

Awareness and attitudes of medical and dentistry students about latex allergy: do they need more?

Tıp ve diş hekimliği öğrencilerinin lateks allerjisi hakkında farkındalık ve tutumları: Daha fazlasına ihtiyaçları var mı?

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ABSTRACT

Objective: The best way for effective protection from latex allergy is to educate risk groups. We have been educating students from both medical and dentistry schools about latex allergy. It is of interest whether these lectures make any differences in their perceptions and attitudes in terms of taking strategies against latex allergy. We aimed to assess the effect of latex hypersensitivity lectures on awareness level of the students from both schools and to determine their perceptions and attitudes towards latex hypersensitivity.

Materials and Methods: The study group included the 5th grade students from dentistry (n= 87) and medical schools (n= 160). Initially, both groups were given a latex hypersensitivity lectures in 5th grade. Before graduating, the students were asked to fill a questionnaire in which their awareness level and attitude against latex allergy were assessed.

Results: The majority of both student groups had a partially adequate knowledge level on latex

ÖZ

Giriş: Lateks allerjisinden korunmanın en iyi yolu risk gruplarını eğitmektir. Tıp ve diş hekimliği fakültelerinde öğrencilere tarafımızdan lateks allerjisi dersi verilmektedir. Bu derslerin öğrencilerin lateks allerjisine karşı önlem almada görüş ve tutumlarını etkileyip etkilemediği merak konusudur. Bu çalışmada lateks allerjisi derslerinin, her iki öğrenci grubunda lateks allerjisi hakkında görüşlerine ve tutumlarına olan etkisini araştırmayı amaçladık.

Gereç ve Yöntem: Çalışmaya diş hekimliği fakültesi (n= 87) ve tip fakültesi (n= 160) beşinci sınıf öğrencileri alındı. Her iki gruba da beşinci sınıfta lateks allerjisi dersi anlatıldı. Mezun olmadan önce öğrencilere lateks allerjisi ile ilgili farkındalıklarını ve tutumlarını inceleyen anket uygulandı.

Bulgular: Her iki gruptaki öğrencilerin çoğunuğun lateks allerjisi hakkındaki bilgi düzeyi kusmen yeterli idi. Lateks allerjisi ile ilgili endişe düzeyi diş hekimliği öğrencilerinde daha yükseltti [78 (%89.7) vs. 109 (%69), p< 0.0001]. Endişenin esas

hypersensitivity. However, the rate of anxiety related to latex allergy was higher in dentistry students [78 (89.7%) vs. 109 (69%), p< 0.0001]. The main reason for anxiety was frequent exposure to latex because of profession. But, application for skin prick tests with latex was poor in both groups [medical students: 10 (6.3%) and dentistry students 1 (1.2%)]. Being in a risk category for latex allergy didn't influence the academic career selection of the groups.

Conclusion: Latex allergy lectures should be modified according to the background and need of risk groups and should be improved by feedbacks in order to increase awareness and provide effective strategies targeting prevention.

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nedeni mesleksel lateks maruziyetinin sıklığı idi. Buna rağmen deri prik testi için başvuru oranı daha azdı [tip öğrencileri 10 (%6.3), diş hekimliği öğrencileri 1 (%1.2)]. Lateks allerjisinin bir risk kategorisi olarak grupların kariyer seçimini etkilemediği görüldü.

Sonuç: Lateks allerjisi dersleri, farkındalığı artırmak ve etkili korunma stratejileri oluşturmak için geri dönüşlere göre geliştirilerek risk gruplarının durumu ve ihtiyaçlarına göre yeniden düzenlenmelidir.

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Anahtar kelimeler: Lateks allerjisi, eğitim, korunma, diş hekimliği, tip fakültesi, öğrenciler

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INTRODUCTION

Exposure to latex and latex containing products can cause type I and IV allergies in sensitized people^[1,2]. The clinical spectrum varies from mild reactions like limited urticaria and contact dermatitis to life threatening reactions such as anaphylaxis^[1-5]. The problem is common in particular risk groups who have frequent exposure to latex and related products^[1-3]. Being a risk group, prevalence rates for latex allergy have been reported to varied between 2.9% and 12.1% in health care workers^[1-5]. The risk is particularly high in certain health care workers such as surgeons, dentists and other health workers working in emergency or critical care units or operating rooms which contain latex enriched environment^[6-9]. In our country, the prevalence rates for latex allergy in health care workers reported to be varied between 6% and 11.9%, being higher in defined risk groups in accordance with previous trials^[6-13].

