

A Management Program for University Students with Allergic Rhinitis

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Abstract

The purpose of this study was to develop a program for university health centers to help them cope with the rapidly increasing occurrence of allergic rhinitis. In order to develop the allergic rhinitis managing program, in-depth literature review, conducted surveys and physical check-ups and consulted with relevant professionals were done during the period from May, 2012 to April, 2013. Self-efficacy theory and self-regulation theory were utilized for the theoretical framework which resulted in a 6-session program that consisted of 6 weekly sessions being established. This program was created based on information gathered from various different sources and utilized the feed-back principle to focus on enhancing self-management abilities. The education program was established with regard to the sources of self-efficacy, that is, role performance, vicarious experience, verbal persuasion and Physiologic states. Making a pledge and taking quizzes were also used for self-regulation purposes. Proactive use of this program in the field is recommended.

Keywords: allergic rhinitis, program, students

1. Introduction

1.1. The Necessity of this Study

As the influence of the environment over general living conditions becomes greater, the importance of a healthy environment has become an important social issue in the 21st century [1]. The rapid increase of environment-related diseases implies that the number of people whose health is affected by polluted environments is increasing and there is a growing need to mediate environment-related health issues. Allergies are linked to the environment and the occurrence of allergies continues to increase around the world: 20% of the world's population suffers from some form of allergy [2].

Among allergic diseases, allergic rhinitis occurs most frequently. The purpose of this research is to develop an intervention program to manage allergic rhinitis among university students, because young adults suffer from allergic rhinitis the most, and their health status is important to society. The program will promote health and enhance productivity at the individual level, increase school-life satisfaction and academic engagement at the school level, and enhance national productivity through the effective use of medical budgets.

As allergic diseases gain more attention, research on the subject has increased as well. The existing research literature on allergies focuses more on allergy outbreak rates and relevant factors [3] and less on allergy management methods. Previous research on allergy management methods focused mainly on hospitalized patients who suffered severe allergies [4]. On the other hand, research on non-hospitalized allergy patients and the development of programs for allergy prevention or management has been lacking. Allergic diseases are more likely to spread in physical environments that are shared. Therefore, targeting communal spaces such as schools and work places would maximize

the use of existing data and resources. In particular, university health centers could play a crucial role in this initiative as university students spend a lot of time on campuses and university health centers are easily accessed [5].

Therefore, there is a need to develop a program for university health centers focused on prevention and management of allergic rhinitis. This will contribute to the effective management of chronic allergic rhinitis and would likely improve productivity.

1.2. Purposes of Study

This research aims to develop a program for university health centers to help them cope with the rapidly increasing occurrence of allergic rhinitis. The detailed objectives are:

- Analyze current data and programs related to allergic rhinitis.
- Inspect and evaluate the level of allergic rhinitis symptoms, quality of life, management methods and requirements.
- Analyze nurses' role within university health centers, check whether health enhancement programs are functional and evaluate their methods.
- Analyze existing data and create an allergic rhinitis management program with the help of professional consultants.

2. Methods

2.1. Research Design

This is a methodological research paper. Literature review, surveys, physical check-ups, and consultations with professionals were used as the basis to develop an allergic rhinitis managing program.

2.2. Research process

This study was conducted during 1 year (May, 2012 to April, 2013) through stages 1 to 4 in the following manner.

2.2.1. Stage 1: Analyze existing data on university students' allergic rhinitis and relevant programs

Literature review. Data from Web Sites related to existing research literature and government information as well as the National Library of Korea, National Assembly Library of Korea, Research Information Service System (RISS), Pub-med, CINAHL, Scopus were utilized to gather relevant data for the program.

