

The Prevalence of Allergic Rhinitis and its Impact on Quality of Life Among Students of the Syrian Private University

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Abstract

Background:

Allergic rhinitis is one of the most common chronic respiratory diseases in the world. It has negative impacts, including complications, and comorbidities, all negatively impacting one's quality of life.

Aims: The current study aims to determine the prevalence of AR among students at Syrian Private University.

Methods:

A cross-sectional was conducted at the Syrian Private University. The survey included questions about demographics and two allergy-specific questionnaires, the mini rhinoconjunctivitis quality of life questionnaire and the activity impairment plus classroom impairment questionnaire. The mini rhinoconjunctivitis quality of life questionnaire was translated to Arabic language and then validated via Cronbach's alpha test.

Results:

Most participants were male 197(54%), residents of Damascus/ Rural Damascus 321(87%), and smokers 208(56%). Their ages ranged from 19-32 years, with a mean of 21.7 (± 1.91) years. The prevalence of students diagnosed with AR was 115(31.1%). Total loss of academic attendance was 12.1%, whereas the impairment of academic productivity was 21.8%

Conclusion:

Almost a third of the sample has allergic rhinitis, and a fifth reported impaired academic productivity, consequently exerting burdens upon students' lives. Further studies are required to evaluate the causes and establish effective management plans.

Introduction

Allergic rhinitis (AR) is among the most common chronic respiratory diseases in the world.^[1] This condition affects 10% - 40% of the population and continues to spread.^[2]

Environmental exposure to allergens and genetic susceptibility to develop AR encompasses complex interactions.^[3] Clinical features of AR usually present after exposure to an allergen.^[4] Symptoms of AR include nasal congestion, rhinorrhea, sneezing, itchy eyes, redness in the eye, and dacryorrhea.^[5] There are several triggers for AR, including animals, dust, mites, and cockroaches, pollen, smoke, and mold.^[4] AR can be categorized into seasonal or perennial, the first occurs during a particular season, while the latter occurs all year round.^[6] However, this classification was inconclusive, another classification was constructed to categorize AR according to its symptom duration as either intermittent (inflammation

duration of < 6 weeks) or persistent (symptoms throughout the year) and severity either mild (patients are broadly able to sleep normally and perform normal activities including work or school) or moderate/severe (significantly affect sleep and activities of daily living and/or if they are considered troublesome).^[7] The socio-economic burdens of AR have a significant impact on an individual's quality of life, sleep, school performance, and work productivity.^[8] Treatment options for AR comprise avoidance of allergens, and pharmacological treatment such as oral or nasal antihistamine, intranasal corticosteroids, and allergen immunotherapy.^[9] Since exposure to polluted air was one of the reasons for exacerbation of AR symptoms, patients in Syria were suffering from this because of pollutants emitted from old diesel exhaust, as well as factories and laboratories that are built near residential areas.^[10] Additionally, war and harmful allergens have negatively affected the severity of AR symptoms.

The current study aims to determine the prevalence of AR among students at Syrian Private University (SPU). The objectives are to verify the use of the Arabic-language mini rhinoconjunctivitis quality of life questionnaire among students with AR and to assess the effect of allergies on the ability to work, attend classes, and perform routine daily activities.

Methods

Study design, participants, and procedure:

This cross-sectional study was conducted using a convenience sampling method during the start of the first semester (2021), at the Syrian Private University (SPU), Dara'a, Syria. All participants provided written consent for their participation. Students were informed their participation was voluntary, response to all questions was not mandatory, all of the responses were recorded anonymously, and were allowed to opt-out of the survey at any time. A structured self-completed Arabic-language questionnaire was distributed among students. The questionnaire contained 4 sections (54 questions): socio-demographic characteristics, mini rhinoconjunctivitis quality of life questionnaire (MiniRQLQ) (14 questions), allergic rhinitis and its impact on asthma (ARIA) (4 questions), and activity impairment questionnaire plus classroom impairment questions: allergy specific (AI+CIQ: AS) (5 questions).

Ethical approval:

Ethical approval was granted from the Institutional Review Board (IRB), Faculty of Medicine, Syrian Private University, Dara'a, Syria.

Statistical analysis:

Data were reported as frequencies and percentages (for categorical variables) or means, medians, and standard deviations (SD) (for continuous variables). Questionnaire reliability was studied by determining internal consistency using Cronbach's alpha test. A Cronbach's alpha value of > 0.70 was predefined as satisfactory.^[11]

Results

Socio-demographics characteristics:

Of 370 total students who completed the survey, 197(54%) were male and 173(46%) were female. Participants' ages ranged from 19-32 years, with a mean of 21.7 (± 1.91) years. The majority of participants were residents of Damascus/ Rural Damascus 321(87%). The prevalence of smoking was 208(56%), 76(36.5%) for the Hubble bubble, and 25(12.0%) for cigarettes. The sample was evenly distributed among the 6 faculties and the majority were in their third year 138(37.3%) (Table 1). A family history of allergic conditions was reported among 71(61.7%) students.

