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ORIGINAL ARTICLE

Incidence of the exposure to blood and blood products and its relationship with the medical education accreditation among last grade medical students in Turkey

Mücahid Alp Arslan[1] Erol Gürpınar[2] Levent Dönmez[3]

[1] Specialist, Ankara Atatürk Sanatoryum Training and Research Hospital, Occupational Disease Clinic, Ankara, Türkiye
[2]Prof. Dr., Akdeniz University Medical Faculty, Department of Medical Education, Antalya, Türkiye
[3]Prof. Dr., Akdeniz University Medical Faculty, Department of Public Health, Antalya, Türkiye

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Abstract

Objective: The primary aim of this study was to investigate the blood contact and needle-stick injury rates of final-year (year-6) medical students receiving their education and training at medical schools in different regions of Turkey and to analyse the relationships between blood contact and needle-stick injury and the personal variables of students and accreditation certifications of medical schools.

Methods: In this retrospective cohort study, self-reporting questionnaires were completed anonymously by consenting final-year medical students. The study population (n=7900) included all final-year medical students attending the 76 medical schools of Turkey. Of the 76 medical schools, 13 were selected by stratified random sampling, according to their accreditation certification and geographical location, which resulted in 2786 final-year medical students being contacted for participation. Comparisons between groups were analysed using Cox proportional hazards regression.

Results: Blood contact to intact skin was 75.2%, mucosal contact was 20.0%, percutaneous contact was 35.4%, and contaminated blood contact was 27.0% of medical students.The average percutaneous time-to-contact was 8.95±0.09 months, with the percutaneous contact rate approaching 50% in the 12th month of the hazard analysis. Percutaneous contact was significantly higher in students who received no formal occupational health and safety training (HR:1.29;95%CI:1.11-1.50) and who attended non-accredited medical schools (HR:1.45;95%CI:1.26-1.66). Percutaneous contact increased significantly in medical students with increasing invasive medical procedure applying scores (HR:1.06;95%CI:1.04-1.09).

Conclusion: The final year of medical education and training is a high-risk period for percutaneous contact, with the evidence suggesting that the high risks could be mediated by implementing appropriate occupational health and safety education and training.

Keywords: Blood Contact, Needle-Stick Injury, Medical Students, Accreditation, Occupational Health and Safety

Correspondence: Specialist, Mücahid Alp ARSLAN, Ankara Atatürk Sanatoryum Training and Research Hospital, Occupational Disease Clinic, Ankara, Türkiye. **E-mail:** mucahidalp@gmail.com, **Phone**: +90 553 640 32 44

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INTRODUCTION

The occupation of healthcare workers (HCWs) places them at high risk of blood(and body fluid) contact and blood-borne infection in the workplace, with high rates of contact generally reported among HCW. In two studiespreviously conducted in Turkey reported that, 50.1% and 56.0% of participants had contactin one-year working periods.[1,2] while in another study, 35% in a six-month period and 64% in a work-life period among HCW had contact.[3] Similar high rates were reported in a work-life study conducted among HCW in China, with 56.5% reporting blood or body fluid contact to the eyes and 84.7% reporting needle-stick injuries .[4]

The evidence from studies investigating HCW also indicates that the majority of blood contacts involve exposure to contaminated blood and blood products. In a study investigating blood contact among nurses, approximately two-thirds of needle-stick injuries were reported to be with contaminated needles.[5] Although it varied across the 14 world regions investigated, occupational HBV, HCV, and HIV infections were estimated to account for 37%, 39%, and 4.4% of infections contracted by HCW .[6] Globally, it was estimated that more than three million HCW experienced a contaminated percutaneous contact each year in the workplace, resulting in approximately 16,000 HCV, 66,000 HBV, and 1,000 HIV infections and 1100 deaths .[6] Occupational exposures to sharp-objects injuries are a major source of preventable blood-borne infections among HCW and, therefore, a major cause of disability and death.