Results. Recently large numbers of web-based programs promoting health have come into existence. In particular, the younger generation is familiar with web-based programs. Accordingly, it is appropriate for the program to be based on the web and at the same time a program that includes both on-line and off-line components should be established. The theoretical framework for existing health-promoting programs is based on self-efficacy theory [6] and self-regulation theory [7] which aim to promote behavioral changes. Self-efficacy refers to self-confidence in the ability to perform the targeted behavior [7]. The sources of self-efficacy are role performance, vicarious experience, verbal persuasion and physiologic states (emotional arousal) according to self-efficacy theory. The concept of self-regulation plays an important role in continuation of behavior changes for the purpose of health promotion by helping individuals to be in control of their behavior [8].

2.2.2. Stage 2: Assess severity of university students' allergic rhinitis, quality of life [QOL], management methods and requirements

Subjects. Students who were willing to participate in the research were provided with a description of the purpose and method of this study, before signing a consent agreement to participate in the research. 131 students participated.

Methods. Research on types of allergic rhinitis symptoms, factors that exacerbate and ameliorate allergic rhinitis symptoms, QOL, prevention and management related requirements was conducted in tandem with an antigen examination. The antigen examination utilized 8 different antigens that are commonly known to cause allergic rhinitis. A saline solution and histamine were used to compare and contrast.

Analysis. The collected data were analyzed using the SAS 9.3 version to determine frequency, percentage and mean and order for symptom types, allergen type and QOL among university students with allergic rhinitis.

Results. Symptoms were reported in the following order: nasal obstruction, rhinorrhea, sneezing, and nasal itching respectively. The mean score of QOL of the participants was 2.24 (5 point). Nasal symptoms had the highest score and affected QOL badly in the item analysis. The mostly widely occurring antigen is D. Farinae (Positive rate 53.4%) and D. Pteronyssinus (48.1%) is also prevalent. The seasons in which allergic symptoms most commonly occurred were spring and fall. QOL differed according to nasal obstruction and rhinorrhea and dust ticks and the season [9].

Conclusions. A program initiated in the spring and fall that includes management methods for nasal symptoms such as nasal obstruction and rhinorrhea and preventing or managing house dust mites could increase the allergic rhinitis related QOL of university students. Developing a program for university students that focuses on allergic rhinitis has significance for our society because the incidence of allergic rhinitis among this group has increased and the health status of people in their twenties is important for the economic productivity of our society. Further study to develop a management program for university students with allergic rhinitis and to test its effects is recommended.

2.2.3. Stage 3: The role of nurses at university health centers and the availability of health-promoting programs and methods

Purpose. To analyze the work tasks carried out by nurses who work in college health centers in order to contribute to reference data that might be useful for developing health promotion programs for college students.

Subjects. 86 members of the Korean Association of University Health Center Nurses participated in this survey.

Data collection. In November, 2012 an e-mail with a survey attached to it was sent to nurses registered in Korean Association of University Health Center Nurses. The survey notified the participants of their rights and the availability of research results if they should so request them. Small tokens of appreciation were given to the survey participants. Phone calls to non-participants were made in order to check whether they received the e-mail survey.

Data analysis. SAS was used to analyze the general and job related characteristics of the subjects in terms of frequencies, percentiles, averages and standard deviation.

Results. Spring was the busiest season for university health centers with March (33.35%), April (20.2%), May (22.6%) being the busiest months during a year. The work of university health centers included the following: disinfection and treatment of wounds, emergency treatments, providing first-aid material during school-wide events. Among survey participating university health center nurses, 73.8% replied that the university health center had a positive impact on the health of university members. 77.4% of the universities had health promotion programs. The most frequent health promotion program was the program to help students quit smoking. Individual education was the chief method for instruction [10].

2.2.4. Stage 4: Create management program for allergic rhinitis by analyzing existing data and needs of the subjects and evaluate web site

Developing a program. The management program was developed based on an analysis of the needs of the subjects from the survey as well as an analysis of existing data. Also, advice from relevant professionals, which included 3 nursing professors, 2 doctors, and 5 nurses, was sought to check the content validity of the program. Finally, the end result was a 6-week program with weekly sessions. Educational guidelines and brochures were created for students that wanted off-line counseling.

