmatic patients and found that the disease had negative effects on various dimensions of life, and the patients had low performance on the days they were not well physically and mentally (25). The study performed by Lavoie evaluated the relative impact of having depressive disorders and anxiety disorders on asthma control and quality of life (13).

The results of the current study showed that self-efficacy was significantly associated with asthma control and life quality. Only the findings of the study performed by Lavoie were consistent with the results of the current study (6).

A study carried out by Scherer showed that low self-efficacy was associated with other factors involved in weak asthma control, including outpatient visits and repeated hospitalization (26). Combined treatment including inhaled corticosteroids and self-care education are the central aspects of asthma treatment (27). In studies performed by Van der Palen and Put, the researchers showed that self-management plans are effective in improving patients' self-efficacy of the patients (28, 29). Cognitive variables, such as knowledge, attitude, and self-efficacy, affect asthma patients' ability to be effective self-managers. In additional multivariate analyses, more knowledge, a more positive attitude, and more self-efficacy were associated with better AQLQ scores (30).

Based on the significant association between self-efficacy and asthma control and life quality, it is recommended to the nurse authorities of the health ministry that by providing more facilities, engaging suitable methods, and preparing clinical environments, educational programs can be provided to improve the self-efficacy and self-management of asthmatic patients. Consultation units should be established in specialized asthma hospitals and clinics, and self-management skills should be taught to the patients by skilled personnel. Based on the severity period of the ailment and high costs of the treatment, it seems that teaching skills to improve self-efficacy should be emphasized to reduce the complications of the disease. It is recommended that future studies should evaluate the factors that have an effect on improving the self-efficacy of asthmatic patients.

The limitations of the current study were as follows: The subjects were recruited from a clinic offering tertiary level health care. Thus, the results cannot be generalized to patients admitted to centers providing primary care. Based on the research conducted before the start of the study, most of the asthmatic patients referred to Sheikholraees Clinic to receive services, and based on the presence of other centers to which patients referred and where they received care, random sampling was not possible. The asthmatic patients were admitted to this clinic from neighboring provinces and countries; the patients cannot be seen as representative of asthmatic patients of the province (Tabriz), and the results were applied only to de-

termine the relationship between self-efficacy and asthma control.

The results of this study showed that an individual's reliance on his/her ability to successfully avoid symptom severity is of great importance. Currently, asthma intervention strategies are the best criterion for the treatment and control of asthma to improve the asthma control and life quality of the patients (27).

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Footnote

Authors' Contribution: Manijheh Esmaeily, study concept and design, analysis and interpretation of data, drafting the manuscript, critical revisions for important intellectual content, and acquisition of data; Hadi Hassankhani, study concept and design, statistical analysis; and Alireza Mohajjel Aghdam and Reza Gharemohammadlu, study conception and design.

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