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Does allergic rhinitis affect communication skills in young adults?

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Abstract Allergic rhinitis (AR) is a chronic disorder with a high prevalence in the general population. The symptoms of AR can impair the cognitive capabilities of the affected people. The study of communication skills and AR interaction has not been adequately discussed. We aimed to analyze Social Communication Skills of university students with AR. Fifty patients suffering from AR and 50 healthy subjects were studied. All participants completed two questionnaires [Social Communication Skills Rating Scale (SCSRS) and Communication Questionnaire] for the assessment of social communication skills. Total scores of both SCSRS and Communication Questionnaire were higher in participants with AR than controls. When the questions of SCSRS were compared between the groups one by one, significant difference was observed between the groups for questions numbered 1–9 and 11, 12 ($p < 0.05$). Also, significant differences were observed between the groups for questions numbered 4, 5, 6, 7 and 8 of Communication Questionnaire ($p < 0.05$). Results of our study indicate that AR could negatively affect the social communication skills of the patients with AR. More research is however needed to validate this hypothesis.

Keywords Allergic Rhinitis · Communication Skills · Social Communication Skills Rating Scale (SCSRS) · Communication Questionnaire

Introduction

Allergic rhinitis (AR) is a common inflammatory condition of the upper respiratory tract, nasal cavity and eyes. It is characterized by both nasal and ocular symptoms including rhinorrhea, sneezing, itchy/blocked nose, sinus pressure, itchy/red eyes, snoring and other sleep problems [1]. Patients with AR are impaired in physical and mental functioning including vitality and the perception of general health [2]. Allergic rhinitis may have an important impact on occupation and worker productivity. Patients are bothered by fatigue, poor performance and concentration at work, headaches and malaise. For example, conjunctivitis may impair vision and vision-related activities. Not only disease but also medication may influence work productivity. Patients taking sedating antihistamines are more likely to sustain occupational injuries [3].

Rhinitis significantly impairs quality of life (QoL) when general or disease specific questionnaires are used. The decrease in QoL seen in perennial rhinitis is comparable to that observed in patients with moderate to severe asthma and can affect sleep, work, education and social life. QoL

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measurements need to be taken into consideration in clinical trials and when treating patients [3]. The bothersome nature of AR symptoms can severely affect daily activities including ability to work, examination performance, impact on QoL and psychosocial well-being [4–8]. Allergic rhinitis is also a social problem that negatively affects the patients' QoL, performance and productivity and thus, it is accepted as a major chronic respiratory disease with economic burdens [3].

Communication is the exchange of information, feedback or response, ideas and feelings [9]. Communication is part of our every day life. The process of communication involves both verbal and non-verbal communication forms. The interplay between verbal and non-verbal communication has a huge impact on the quality of communication and is highly influential in developing positive relationships between people [10]. Studies have been carried out to examine the association between personality traits and allergic rhinitis, especially amongst women. This has revealed an increased preponderance of allergic rhinitis of the moderate to severe type in those with psychological traits that include neuroticism, depression, social anxiety and shyness [11].

The aim of our study was to investigate the social communication skills of patients with AR. To date, the impacts of AR on patient social communication skills have not been adequately discussed in literature.

Materials and methods

This prospective study was conducted in Eskişehir Osmangazi University between 2012 and 2013 in accordance with Helsinki Declaration of the World Medical Association, and was approved by local ethics committee.

Subjects

Fifty university students with AR between the age of 18 and 24 years and 50 normal healthy subjects without AR as control between the age of 18 and 24 years were enrolled to the study. All participants who enrolled in this study were single.

Participants with AR were asked if they had AR-related symptoms such as nasal discharge, nasal itching, sneeze and nasal obstruction. A detailed ear, nose and throat (ENT) examination performed. The diagnosis of AR is based on the symptoms and clinically findings initially. Then, skin prick test showed positive result for house dust mite allergic rhinitis which confirms AR diagnosis. According to the skin prick test results, there was monosensitization on house dust mites in AR group. Their symptoms continued during all year (perennial AR). They did not take any medications such as antihistamines, cortisone, etc. during testing.