Allergic Rhinitis its Impact on Asthma, and quality of life:

The prevalence of students diagnosed with AR by a doctor was 115(31.1%), 51(44.3%) were male and 64(55.7%) were female. AR's effect on the quality of life showed varying degrees of effect among students (table 2). AR and its impact on asthma were reported among students as mild and intermittent 64(83%), mild and continuous 27(71), moderate/severe and intermittent 13(17%), and moderate/severe and continuous 11(29%) (Table 2). The Arabic MiniRQLQ showed good internal consistency, with a Cronbach's alpha value of 0.93.

Activity Impairment and Classroom Impairment:

Overall, the mean number of hours/week spent by our students in classes was 17.05(± 2.53). The mean AI + CIQ: AS score was 3.72(± 2.14). Total loss of academic attendance was 12.1%, whereas the impairment of academic productivity was 21.8% (Table 3).

Discussion

AR is a chronic respiratory disease that has severely affected mankind's quality of life. This first study aims to reveal the prevalence of AR among students studying at the Syrian Private University 115(31.1%). In two studies conducted in Syria, the estimated prevalence of AR symptoms was 50.7% and 47.4%.^[12, 13] Our prevalence was lower compared with Thailand 58.5%, Saudi Arabia (44%), and United Arab Emirates (32%), but lower compared with South Korea (27%), Canada (25%), and Europe (21%).^[14-19] A Syrian study conducted during the war screened for AR symptoms, the high prevalence of symptoms found among the population was attributed to the war, including exposure to various harmful substances, where they found a statistically significant correlation between AR and distress from war noises.^[12]

With the increasing incidence of atopy worldwide, AR continues to impact health issues among the community, resulting in enormous consequences, including complications, and comorbidities causing significant burdens on one's quality of life. Therefore, it is paramount to assess the quality of life among students suffering from AR. Consequently, the Arabic-language mini rhinoconjunctivitis quality of life

questionnaire was assessed for validity, a good internal consistency was found, Cronbach's alpha value of 0.93.

The quality of life among students with AR showed varied responses across the scale. This was also the case in a Thailand study.^[14] The class impairment questionnaire revealed the total loss of academic attendance and impairment of academic productivity was 12.1% and 21.8% respectively. A study in Spain revealed the total loss of productivity was 21.2%, whereas the impairment of daily activities was 22.0%.^[20] Affected AR individuals may underperform in work or study settings, their job/ class-related relationships may be affected, and their professional careers may suffer.^[20]

Conclusion

Our study revealed a high prevalence of AR among students at SPU. AR has negatively affected the students' quality of life. Further studies are required to evaluate the causes and establish effective management plans.

Limitations:

There are limitations in the study design and sampling method. Also, this study does not take into account students with AR, who are undiagnosed. A further study must be conducted to screen for those with undiagnosed AR. In addition, the quality of life, causes and triggers, and management plans regarding AR must be assessed on a national level.

Abbreviations

AR

Allergic Rhinitis

SPU

Syrian Private University

MiniRQLQ

Mini Rhinoconjunctivitis Quality of Life Questionnaire

ARIA

Allergic Rhinitis and its Impact on Asthma

AI + CIQ

AS:Activity Impairment Questionnaire plus Classroom Impairment Questions:Allergy Specific

SD

Standard Deviation.

Declarations

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Availability of data and materials:

All data related to this paper's conclusion are available and stored by the authors. All data are available from the corresponding author on a reasonable request.

Ethics approval and consent to participate:

This study was approved by the Institutional Review Board (IRB) at the Syrian Private University (SPU). All Participants confirmed their written consent by signing the consent form. Participation in the study was voluntary and participants were assured that anyone who was not inclined to participate or decided to withdraw after giving consent would not be victimized. All information collected from this study was kept strictly confidential.

Consent for Publication:

Not applicable.

Competing interests:

The authors declare that they have no competing interests.

Authors' contributions:

SA was responsible for study design, literature search, data analysis, and write-up; EA was responsible for study design and data collection; BB and FM participated in literature search and write-up; LN participated in the study design and reviewed the final draft. All authors read and approved the final draft.

Abbreviations

AR: Allergic Rhinitis; SPU: Syrian Private University; MiniRQLQ: Mini Rhinoconjunctivitis Quality of Life Questionnaire; ARIA: Allergic Rhinitis and its Impact on Asthma; AI+CIQ: AS: Activity Impairment Questionnaire plus Classroom Impairment Questions: Allergy Specific; SD: Standard Deviation.