Evaluation. Experts included 2 nursing professors, 2 doctors, and 2 nurses evaluated the developed program using web evaluation tool developed by Chung & Park [11]. The web evaluation tool constructed 8 sub-categories such as clearances, appropriateness, accuracy, reliability, easiness, authority, currency, update and included 27 items. The tool developed a 5 point scale and the higher the score, the better the web site was deemed. The result from the professional evaluation indicated the scores were high with regard to the authority, currency, and appropriateness categories.

2.3. Instruments

2.3.1. Allergic rhinitis symptom checklist: Allergic rhinitis symptom checklist was devised from the allergy symptom tool of International Study of Asthma and Allergies in Childhood (ISAAC) [12]. This 10 items checklist included a 10 point scale and the higher the score, the greater the allergic rhinitis symptoms. The classification is as follows: lower than 4 points indicates mild symptoms, 4 points to 7 points indicates moderate symptoms and above 7 points indicates severe symptoms.

2.3.2. Quality of life: QOL was evaluated using the 5 point Likert-type scale for perennial allergic rhinitis patients developed by Park *et al.*, [13]. This scale included a total of 28 items. The scale included 7 subcategories such as 'practical problems in daily life', 'sleep disturbances', 'nasal symptoms', 'general symptoms', 'limitations on activities', 'emotional problems', 'ocular symptoms', and each subcategory contained 3-6 items. The higher the score, the lower the allergic rhinitis related QOL among patients with allergic rhinitis was.

2.3.3. Skin Prick Test: This test is a kind of allergy skin test to detect allergens in patients reporting allergic symptoms. The allergen solution is dripped onto the inside of the lower arm and then gently pricked on to the skin surface with a lancet. 8 allergen solutions (D. Farinae, D. pteronyssinus, Cat hair, Dog hair, Cockroach, Ragweed, Mugwort, Dirch-Alder Mix: produced by Lofarma company in Italy) were used, and normal saline and a histamine were used as a control in this test. The response was evaluated by examining the prick site for wheal and erythema after 15 minutes [14].

2.3.4. Allergic Rhinitis Knowledge: Through the in-depth literature review, a 15 items allergic rhinitis scale was established and then it was reviewed by 10 experts (3 nursing professors, 2 doctors, and 5 nurses) for calculating the content validity. Of the total 15 items, 10 items which had a higher content validity index (above 0.7) were selected; finally, the content validity index of 10 items with regard to the allergic rhinitis knowledge scale was 0.79. It was tested on 5 college students to evaluate the accuracy of terms or meanings. This scale included 4 sub-categories such as the mechanisms of allergic rhinitis (2 items), symptoms (3 items), medication (2 items), general management (3 items) and the higher the score, the greater the knowledge about allergic rhinitis.

2.4. Ethical Considerations

This study was approved by the Institutional Review Board of a university. All the subjects participated in this study voluntarily after hearing an explanation about the purposes and the processes of the study. The subjects were informed that they had the right to refuse to participate, that they could stop participating at anytime during the study, and that their confidentiality would be respected. The subjects then signed an agreement consenting to participate in the study. And then the study proceeded on the basis of the consent given and with the dignity of the participants respected at all times.

3. Results

Based on an analysis of existing programs and the survey used in this study, a theoretical framework was proposed by nursing professors, treatments and management methods for allergic rhinitis were suggested by allergy specialist doctors, and computer professionals were consulted to develop web components of the management program. These efforts resulted in a web site (<http://health.hoseo.ac.kr/CmsHome/Allergy.eznic>) and educational guidelines for instructors and brochures for offline sessions. Self-efficacy theory and self-regulation theory were utilized for the theoretical framework which resulted in a 6-session program that consisted of 6 weekly sessions being established. The objective of the program was to 1) alleviate allergic rhinitis symptoms, 2) enhance the quality of life of those suffering from allergic rhinitis, and 3) increase academic efficiency and engagement. The web site included 4 segments, that is, allergic symptom checklist, allergic rhinitis video, allergic rhinitis educational program and dance exercise video. Educational guidelines for instructors and brochures for offline sessions were made. The educational program was established with regard to the sources of self-efficacy, that is, role performance, vicarious experience, verbal persuasion and stress management. Making a pledge and taking quizzes were also used for self-regulation.