The control group was chosen from the healthy subjects with negative skin prick test results. They had no AR-related symptoms and the normal ENT examination findings.

Patients with nasal polyps, nasal septal deviation, nasopharyngeal pathologies, asthma and acute respiratory infections were excluded. Besides, we excluded any cases suffered from any other illness which could affect the communication skills (e.g. neurological diseases, diagnosed psychiatric disorders etc). Informed consents were obtained from all patients.

Social Communication Skills Rating Scale (Adult Form-Public Interaction Skills) (SCSRS)

SCSRS was used for rating the social communication skills of all participants. It is comprised of 15 items, each evaluated on a three point scale (1 = 'Rarely' uses abilities, 2 = 'Sometimes' uses abilities, 3 = 'Almost always' uses abilities) (see "Appendix 1").

Communication Questionnaire

In addition, another form (Communication Questionnaire) was completed from by all participants (see "Appendix 2"). This form is a self-assessment questionnaire consisting of 8 questions, for which responses are marked as 'Never', 'Rarely', 'Frequently' or 'Always' (see "Appendix 2").

Communication questionnaire is generally used test. We only modified 2nd and 3rd questions (School and income) according to the Turkish population. Therefore we used this test which was given in "Appendix 2".

Statistical analysis

Data statistical analysis was performed using SPSS version 15.0. Differences between AR patients and control group were evaluated by Chi square test.

p values <0.05 were considered as statistically significant.

Results

There was no significant difference between the groups for age, gender, education and level of income ($p > 0.05$).

The results of both SCSRS and Communication Questionnaire in terms of total scores are shown in Table 1. Participants with AR exhibited statistically significant score in both SCSRS and Communication Questionnaire. For Communication Questionnaire, total score was

13.16 ± 3.04 in controls versus 17.16 ± 2.88 in AR patients ($p = 0.000$) and for SCSRS-10, total score was 36.22 ± 7.00 in controls versus 29.58 ± 5.94 in AR patients ($p = 0.000$).

We presented Communication Questionnaire results in Table 2 and Fig. 1; and Social Communication Skills Rating Scale (SCSRS) results in Table 3 and Fig. 2. When the questions of SCSRS were compared between the groups one by one, significant difference was observed between the groups for questions numbered 1–9 and 11, 12; but not for other questions (numbered 10, 13–15). On the other hand, significant differences were observed between the groups for questions of Communication Questionnaire (except first 3 questions) (Tables 2, 3).

Our results showed that total scores of both SCSRS and Communication Questionnaire were higher in participants with AR than controls. These results indicated that AR could negatively affect the social communication skills of the patients.

Table 1 Total scores of both Communication Questionnaire and SCSRS

Group	*n*	Mean	Standard deviation
Communication Questionnaire			
Control	50	13.16	3.04
Allergic Rhinitis	50	17.16	2.88
p value	0.000		
SCSRS			
Control	50	36.22	7.00
Allergic Rhinitis	50	29.58	5.94
p value	0.000		

Total scores of both Communication Questionnaire and SCSRS are higher in allergic rhinitis patients than controls, and the differences between allergic rhinitis patients and controls are statistically significant ($p < 0.05$)

Discussion

Allergic rhinitis is a chronic inflammation disorder of the nasal mucosa with a high prevalence in the general population. It causes symptoms such as sneezing attacks, itchy eyes, nose and palate, rhinorrhea and nasal congestions. It can be accompanied by postnasal drip, coughing, restlessness and fatigue [12]. It impairs the cognitive capabilities of the affected people. Prevalence has increased in the last decades partly due to greater environmental exposure, life style changes (longer permanence in enclosed spaces, and socioeconomic factors [13]. If nasal symptoms are not well controlled in patients with allergic rhinitis, they may contribute to learning problems during school hours either by direct interference or by nocturnal sleep loss resulting in daytime fatigue [14, 15]. Seasonal allergic rhinitis may be associated with a reduced ability to learn [3]. In this study, we observed that AR could negatively affect the social communication skills of the subjects. To the best of our knowledge, this is the first study in the literature that analyzing the effect of AR on social communication skills.