In our recent study, we showed a relatively lower prevalence rate of latex allergy among 6th grade medical students when compared to previous reports^[10-13]. This result could be attribu-

table to relatively low (infrequent) exposure to latex containing products of medical students in comparison to those working professionally with more latex exposure. So, the most important data derived from all these epidemiological studies is that increased exposure yields increased latex allergy.

After clinical symptoms of latex allergy are manifested, this allergy can cause high medico-social burden to the sensitized individuals not only in terms of limitations in professional life but also increased socio-economic burden which might lead some of them to quit the job^[14-18]. So, it is reasonable to assess the risk for latex allergy before it manifested clinically particularly in high risk groups. The strategies targeting the prevention of latex exposure as early as possible especially in high risk groups have been shown to decrease the occurrence of this allergy^[19-23].

Other than decreasing the exposure to latex in high risk groups, providing a high awareness level for latex allergy on individual basis might have particular importance for the actions taken against latex allergy^[24]. Our previous study showed that the interns had limited awareness

level on latex allergy which also influenced their attitude for learning their individual risks^[13]. The best way to create effective awareness level about latex allergy is to educate the risk groups. In this sense, we have been educating students from both medical and dentistry schools since we got the discouraging results in interns about inadequate awareness level about latex allergy. However, it is of interest whether these lectures make any differences in their perceptions and attitudes in terms of taking strategies against latex allergy.

In this study, we evaluated the effect of this training on awareness level of the students about latex hypersensitivity and determined whether any change in their behaviours occurred related to latex allergy. Study groups consisted of both students from medical and dentistry schools, being included in two high risk groups for latex allergy.

MATERIALS and METHODS

Study Group

The study group included the 5th grade students from Dentistry and interns (6th grade students) from a medical school. The study was performed during 2008-2009 season and was approved by Local Ethics Committee and written informed consent was obtained from all cases before participating in the study.

Study Protocol

The study consisted of two steps. Initially, both groups were given latex hypersensitivity lectures by the same allergy specialist in 5th grade of their schools. The lecture was in the oritical format which took 45 minutes and consisted of the following items about latex allergy: risk groups, products contain latex in and out of hospital environment, clinical manifestations, diagnostic methods, prevention, medical treatment, and latex specific immunotherapy. The lecture was enriched with some case scenarios and was completed with interactive discussion. During these lectures, primary and secondary prevention were particularly emphasized

and the students from both schools were advised to determine their individual risks before graduating from their schools. In the second phase of the study, the students from both schools were asked to fill a questionnaire in which mainly their awareness and attitude against latex allergy as well as training method was assessed just before their graduation from their schools. The questionnaire used in the study were prepared by the authors as either open ended or multiple choice questions mainly based on our previous research^[13]. This questionnaire included the items below:

1. Questions related to demographics and presence of any allergic disorders.
2. Questions related to presence of symptoms in exposure to latex.
3. Questions related to knowledge level about latex allergy: risk groups, clinical findings, diagnosis, products which contain latex, prevention and treatment for latex allergy.
4. Questions related to self assessment of self knowledge on latex allergy.
5. Questions related to evaluation of training method.
6. Questions related to evaluation of anxiety caused by latex allergy.
7. Questions related to determination of attitude of the students against latex allergy before graduation
8. Questions related to preferred occupation for future professional life and effect of knowledge on latex allergy on this.

Statistical Analysis

The statistics of the study was carried out by SPSS (Statistical Package for Social Sciences) (SPSS, Version 11.0; SPSS; Chicago, IL). Numeric values were expressed as mean \pm SEM whereas nominal values were given as n (%). Chi-square method, or Fisher's exact test where appropriate was used to compare categorical values. Considering the knowledge level of students (7 questions related to item 3), the ans-

wers were categorized according to followings: Not adequate (0 point); partially adequate (1 point) and adequate (2 point). Then the answers were translated into a point and categorized. The point "0" was considered as "no knowledge level" the point between 1 and 7 was considered "partially adequate knowledge level" and over 7 was considered as "adequate knowledge level". Numeric values were compared with independent samples T test. One way ANOVA was used for evaluation knowledge and anxiety level. Pearson correlation analysis was used for correlation between parameters. A p value less than 0.05 considered statistically significant.