3.1. Web Site

The web site contains an allergic symptom checklist, allergic rhinitis video, allergic rhinitis educational program and dance exercise video. Students could log onto the web site and check the severity of their symptoms with regard to allergic rhinitis. Also, they could learn about what allergic rhinitis is via the allergic rhinitis video. When students decide to join the education program, they are able to receive education and information during a 6 session educational program.

3.3.1. Allergic Rhinitis Education Program: This is a 6-session program that consisted of 6 weekly sessions. The education program was established with regard to the sources of self-efficacy, that is, role performance, vicarious experience, verbal persuasion and stress management. Especially, self-regulation of symptoms was focused on and quizzes were suggested in the last part of the every session.

1st session: Self-identification of current status. This session included an introduction to the program process and a detailed explanation about allergic diseases. Students can

identify allergic rhinitis symptoms that they have experienced through a checklist. In this session, students could self-check their allergic rhinitis symptoms and understand the features of allergic rhinitis. The allergic rhinitis video can help increase understanding about allergic diseases and the dance exercise video can be used to decrease stress.

2nd session: Understanding allergic rhinitis. In this session, students learn about the causes of allergic rhinitis and typical symptoms and compare these with symptoms associated with nose colds. A quiz is provided. Feedback can be given and counseling is provided if they want and the dance exercise video can be used to decrease stress.

3rd session: Diagnosing allergic rhinitis and treatment. In this session, students learn about diagnostic methods for allergic rhinitis and learn about various different treatment methods for allergic rhinitis. Treatment methods included medication, immune therapy and environmental awareness in order to focus on alleviating symptoms. A quiz and counseling are also provided and the dance exercise video can be used to decrease stress.

4th session: Symptom management of allergic rhinitis. Students could learn about the importance of symptom management with regard to allergic rhinitis. Also, they learn about and practice various management methods. A quiz and counseling are also provided and the dance exercise video can be used to decrease stress.

5th session: Allergic rhinitis and daily life. Students learn about methods to prevent allergic rhinitis in daily life and practice them. Feedback through quizzes and counseling are provided and the dance exercise video can be used to decrease stress. If they want, correspondence through e-mail is welcomed.

6th session: Discover how to change behavior and maintain resolve. In this session, changes measured since the 1st session is evaluated and students learn how to maintain their resolve with regarding to changes implemented. Feedback through A quiz and counseling are provided and the dance exercise video can be used to decrease stress. The details are described in table 1.

3.2. Educational guidelines and brochures

Educational guidelines for instructors and brochures for offline sessions were made. The guidelines outline the session goals and there is an introduction guide to every session. Brochures include definitions, types of symptoms, causes, irritation factors, treatments and symptom management methods with regard to allergic rhinitis.

4. Discussion

Although web based programs about diabetes, hypertension, heart disease, diet and exercise have been established, there is no web based allergic rhinitis program in Korea. Construction and testing of more rigorous theory based interventions is needed [7]. This study tried to establish a web based and theory based intervention program. Self-efficacy and self-regulation theory were used in this program. So, self-efficacy and self-regulation ability should be evaluated to verify this allergic rhinitis program. If self-efficacy and self-regulation are improved, quality of life also can be improved through effective management of allergic symptoms. Ultimately, further research is needed to evaluate the quality of life of the participants who participated in this program.

5. Conclusions

After consulting with relevant professionals, this management program for allergic rhinitis was developed by analyzing existing data and programs, by evaluating preventive measures for allergic rhinitis, by assessing management methods, and by appraising relevant requirements. This was combined with an analysis of existing university health centers' health promotion programs and resources. All of these measures and efforts made the development of the program possible. This program was created based on information gathered from various different sources and utilized the feed-back principle to focus on enhancing self-management abilities. Proactive use of this program in the field is recommended as it is anticipated that the objectives will be achieved with minimal effort.