Communication is the cohesive force in every human culture and a dominant influence in the personal life of everyone. Through the communication process, people exchange information, thoughts, ideas and emotions [10]. With the introduction of a questionnaire designed to measure rhinitis associated impairments of QoL, it becomes clear that patients may be bothered by sleep disorders, emotional problems, impairment in activities and social functioning [16]. QoL is a concept including a large set of physical and psychological characteristics assessing problems in the social context of lifestyle [3]. Elkholy et al. [17] found that patient with AR suffers from significantly lower QoL if compared with control. It has been reported that allergic rhinitis is associated with impairment in how patients function in day-to-day life at home, at work and in school [18, 19]. Using a generic questionnaire (Medical

Table 2 Communication Questionnaire results

Question number	Control group ($n = 50$)		AR patients ($n = 50$)		*p*
	Mean	Standard deviation	Mean	Standard deviation	
1	1.36	0.50	1.36	0.48	1.000
2	1.84	1.00	1.84	0.95	1.000
3	3.42	1.50	3.36	1.62	0.200
4	1.14	0.40	2.22	0.84	0.000
5	1.48	0.50	2.00	0.83	0.000
6	1.50	0.50	2.26	0.87	0.000
7	1.08	0.30	2.22	0.84	0.000
8	1.34	0.50	1.90	1.28	0.000

Total scores of 4th, 5th, 6th, 7th and 8th questions are higher in allergic rhinitis patients than controls, and the differences between allergic rhinitis patients and controls are statistically significant ($p < 0.05$)

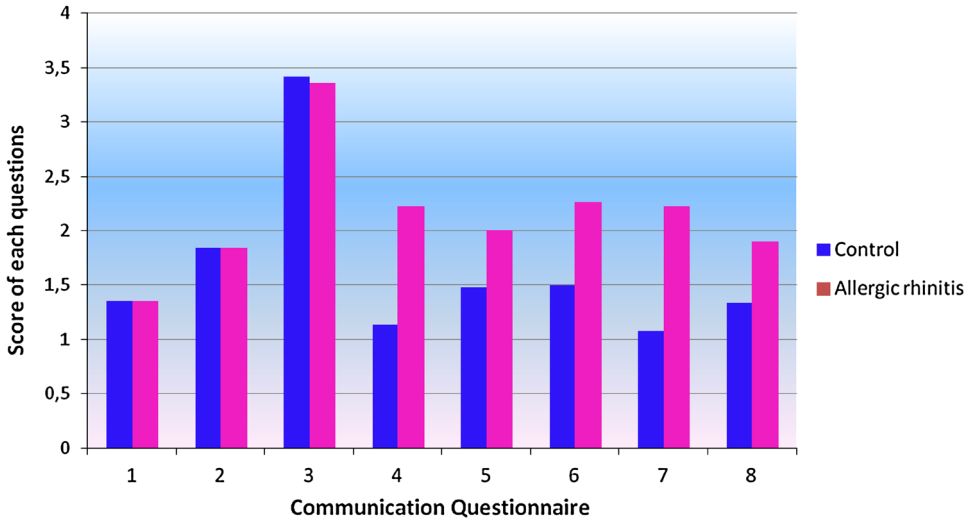

Fig. 1 Communication Questionnaire results

Table 3 One by one comparisons of total scores of each questions in the SCSRS

Question number	Control group ($n = 50$)		AR patients ($n = 50$)		p
	Mean	Standard deviation	Mean	Standard deviation	
1	2.50	0.80	1.76	0.82	0.000
2	2.32	0.70	1.70	0.70	0.000
3	2.30	0.70	1.56	0.64	0.000
4	2.16	0.80	1.72	0.72	0.017
5	2.32	0.70	1.92	0.92	0.000
6	2.10	0.70	1.62	0.75	0.000
7	2.48	0.80	1.60	0.92	0.000
8	2.22	0.70	1.62	0.66	0.000
9	2.20	0.80	1.66	0.84	0.000
10	2.76	0.40	2.70	0.46	0.499
11	2.56	0.50	2.08	0.27	0.000
12	2.78	0.60	2.48	0.73	0.017
13	2.32	0.60	2.10	0.61	0.196
14	2.26	0.50	2.22	0.46	0.901
15	2.94	0.30	2.84	0.42	0.146