RESULTS

Part I. Demographics of the Study Group and Presence of Any Allergic Disorder

The study groups included 160 students [mean age: 24.4 ± 1.0 years female/male: 83 (51.9%)/77(48.1%)] from medical school and 87 students [mean age: 23.3 ± 0.8 years, female/male: 52 (59.2%)/35 (40.2%)] from dentistry. Forty three (27%) of medical students and 25 (28.7%) of dentistry students had an allergic disease in the past while 25 (15.6%) and 11 (12.6%) of the students from medical school

and dentistry, respectively had these diseases in the last 12 months Table 1. No differences were observed in terms of presence of allergic diseases.

Fifty five (36.7%) of the medical students and 27 (32.9%) of dentistry students had family history of an allergic disorder. The students from dentistry school reported to have more friends diagnosed as latex allergy than medical students did [21 (28%) vs. 14 (10.6%), $p=0.002$].

Part II. Physician Diagnosed Latex Allergy and Current Latex Related Symptoms

Among medical students, 2 (1%) had physician diagnosed latex allergy whereas 4 (4.6%) cases from dentistry school had confirmed-physician diagnosed latex allergy (Table 1).

Regardless from the school, a total of 55 students (22.7%) described latex related symptoms. Eczema [45 (18.6%)], urticaria/angioedema [18 (7.4%)] were the leading symptoms in latex exposure (Table 2). Overall, the students from dentistry school had more allergic symptoms related to latex exposure particularly urticaria/angioedema than those from medical students (Table 2).

Table 1. History of past and current allergic diseases of study groups

Variable	Medical school (n= 160)				Dentistry school (n= 87)			
	Past		Current		Past		Current	
	n	%	n	%	n	%	n	%
Asthma	4	2.5	3	1.8	0		1	1.1
Allergic rhinitis	22	13.7	14	8.3	10	11.5	7	8
Urticaria	5	3.1	3	1.8	5	5.7	2	2.3
Drug allergy	2	1.2	2	1.2	4	4.5	1	1.1
Venom allergy	3	1.8	1	0.6	1	1.1	1	1.1
Contact dermatitis	6	3.7	5	3.1	5	5.7	1	1.1
Anaphylaxis	4	2.5	1	0.6	1	1.1	0	
Atopic dermatitis	2	1.2	1	0.6	5	5.7	0	
Latex allergy	1	0.6	1	0.6	3	3.4	1	1.1

Table 2. Symptoms related to latex exposure

Symptoms on exposure to latex related products	Students from medical school n (%)	Students from dentistry school n (%)	p
Eczema like skin lesions	23 (14.6)	22 (26.2)	NS
Urticaria/angioedema	5 (3.2)	13 (15.3)	0.006
Nasal symptoms	4 (2.5)	7 (8.2)	NS
Dyspnea	2 (1.3)	3 (3.4)	NS
Anaphylaxis	1 (0.6)	0	NS

NS: Not significant.

Part III. Assessment of Knowledge of the Students on Latex Allergy

The majority of the students from both schools had a partially adequate knowledge level on latex hypersensitivity (Table 3). Overall, the students from medical school had more awareness level on latex hypersensitivity compared to those from dentistry school ($p < 0.001$) (Table 3). In detail, the students from both groups had more awareness on products which contain latex in hospital environment than in daily life. Medical students were more aware on products which contain latex in hospital environment, clinical symptoms related to latex exposure, on risk groups, diagnosis, treatment and prevention when compared to dentistry

students (Table 3). Overall mean awareness score was higher in medical students when compared to those of dentistry school (6.6 ± 2.1 vs. 4.5 ± 2.2 , $p < 0.0001$). There was no effect of gender on knowledge about latex hypersensitivity on both groups.

Part IV. Self Assessment of the Students About the Proficiency of Their Knowledge on Latex Allergy

The majority of the students from medical students reported that their knowledge on latex allergy was partially inadequate (Figure 1). However, majority of the student from dentistry school felt that their knowledge level was inadequate.

