RESEARCH ARTICLE

Effect of educational programme on patients with bronchial asthma regarding self -care management

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Abstract

Objective: To evaluate the effect of educational programmes on patients with bronchial asthma regarding self-care management.

Method: The quasi-experimental study was conducted at the El-Fayoum University Hospital, Egypt, from August 2021 to January 2022, and comprised patients of either gender aged >20 years who had a history of asthma attacks in the preceding 6 months. Data were collected through three questionnaires adapted from the literature regarding patients' sociodemographic and clinical characteristics, their knowledge regarding asthma and self-care management, and their practices as noted through an observational checklist. After evaluation as a baseline, the subjects were given training through 30-minute sessions twice a week for a total of 10 sessions. They were also provided with a self-care management booklet in the Arabic language. The post-intervention evaluation was at the end of the 10-session programme and then again 3 months after the first evaluation. The collected data were statistically analyzed using the statistical package for social science (SPSS) version (20), percentage (%), the arithmetic mean (), standard deviation (SD), and chi-square (X2 & *p*-value).

Results: Of the 100 patients with a mean age of 31.5±7.41 years, 34(34%) were in the 30-40 years bracket, 63(63%) were males, 70(70%) could read and write, 94(94%) lived in urban areas, 50(50%) were smokers and 81(81%) said asthma attack was triggered by consumption of certain foods. At baseline, 69(69%) patients had unsatisfactory knowledge and 72(72%) had unsatisfactory practices regarding self-care management. Post-intervention, there was a highly significant improvement in knowledge and practice scores (p=0.001).

Conclusion: The educational intervention improved patients' knowledge, practice, and self-care management.

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Introduction

One of the most prevalent chronic diseases in the world is asthma whose epidemiology is important because of its rising prevalence and severity it affects individuals, families, economies, and health systems, with direct medical expenses (hospital stays and prescription drug prices) and indirect expenses (lost work time and premature death), add to the gravity of the matter which is marked by an increasing asthma-related death rate globally.[1]

Programmes that promote self-management and are based on set targets related to improving health outcomes, improving health resource usage, and reducing costs are among the educational interventions available to those with asthma, with the most successful educational intervention being the one that has a written action plan related to new skills and has regular reviews.[2]

Self-management is recognized as a crucial component of treating chronic illnesses. For patients to manage their conditions, healthcare providers must equip them with the knowledge and abilities to do so. This includes teaching people with severe asthma about how to track their asthma control, follow medication guidelines, avoid triggers, schedule routine doctor appointments, recognize and deal with symptoms that are getting worse, and use an asthma action plan that is up to date.[3]

Controlling bronchial asthma calls for initial and ongoing evaluations, particularly in primary care settings. It is essential to create an educational programme for bronchial asthma sufferers because it has a significant impact on their life.[4]

The current study was planned to evaluate the effect of an educational programme on patients with bronchial asthma regarding self-care management.

Patients and Methods

The quasi-experimental study was conducted at the El-Fayoum University Hospital, Egypt, from August 2021 to January 2022. After approval from the ethics review committee of Ain Shams University, Cairo, Egypt, the sample size was calculated based on the total number of patients who had been bronchial asthma patients

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admitted during 2019-20 considering alpha type 1 error with a level significance 95% and type 2 error (B) 90% using the formula:[5]

The relevant values were 'n' = sample size; 'N' = number of patients during 2019-20 at El-Fayoum University Hospital (300); and 'e' = coefficient factor (0.05).

The sample was raised using a purposive sampling technique from among bronchial asthma patients of either gender aged >20 years who had a history of an asthma attack in the preceding 6 months, were oriented and could interact with others. Physically or mentally handicapped individuals and those who had taken part in an asthma education programme in the past were excluded.

Data was collected after permission from the dean of the outpatient clinics at El-Fayoum University Hospital. Three data collection tools were used. The first was an interview questionnaire, which was adapted from earlier studies.[4,6] The first part related to socio-demographic data, like age, educational level, residence, income, smoking status, food, and asthma triggers. The second part related to patients' clinical and medical history, such as disease onset, duration of bronchial asthma, allergic substances, symptoms of asthma, and investigations.

The second tool also adapted from literature,[7,8] assessed patients' knowledge regarding asthma and self-care management. It had 52 multiple choice questions (MCQs) regarding generalized knowledge about bronchial asthma, causes, medications, devices, inhalers, investigations, nutritional guidelines, breathing exercises, home hygiene, and interventions to minimize asthma attacks and complications.

Correct answers were scored 1, and incorrect responses were scored 0. A total knowledge score of>70% indicated a satisfactory level, while <70% indicated an unsatisfactory level.