Medical students who train in the same workplace and perform the same invasive medical procedures as other HCW, therefore, have to beassumed to have the same sharp-object injury and blood-borne infection risks.This assumption is supported by the evidence from studies conducted among medical students worldwide. In Iran, 39.3% of medical students reported sharp-object injuries, with 45.3% occurring as the result of needle-sticks.[7] In Canada, 25.0% of medical students reported that they had at least one needle-stick injury during their education and training at medical school.[8] In New York, 22% of 3rd and 4th year medical students reported needle-stick injuries.[9] In Germany, 21.4% of medical students reported percutaneous contacts (PC) every year.[10] In the two independent studies conducted in Turkey, 56.7%and 25.3%of medical students had contaminated needle-stick injuries in their medical education lives and 18.8% of medical students had needle stick injuries in last six months of medical education.[11,12]

Blood contact and infection risks among medical students during their education and training should receive the same health and safety considerations as that of other HCW. This is especially pertinent in medical students because they lack manual dexterity, experiencein personal protective equipment (PPE) use during invasive medical procedures, and knowledge and understanding of post-contact procedures. Moreover, because medical students are often younger than other HCW, their life-consequences after contracting a blood-borne infectious disease may be far greater than that of other HCW.

A comprehensive investigation and analysis of the education and training conditions and blood contact and infection risks of medical students, therefore, will reveal the scope and prevalence of these events. In addition, the

investigation and analysis may reveal whether there is a need to revise the occupational health and safety standards at hospitals affiliated to medical school to include the training of medical students and to include formal occupational health and safety training early in the curriculum of medical students.

Although similar studies have previously been conducted among medical students at Turkish medicals schools ,[13,14] in the present a much larger sample size will be investigated, with participating medical students attending medical schools in different regions of Turkey. The present study, therefore, will provide more accurate blood contact and needle-stick injury rates and a better understanding of the variables associated with these events. The present study will also investigate the impact medical school accreditation certification has on these events.

The primary aim of this study was to investigate the blood contact and needle-stick injury rates of final-year (year-6) medical students receiving their education and training at medical schools in different regions of Turkey and to analyse the relationships between blood contact and needle-stick injury and the personal variables of students and accreditation certifications of medical schools.

METHODS

Type of Study

In this retrospective cohort study, data was collected fromself-reporting questionnaires administered to final-year medical students from 01 to 30 May 2017, with the 12-month exposure reporting period extending from the start to the finish of the2017 academic year ofmedical schools in Turkey.

Subjects; Participation and Representativeness

The study population (n=7900) was comprised of all final-year students attending medical schools (n=76) in Turkey. Medical schools were first classified into seven groups according to geographical regions. Then they were checked if they are accredited. In order to evaluate if the accreditation of medical education effect the exposure, it was decided to select one accredited and one non-accredited faculty from each geographical region. In order to avoid over-representation of faculties with a small number of students in the findings, it was considered to select the faculties with the highest quota from each geographical region as an example. However, since none of the medical faculties in the Eastern and Southeastern Anatolia regions are accredited, non-accredited faculties from these regions had to be selected. While deciding on quotas of faculties, it was considered the number of students of the schools in 2010, since the entrance of final-year (year-6) medical students to the faculty would be approximately six years ago. Of the 76, 13 medical schools were selected according to accreditation certification and geographical region by stratified random sampling.

This medical school sampling provided 2786 final-year medical students, who were all contacted for participation. Of the 2786 medical students contacted, 451 did not consent to participate(n=203) and/or did not acknowledge contact(n=248). Subgroup analysis of those who did not agree to participate in the study showed that they were excluded as random.The student response and participation rate was 83.8%, with 84.5% of medical students from accredited medical schools and

83.4% from non-accredited medical schools choosing to participate.