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Table 1. Contents and Theoretical Underpinning of the Program

Sessi on	Contents	Method	Theoretical Support
1st	1. Self Identification of Current Status	Status check	
	-Discuss allergic rhinitis symptoms that one has experienced.	Understanding and Exchange	Vicarious Experience
	-Learn about the three major allergic diseases, the reason they are increasing, and how the management of symptoms is important.	Learning	Verbal Persuasion
	-Self diagnose severity of one's symptoms through checklist.	Self-Disclosure	Success Experience
	-Make pledge to improve one's condition.	Resolve	Self- Regulation
	-Physical Exercise		Stress Management
2nd	2. Understanding Allergic Rhinitis		
	-Learn about causes of allergic rhinitis and typical symptoms and compare them with nose colds.	Learning	Recognition
	-Quiz	Feedback	Self- Regulation/ Verbal Persuasion
	-Counseling	Understanding	Stress Management
	-Physical Exercise		
3rd	3. Diagnosing Allergic Rhinitis and Treatment		
	-Learn about diagnostic methods for allergic rhinitis.	Learning	
	-Learn various different treatment methods for allergic rhinitis.	Learning	Recognition
	-Quiz	Feedback	
	-Counseling	Understanding	Self- Regulation
	-Physical Exercise		Stress Management
4th	4. Symptom Management of Allergic Rhinitis		
	-Learn about the importance of symptom management with regard to allergic rhinitis.	Learning	Vicarious Experience
	-Learn about and practice various management methods.	Learning	Role performance
	-Quiz	Feedback	
	-Counseling	Understanding/ Demonstrating	Self- Regulation/ Verbal Persuasion
	-Physical Exercise		Stress Management
5th	5. Allergic Rhinitis and Daily Life		
	-Learn about methods to prevent allergic rhinitis in daily life and practice them.	Learning	Vicarious Experience
	-Quiz	Feedback	
	-Counseling	Understanding/ Demonstrating	Self- Regulation/ Verbal Persuasion
	-Physical Exercise		Stress Management
6th	6. Discover how to Change Behavior and Maintain Resolve		
	-Evaluate changes implemented since 1st session and become determined to maintain resolve.	Strengthening resolve	
	-Quiz	Feedback	Self- Regulation/ Verbal Persuasion
	-Counseling	Verbal Persuasion	
	-Physical Exercise		Stress Management

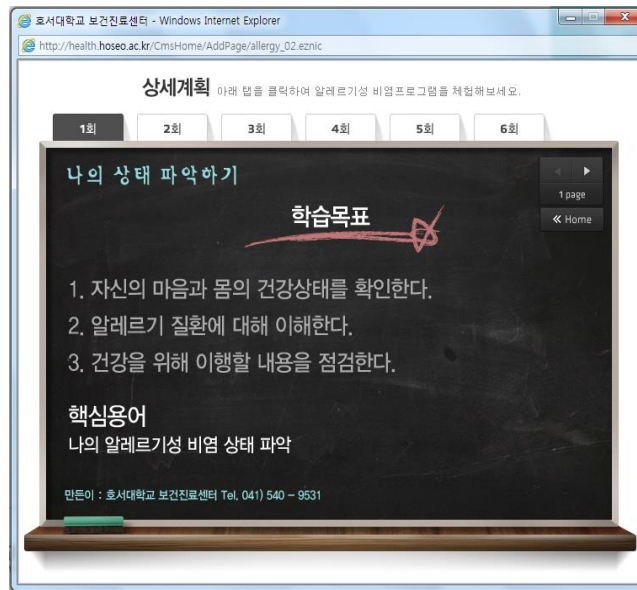


Figure 3. Allergic Rhinitis Educational Program



Figure 4. Dance Exercise for Stress Relief

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