The third tool also adapted from literature,[9] was an observational checklist utilized to assess patients' practices during asthma attacks. The 85-item list addressed deep breathing and coughing exercises (15 items), usage of metered dose inhaler with a spacer (16 items), using metered dose inhaler in the mouth (16 items), using metered dose inhaler with a spacer and mask (16 items), using dry powder inhaler (9 items) and using a nebulizer (13 items).

Each item done correctly was scored 1 and that done incorrectly was scored 0. A total practice score of>70% indicated a satisfactory level, while <70% indicated an unsatisfactory level.

The validity of the tools was determined through a panel of seven experts, including 3 professors, 3 teaching staff, and 1 lecturer of medical surgical nursing from Ain Shams University, who reviewed the tools to be sure about validity for comprehension, accuracy, clarity, and relevance.

The reliability of the tools was tested using alpha Cronbach's model. The reliability for the tools was 0.81.

Four subjects participated in a pilot study to evaluate the tools' clarity, applicability, feasibility, and relevance as well as the amount of time needed to utilize them. Since no changes were made after the pilot study was completed, therefore those who had taken part in it were also included in the sample of the main study.

Data was collected after taking informed consent from all the patients. Face-to-face interviews were conducted in the waiting area of the outpatient clinics, followed by data collection through the other two tools.

Based on the collected data, the researchers developed an educational programme, including a self-care management booklet in the Arabic language which included illustrative coloured pictures and the main points about bronchial asthma definition, causes, manifestations, complications, laboratory findings, measures to minimize asthma attacks, patient's practice while deep breathing and coughing exercises while utilizing nebulizer and different types of inhalers. The booklet was handed to each participant.

The educational phase comprised 30-minute sessions twice a week for a total of 10 sessions; 4 theoretical and 6 practicals. Each session had 10 subjects. The sessions were conducted in the training unit with the permission of the responsible supervisor nurse. Teaching methods included group discussion, role-playing, demonstration and re-demonstration, and models and pictures of inhalers and nebulizers.

A post-intervention evaluation was done immediately at the end of the 10th session, and then again 3 months after the first evaluation. The collected data were statistically analyzed using the statistical package for social science (SPSS) version (20), percentage (%), the arithmetic mean, standard deviation (SD), and chi-square (X2 & P-value)was calculated for significance.

Results

Of the 100 patients with a mean age of 31.5±7.41 years, 63 (63%) patients were males, 34(34%) were in the 30-40 years age bracket, 70(70%) could read and write, 94(94%) lived in urban areas, 50(50%) were smokers (Table 1).

The mean duration of the disease was 4.12±3.25 years,

81(81%) said asthma attacks were triggered by the consumption of certain foods, with 47(47%) subjects saying they had bronchial asthma for 1-3 years (Table 2).

At pre intervention of the programe, 31(31%) patients had a satisfactory knowledge level, and the number increased to 85(85%) in post-intervention assessment (p<0.001). The number declined to 82(82%) at 3-month follow-up, but the decline was not significant (p>0.05) (Table 3).

Table-1: Socio-demographic characteristics (n=100).

	n (%)
Age (years)	
20- <30	30 (30.0)
30- <40	34 (34.0)
40- <60	20 (20.0)
60 or more	16 (16.0)
Mean±SD	31.5±7.41
Gender	
Male	63 (63.0)
Female	37.0 (37.7)
Educational level	
Illiterate	27 (27.0)
Read and write	70 (70.0)
Technical diploma	3 (3.0)
Place of residence	
Urban	94 (94.0)
Rural	6 (6.0)
Income per month from the patient's point of view	
Cover treatment costs	0 (0)
Not cover treatment costs	100 (100.0)
Smoking	
Yes	58 (58.0)
No	42 (42.0)

SD: Standard deviation.

Table-1: Medical history of the subjects (n=100).

Items	n (%)
Duration of bronchial asthma	
1-3 years	47 47.0
3-5 years	22 22.0
More than 5 years	31 31.0
Mean±SD	4.12±3.25
***Triggers of asthma**	
Foods trigger an asthma attack	81 81.0
House dust	100 100.0
Pet dander	63 63.0
Plastic	38 38.0
Pollen	68 68.0
Hair spray	45 45.0
Pesticides	65 65.0
Wood fire smoke	74 74.0
Car exhaust	73 73.0
Exposure to insects such as cockroach	38 38.0
Using perfume	71 71.0

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Table-2: *continued from previous column*

Items	n (%)
Dehydration - high humidity	3 3.0
Violent exercise	56 56.0
Exposure to cold weather	91 91.0
Emotions	37 37.0
*Symptoms of asthma attack	
Shortness of breath	100 100.0
Tightness in the chest	77 77.0
Dry cough	12 12.0
Cough with secretions	97 97.0
Rapid heart rate	38 38.0
Increased respiratory rate	59 59.0
Pale face	58 58.0
Wheezing in the chest	94 94.0
Choking	14 14.0
Investigations	
Yes	100 100.0
No	0 0.0

SD: Standard deviation. *Numbers not mutually exclusive

Table-3: Level of knowledge regarding bronchial asthma and self-care management at pre, post-intervention and follow-up stages (n=100).