In SCSRS, total scores of 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 11th and 12th questions are higher in allergic rhinitis patients than controls, and the differences between allergic rhinitis patients and controls are statistically significant ($p < 0.05$)

Outcomes Survey Short Form 36: SF-36), QoL was found to be significantly impaired in patients with moderate to severe perennial allergic rhinitis when compared to normal subjects [2, 20]. Studies in psychosomatic medicine have linked type I or immunoglobulin E mediated allergic disorders with psychological disturbances, in particular, negative affective states. These include neuroticism, depression, social anxiety and shyness [11]. Psychological factors or stress may trigger several of the allergic symptoms [21]. Furthermore, patients with allergic rhinitis, regardless of the type of rhinitis, may develop a group of psychological complaints related to symptom severity [22].

Allergic rhinitis is defined by a symptom complex that includes sneezing, itchy nose, rhinorrhea, nasal obstruction and crusting and ocular symptoms [23]. Allergic rhinitis symptoms significantly impact sleep and reduce cognitive and emotional functioning affecting work and school productivity [24]. Behaviorally, AR symptoms result in significant sleep impairment with accompanying fatigue, cognitive impairment and social impairment as well as productivity losses in school and work, and significant societal costs [25–27]. Very little is known about the impact of allergic rhinitis on the career of patients. It is imaginable that patients will not change or lose jobs except in the case of occupational allergy [3]. Recent studies described the negative impacts of AR upon learning, cognitive skills, memory and psychosocial relations. Behaviour disorders such as restlessness, irritability, attention

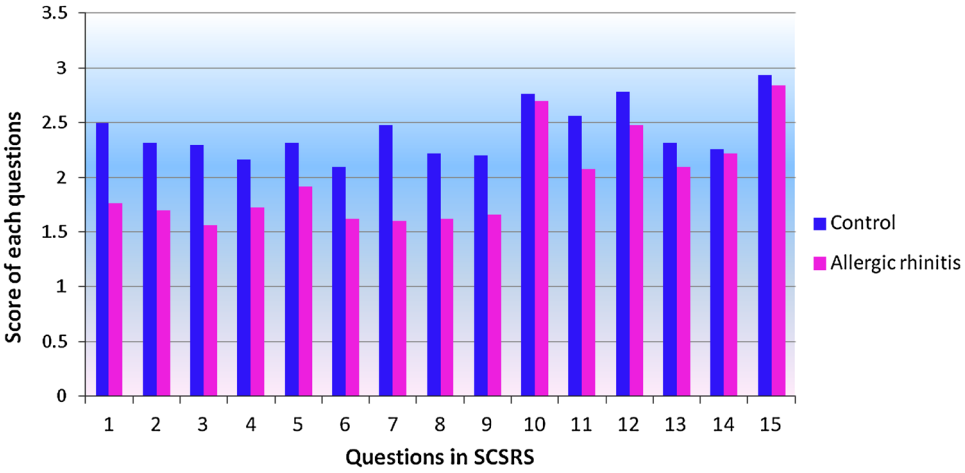

Fig. 2 Social Communication Skills Rating Scale (SCSRS) results

deficit and diurnal sleepiness have also been reported in the literature. These symptoms may impair the child's ability focus and thus negatively affect performance at school [15]. Bousquet et al. [28] reported that patients with the most severe congestion symptoms have the greatest amount of missed work time and activity impairment. It has been shown that relaxing experiences such as listening to classical music, or pleasurable experiences such as kissing or laughing, can modify the behaviour of the immune cells in allergic patients [29, 30].