Table 3. Comparison of the awareness level of the students from both schools

Knowledge about	Students from medical school n (%)			Students from dentistry school n (%)			p
	Not adequate	Partially adequate	Adequate	Not adequate	Partially adequate	Adequate	
The products containing latex and related products in daily life	57 (35.6)	102 (63.8)	1 (0.6)	30 (34.5)	54 (62.1)	3 (3.4)	NS
The products containing latex and related products in hospital	4 (2.5)	145 (90.6)	11 (6.9)	9 (10.3)	73 (83.9)	5 (5.7)	0.003
Clinical manifestation	8 (5.0)	125 (78.1)	27 (16.9)	16 (18.4)	62 (71.3)	9 (10.3)	0.002
Risk groups/factors	18 (11.3)	112 (70.0)	30 (18.8)	38 (43.7)	44 (50.6)	5 (5.7)	0.000
Diagnostic procedures	35 (21.9)	102 (63.8)	23 (14.4)	58 (66.7)	28 (32.2)	1 (1.1)	0.000
Treatment	28 (17.5)	81 (50.6)	51 (31.9)	50 (57.9)	28 (32.2)	9 (10.3)	0.000
Prevention	43 (26.7)	102 (63.8)	15 (9.4)	46 (52.9)	39 (44.8)	2 (2.3)	0.000
Global awareness levels	3 (1.9)	97 (60.6)	60 (37.5)	5 (5.7)	73 (83.9)	9 (10.3)	0.000

NS: Not significant.

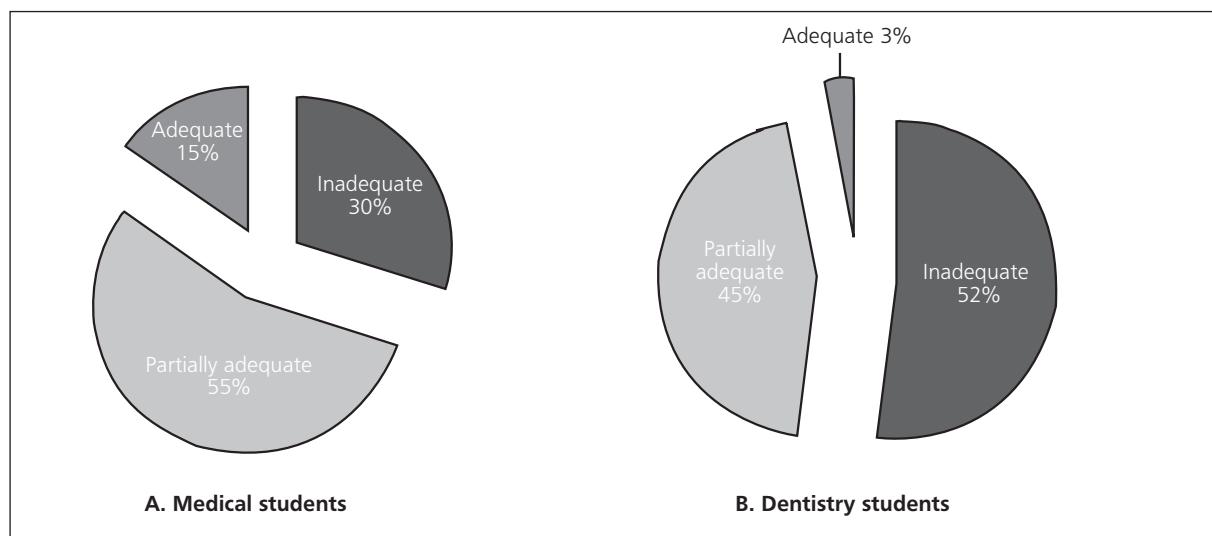


Figure 1. Belief of students about the adequacy of their knowledge on latex allergy (A for medical students, B for dentistry students).

Part V. Assessment of Training

Method on Latex Allergy

The majority of both groups reported that a training on latex allergy was definitely necessary (71% of medical students and 82% of dentistry students). However, 47% of the students from medical school reported that current lecture format performed on latex allergy was partially adequate, whereas almost half of the students from dentistry thought that this type of training was not enough ($p < 0.0001$) (Figure 2).

Regarding the expectation of the students for training on latex allergy, the majority of the students from both groups stated that they needed practical sessions on this. The satisfaction from the current lecture format was lower in students from dentistry school than those in medical school (35.5% vs. 19.5%, $p = 0.016$). The students from dentistry school reported more frequently that lecture duration was not enough than those from medical students (61.5% vs. 40.6%, $p = 0.004$).

Part VI. Evaluation of Anxiety Related to Latex Allergy

The rate of anxiety related to latex allergy was higher in dentistry students than those from medical students [78 (89.7%) vs. 109

(69%), $p < 0.0001$]. Additionally, according to visual analog score, mean anxiety score was also higher in students from dentistry school than those from medical students [6.29 ± 1.8 vs. 5.39 ± 2.0 , $p = 0.002$]. Regardless of the school, the main reason for concern related to latex allergy was frequent exposure to latex because of profession (Table 4).