Total knowledge	Pre n (%)	Post-intervention n (%)	Follow-up n (%)
Satisfactory	31 (31)	85 (85)	82 (82)
Unsatisfactory	69 (69)	15 (15)	18 (18)
Chi- X^2		59.852	0.327
p-value		P1= <0.001*	P2= 0.568

Statistically significant: p<0.001** *Significant difference: P <0.05
P1=pre& post P2=post &follow

Table-4: Total practice level regarding bronchial asthma and self-care management at pre, post-intervention and follow-up stages (n=100).

Total knowledge	Pre n (%)	Post-intervention n (%)	Follow-up n (%)
Satisfactory	28 (28)	86 (86)	84 (84)s
Unsatisfactory	72 (72)	14 (14)	16 (16)
Chi-square X^2		86.625	0.327
p-value		P1= <0.001*	P2= 0.568

Statistically significant: p<0.001** *Significant difference: P <0.05
P1=pre& post P2=post &follow

Table-5: Correlation between patients' total knowledge score and total practice score regarding bronchial asthma and self-care management at baseline, post-intervention and follow-up stages (n=100).

Total practice	Total Knowledge	
	r-value	*p-value*
Pre	0.372	<0.001*
Post-intervention	0.425	<0.001*
Follow-up	0.205	0.015*

At pre intervention of the programe, 28(28%) subjects had satisfactory practices regarding self-care management. Post-intervention, the number increased to 86(86%) ($p<0.001$). The number declined to 84(82%) at a 3-month follow-up, but the decline was not significant ($p>0.05$) (Table 4).

The correlation of the total knowledge score with the total practice score was highly significant at pre, post-intervention, and follow-up stages (Table 5).

Discussion

The current study had more than one-third of the participants aged 30-40 years and more than two-thirds of them were males. Eissa et al. reported that three-quarters of their sample was aged 18-35 years.[10] In contrast, Ibrahim et al. reported that more than half of those surveyed were aged 40-60 years.[11]

In the current study, more than two-thirds of patients could read and write, which is in agreement with Elbur et al. who had more than half of their asthmatic participants with a college education.[12]

In the current study, the subjects were primarily from urban areas. Ahmed et al. suggested that compared to rural areas, urban residents had a higher notification rate.[13] This is in contrast with Abo El-Fadl et al. who mentioned that most of the participants were from rural areas.[6]

None of the subjects in the current study had sufficient income which is in line with an earlier study.[14]

More than half of the sample in the current study were cigarette smokers, while another study reported that about one-fifth of the participants had stopped smoking.[15]

This could be secondary to the high responsiveness of the bronchi to histamine, which is elevated immediately after eating.[6]

Concerning the disease duration, the present study had more than one-third of participants who were asthmatic for 1-3 years. This may be secondary to chronic diseases. Another study reported that the illness duration was 3 years.[16]

The participants in the current study reported that the most popular triggers for the asthmatic attack were some foods, house dust, and exposure to cold. This is in line with Dharmage, et al.[17]

All the patients in the current study had unsatisfactory total knowledge at pre intervention of the programme. This could be due to the shortage of awareness programmes and data sources concerning asthma. After the implementation of the programme, patients' knowledge demonstrated significant improvement, which continued during the follow-up phase with no remarkable decrease in the knowledge level.

The finding is in agreement with Emily et al,[18] but not with Gare et al. who reported that knowledge about asthma was poor among their patients and misconceptions were prevalent.[16]

As regards patients' practices related to asthma, the current study showed that most participants had an unsatisfactory level at pre intervention of the programe, but had a satisfactory level of self-care management post-intervention and during follow-up. This was in line with an earlier study.[19]

The current study found that there was a significant variance correlation between knowledge and practice at pre intervention of the programme, post-intervention, and during follow-up stages. This may be secondary to improper usage the inhalers and nebulizers. The finding is supported by Nguyen et al.[20]

It is recommended that a similar study with a large sample at multiple centers should be conducted to validate the current findings. Future studies should also examine patients' knowledge, and practices before and after the implementation of an educational program concerning asthma self-care management.

Conclusion

The educational programme improved patients' knowledge, practice, and self-care management regarding bronchial asthma.

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