Allergic rhinitis is associated with substantial morbidity and QoL impairment. The classic symptoms of AR (nasal obstruction, rhinorrhea, sneeze and itchy nose/eye) can seriously impair emotional well-being, performance of daily activities, sleep quality, cognition and productivity at work and school.

Conclusion

Allergic rhinitis is related to decrease in communication skills of the patients. The reason may be its negative effects on psychological status of the subjects. More attention should be paid to evaluate the psychological status of AR patients, and appropriate treatment should be provided to improve their symptoms and social communication skills. Further studies with larger populations and longer duration are needed to determine effect of AR on social communication skills.

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Conflict of interest The authors declare that there is no conflict of interest.

Appendix 1: Social Communication Skills Rating Scale (Adult Form-Public Interaction Skills (SCSRS)

SCSRS was used for rating the social communication skills. The adult form scale was used: (1) shows Rarely uses abilities, (2) shows Sometimes uses abilities, (3) shows Almost always uses abilities.

There are 15 items of SCSRS:

1. Eye contact (EC): looks at others while talking and listening.
2. Volume (V): speaks by compatible sound volume to the situation.
3. Voice (Voi): avoids to use unsuitable voice tones (Boasting, whining, like a boss, sarcastic, etc).
4. Facial expression (EF): avoids the use of unsuitable facial expressions (Rude, grumpy, stuck-up view, etc).
5. Posture (P): uses appropriate standing and sitting postures on the situation.
6. Inter-Personal distance (PD): uses appropriate distance with others at standing or sitting.
7. Hygiene (H): keeps body and clothes clean in good order.
8. Body language (BL): uses appropriate body language on the situation.
9. Attitude (A): uses Appropriate manners on the situation (Says "Please", "Thank you", "I'm sorry", "Excuse me").
10. Listening principles (LP): during listening, body language reflects "I'm listening to you" and "I think about the things said".

11. Stop/Change Topics (SCT): continues to conversation or change the conversation subjects smoothly.
12. Speeches (S): starts speech with salute, waits for order and listens during speech, and finishes with goodbye.
13. Interrupt/Cutting (IC): interrupts appropriately when needed.
14. The right time and place (RTP): thinks appropriate time and place for the things he will do and say.
15. Official or Natural Formation (ONF): knows why and how a more formal (be fitting and respectful) or natural (relax and natural) behave.

Appendix 2: Communication Questionnaire

1. What is your gender?

( ) 1. Female ( ) 2. Male

2. Which kind of high school did you graduate?

( ) **1-**Normal high school ( ) **2-**Anatolian high school ( ) **3-**Private College

( ) **4-**Science high school ( ) **5-**Profession high school

3. How much is your total income?

( ) **1-**Lower than 1000 TR ( ) **2-**1000-2000 TR ( ) **3-**2001-3000 TR

( ) **4-**3001-4000 TR ( ) **5-**4001-5000 TR ( ) **6-**More than 5000 TR

4. When you communicate to new one, your nasal discharge or your nose wiping attract attention of his/her?

( ) **1-** Never ( ) **2-** Rarely ( ) **3-** Frequently ( ) **4-** Always

5. When you communicate to new one, your nasal obstruction wiping attract attention of his/her?

( ) **1-** Never ( ) **2-** Rarely ( ) **3-** Frequently ( ) **4-** Always

6. When you communicate to new one, your frequent sneezing attract attention of his/her?

( ) **1-** Never ( ) **2-** Rarely ( ) **3-** Frequently ( ) **4-** Always

7. When you communicate to new one, your nasal discharge, nasal obstruction and frequent sneezing make a difference for his/her?

( ) **1-** Never ( ) **2-** Rarely ( ) **3-** Frequently ( ) **4-** Always

8. Your nasal discharge, nasal obstruction and frequent sneezing render you shy during the communication to someone?

( ) **1-** Never ( ) **2-** Rarely ( ) **3-** Frequently ( ) **4-** Always

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