There was no correlation between awareness scores and anxiety visual analog scores in dentistry students whereas students from medical school had such a correlation ($r = 0.215$, $p = 0.025$). No correlation depending on gender was observed in both groups. On the other hand, anxiety scores were higher in students who had latex related symptoms than those not ($p < 0.0001$).

Part VII. Attitude of the Students for Latex Allergy

Application for skin prick tests with latex was poor in both groups [medical students 10 (6.3%) and dentistry students 1 (1.2%)]. Rate for use of SPTs for common allergens was significantly higher in medical students than in dentistry students [21 (13.2%) vs. 1 (1.2%), $p = 0.002$].

Regarding the preventive measures, the majority had no action for latex allergy [184

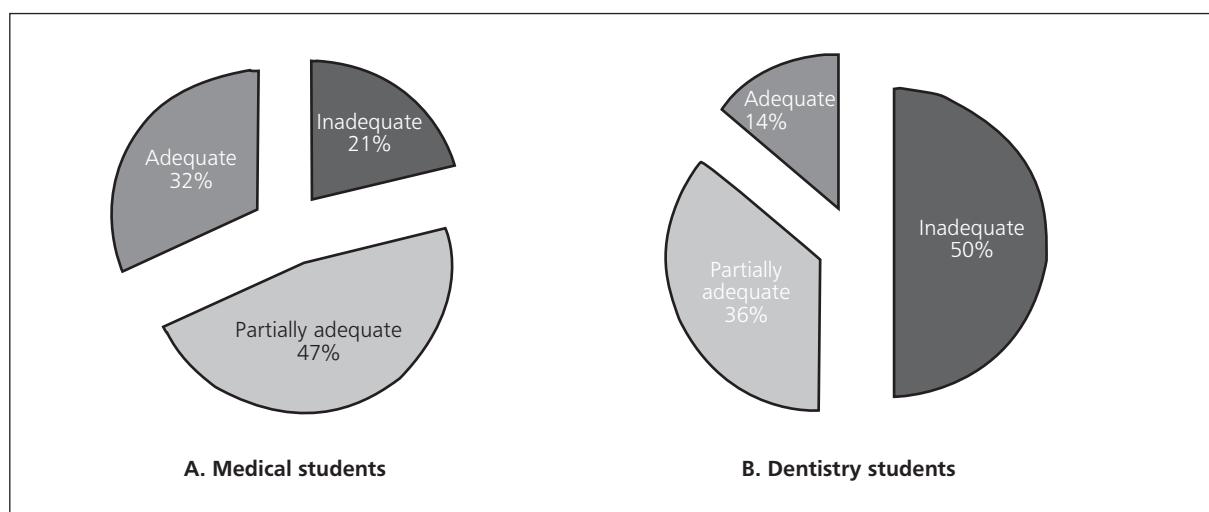


Figure 2. Belief of students about the adequacy of the training on latex allergy (A for medical students, B for dentistry students).

Table 4. Reasons for anxiety related to latex allergy in students (responder n= 83)

Reason	n (%)
Frequent exposure to latex because of profession	24 (28.9)
Limitations in some professional activities	12 (14.4)
Negative effect on speciality preference	9 (10.8)
Potential to cause serious health effect (such as anaphylaxis)	9 (10.8)
Possibility to develop latex allergy in future	9 (10.8)
Loose in work capacity or performance	8 (9.6)
Poor quality of life	5 (6)
Being atopic	9 (10.8)

(77.6%)]. Forty (16.9%) preferred to use talc free latex gloves whereas 10 (4.2%) did not wear latex gloves for prevention of latex allergy. Ten students (4.2%) reported to have latex free gloves.

Part VIII. Preference for Future Professional Life

Majority of the both groups reported that they preferred a speciality training for future professional life. The majority of the medical students preferred internal medicine [80 (59.7%)] whereas dentistry students mostly preferred prothesis [14 (31.1%)] or orthodonti [12 (26.7%)].

Regarding the effect of concern related latex allergy on academic career selection, no effect was observed in both groups. Only 11 (6.9%) and 8 (9.4%) from medical students and dentistry students, respectively stated that latex allergy could be a concern for directing future professional life.

DISCUSSION

In this study, the awareness level of the students from medical and dentistry schools on latex allergy was inadequate, despite lower levels were figured out in students from dentistry school. However, both groups had significant concerns related to latex allergy particularly be-

cause of the possibility of this allergy to limit their professional life activities. But despite this fact, both groups tended to pay low attention and participation both to learn their individual risks for latex allergy and to perform actions which are necessary for prevention from this allergy. The students stated that they needed more lectures on latex allergy particularly practical sessions.