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Tables

Table 1. Socio-demographic characteristics

Table 1. Socio-demographic characteristics: (N = 370)					
Gender (%)	Male	197 (53.3)	Study year (%)	1	10 (2.7)
	Female	173 (46.7)		2	90 (24.3)
Age (%)	<20	40 (10.8)	3	138 (37.3)	
	20-24	308 (83.2)	4	75 (20.3)	
	25-29	21 (5.7)	5	43 (11.6)	
	30-34	1 (0.3)	6	14 (3.8)	
Medical Condition (%)	Yes	28 (7.6)	Smoking (%)	Yes	208 (56.2)
	No	342 (92.4)		No	162 (43.8)
Residence (%)	Damascus	211 (57.0)	Smoking method (%)	Cigarettes	111 (30.0)
	Rural Damascus	110 (29.7)		Hubble bubble	169 (45.7)
	Other governorates	49 (13.2)		Electronic cigarettes	14 (3.8)
Faculty (%)	Medicine	61 (16.5)	BMI (Kg/M ²) (%)	Electronic Hubble bubble	30 (8.1)
	Dentistry	62 (16.7)		≤ 18.5	8 (2.2)

Pharmacy			18.6 –24.9	
	62 (16.7)			204 (55.1)
Information technology			≥ 25.0	
	61 (16.5)			158 (42.7)
Petroleum engineering		Work (%)	Yes	
	62 (16.7)			18 (4.9)
Business Administration			No	
	62 (16.7)			352 (95.1)

Table 2. Mini Rhinoconjunctivitis Quality of Life and Allergic Rhinitis and its Impact on Asthma Questionnaire

Table 2. Mini Rhinoconjunctivitis Quality of Life Questionnaire: (n = 115)							
	Not troubled	Hardly troubled at all	Somewhat troubled	Moderately troubled	Quite a bit troubled	Very troubled	Extremely troubled
Activities							
Regular activities at home and at work (your occupation or tasks that you have to do regularly around your home and/or garden)	17 (15)	34 (30)	34 (30)	20 (17)	7 (6)	2 (2)	1 (1)
Recreational activities (indoor and outdoor activities with friends and family, sports, social activities, and hobbies)	22 (19)	44 (38)	26 (23)	17 (15)	4 (3)	0 (0.00)	2 (2)
Sleep (difficulties getting a good night's sleep and/or getting to sleep at night)	7 (6)	31 (27)	31 (27)	25 (22)	13 (11)	5 (4)	3 (3)
Practical Problems							
Need to rub nose/eyes	7 (6)	22 (19)	42 (37)	24 (21)	12 (10)	4 (3)	4 (3)
Need to blow nose repeatedly	13 (11)	26 (23)	30 (26)	26 (23)	13 (11)	4 (3)	3 (3)
Nose Symptoms							
Sneezing	9 (8)	21 (18)	37 (32)	28 (24)	9 (8)	5 (4)	6 (5)
Stuffy blocked nose	17 (15)	34 (30)	23 (20)	22 (19)	9 (8)	5 (4)	5 (4)

Runny nose	15 (13)	31 (27)	32 (28)	15 (13)	9 (8)	6 (5)	7 (6)
Eye Symptoms							
Itchy eyes	32 (28)	34 (30)	23 (20)	11 (10)	8 (7)	4 (3)	3 (3)
Sore eyes	53 (46)	32 (28)	14 (12)	5 (4)	6 (5)	3 (3)	2 (2)
Watery eyes	35 (30)	38 (33)	21 (18)	11 (10)	5 (4)	3 (3)	2 (2)
Other Symptoms							
Tiredness and/or fatigue	7 (6)	22 (19)	39 (34)	24 (21)	13 (11)	6 (5)	4 (3)
Thirst	17 (15)	34 (30)	23 (20)	22 (19)	9 (8)	5 (4)	5 (4)
Feeling irritable	17 (15)	29 (25)	27 (23)	22 (19)	14 (12)	2 (2)	4 (3)
Allergic Rhinitis and its Impact on Asthma: (n = 115)							
	Mild			Moderate/Severe			
Intermittent	64 (83)			13 (17)			
Continuous	27 (71)			11 (29)			

Table 3. Allergic Rhinitis and its Impact on Asthma

Table 3. Allergic Rhinitis and its Impact on Asthma: (n = 115)		
	Mild	Moderate/Severe
Intermittent	64 (83)	13 (17)
Continuous	27 (71)	11 (29)

Table 4. Activity Impairment Questionnaire plus Classroom Impairment Questions: Allergy Specific

Table 3. Activity Impairment Questionnaire plus Classroom Impairment Questions: Allergy Specific		
	Mean	±SD
How many hours per week do you usually attend classes?	17.05	2.53
During the past seven days, how many hours did you miss from class because of problems associated with your allergies?	2.07	2.21
During the past seven days, how much did allergies affect your productivity while in class? If allergies affect your productivity in class only a little, choose a low number. Choose a high number if allergies affected your productivity a great deal.	3.72	2.14
During the past seven days, how much did your allergies affect your ability to do your regular daily activities (work around the house, shopping, childcare, exercising, and studying), other than attending classes? If allergies affected your activities only a little, choose a low number. Choose a high number if allergies affected your activities a great deal.	3.20	2.04