The results of the current study clearly indicated that both student groups reacted in a different way to latex allergy and their expectations are different. First of all, the knowledge level of both groups was different. The majority of the students from dentistry school were less aware about the risk groups, latex containing products, clinical findings, treatment and prevention of latex allergy. They were also aware of this fact and at least half of them reported their knowledge to be inadequate about this particular allergy. Considering the similarity of the content of the lectures which were given to each student group, this discrepancy in awareness level could be derived by other factors. The attention paid by each group might have been differed depending on perception of the students which could be influenced by their individual need and academic backgrounds. The students from dental school are mainly responsible from lectures related to dentistry and need only basic knowledge on medicine. One reason could be that they pay less attention to the lectures of medicine as they believe that these lectures has secondary importance for their professional life. The medical students were educated about this topic under the major clinical lectures. However, low awareness level even in medical students group indicate the inadequacy of the lecture given during that term as well. It is well known that dentists have more risk for development of latex allergy as they used more latex containing products particularly gloves during their education. So, a particular attention must be paid to the lectures given to the dentistry students as this allergy is very important for them on individual purpose.

Presence of atopy or allergic disorders such as asthma and allergic rhinitis reported to be a significant risk factor for development of latex allergy^[1-3]. So, considering this fact, one of the major "take home messages" for students in these lectures was to recommend checking their atopic status individually before they graduate their schools. In this term, skin prick tests with common inhalant allergens as well as latex were also recommended. However, our results showed that only a few students applied for performing skin prick tests either with inhalant allergens or with latex. This finding actually was very surprising for us as this point was particularly emphasized during lectures. Moreover, the students were told that these tests would be provided for free of charge for them. Taken together, all these results indicate the necessity to improve the awareness level of the students about to learn their individual risks and protect themselves from this particular allergy.

This study mainly addressed the knowledge and attitude of students from both schools in terms of latex allergy. In this sense, neither skin prick test nor evaluation of specific IgE for latex allergy was the subject of this study. So, we didn't evaluated the actual prevalence of latex allergy among students. However, the frequency of urticaria related to exposure to latex was higher in dentistry students. This finding could be explained by more frequent exposure to latex gloves of the students from dentistry school compared to those from medical school.

Considering the anxiety level related to latex allergy, both groups had high anxiety levels, however the dentistry students showed more higher anxiety level than those from medical school. The high anxiety level of the study group is not surprising as they expose latex more frequently. However, this anxiety didn't seem to cause a significant behavioral change in both groups towards actions taken for determination of their individual risks as only a few students applied for skin prick tests with latex. Other than this, interestingly, only the mi-

nority of the students from both groups stated that latex allergy could be a concern for direction of the professional life in future. So, once again this finding emphasize the low awareness level of students on latex allergy and indicate the need for improvement of the lecture format.

There is no single method for education of latex allergy in susceptible groups. The classical lectures as well as written informations are some examples commonly applied^[24-27]. In our university, latex allergy lectures were mainly given as a formal classroom lecture which lasted 45 minutes in both medical and dental schools. The subheadings of the lectures involve definition of latex allergy, the sources of latex, risk factors, clinical presentations, treatment, and prevention. The lecture was enriched by slide presentation and some case reports. In addition to theoretical lecture, the medical students also had clinical practice during their allergy training whereas the students from dentistry did not have. However, our students from both groups stated that this format of the lectures was not adequate and they needed more training on this, particularly in the format of practical courses. So, taking together, a specifically designed lectures based on the need and academic background of the students seem to be important in order to improve the awareness level of the students about latex allergy. Moreover, as there is no standart formatting for these lectures and there are different risk groups with different academic backgrounds, a feedback system should be applied in order to evaluate the effectiveness of lectures and need of the students^[28].

In conclusion; our results demonstrated that both the dental and medical school students had insufficient awareness level about latex allergy despite a formal lecture was given on this particular allergy. But they were aware of their insufficient knowledge about this unique allergy and they were in need more lectures particularly practical ones. They had high concern because of being a risk group for latex allergy. However, despite this anxiety, no significant

change in their perceptions and attitudes towards determination of their individual risks or protection themselves from this allergy was detected. In this sense, latex allergy lectures should be individualized according to the need of groups and their academic backgrounds and effectiveness of the lectures should be evaluated with a feedback system in order to increase awareness and provide effective strategies targeting prevention of latex hypersensitivity.

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