Dependent and Independent Variables

The dependent variable was percutaneous contact and the timing of the contact. The independent variables were the personal characteristics, occupational health and safety knowledge, invasive medical procedure skills, and blood-borne disease knowledge of final-year medical students, as well as, the accreditation certification of medical schools they attended.

Measures; Terms and Criteria

Percutaneous contact: were stinging and / or injuries caused by medical instruments such as dirty / used injector tips, scalpels, etc. This variable was analysed according to the student's recorded statement, with the accuracy of the variable unable to be confirmed. The timing of percutaneous contact was analysed as the time (in months) from the start of classes to the date of percutaneous contact, with contacts occurring before the start of final year classes not included in the analysis. When calculating the number of people with percutaneous contact, the first event that people encountered and the timing of it were taken into account. Survival analysis, which also took this timing into account, was used in the analysis. In the presentation of the findings, repetitive contacts of the same student, such as the second or third contact, were not included.

Personal characteristics: were gender, place of residence,school achievement, and invasive medical procedure application score.

Student accommodation: were staying with family,in dormitories,in rental houses with friendsand in rental houses without friends.

School achievement: student achievement was analysed according to two independent questions; how do you rate your medical school achievements (1) those who express their medical school achievement as "above the class average" were grouped as "those who express themselves more successfully" and those who express themselves as "the same or below the average" were grouped as "those who express themselves less successfully" and (2) did you repeat a semester at any time during your medical school education and training (with those repeating at least one semester regarded as relatively unsuccessful).

Invasive medical procedure application score: medical students were provided with a list of 5 invasive medical procedures and asked to score themselves for each invasive medical procedure performed in their final year as follows;(0 points) never performed the invasive procedure, (1 point) performed the invasive procedure 1 to 3 times, and (2 points) performed the invasive procedure 4 or more times. The scores from each of the 5 invasive medical procedures were totalled, with the cumulative score for each student recorded as the student's "invasive medical procedure application score". This variable was included in the Cox proportional hazards regressionas a continuous variable and in the univariate analysis as a median of the group score.

Usage of protective measures status: the medical students were asked whether they used PPE when performing invasive medical procedures with students grouped according to their response into two groups; "frequent user" and "infrequent user".

The level of knowledge on blood-borne diseases: the medical students were asked 13 questions from prescribed literature on the subject .[15,16,17,18]The knowledge of medical students was rated and grouped according to the number of correct answers given. The median score for the medical students was 10, with a student having a score of ≥10 rated as having "good knowledge" and a student having a score of <10 rated as having "poor knowledge".

Trainings received on the subject: the medical students were asked if they were educated on the following three health and safety subjects: "invasive medical procedures and/or needle-stick injuries", "health of HCW", and "occupational rules, regulation, and hazards in hospitals".

Accreditation status of the medical school: The medical schools of Turkey are evaluated for accreditation according to a number of different standards, [19,20] with medical schools required to implement and maintain these standards in the education and training of medical students according to their accreditation certification. In the present study, the medical school sample was selected by stratified method according to accreditation.

Reporting the blood contact: the medical students were asked whether they reported their blood contact to the occupational health and safety (OHS) unit of the hospital affiliated to the medical school. Admissions or reports to other medical service providers (i.e., outpatient clinics, emergency service centres, and examination of serological testing) were not accepted.

Data Collection

Data collection was performed by 52 examiners, with four examiners stationed at each of the 13 selected medical schools.The four examiners reported to one study coordinator at the medical school, with the coordinator collecting and sendingcompleted questionnaires to the primary study centre.An informed consent form to participate in the study was attached to the questionnaire given to the medical students. Participating medical students were asked to complete the consents and questionnaires anonymously. Thequestionnaire took participants approximately 15 minutes to complete and reported on contact exposures experienced in their 2017 academic year.

Data Analysis and Statistics

The data were evaluated using the SPSS 25.0 (Statistical Package for Social Sciences) package program. Descriptive analyses are presented in numbers and percentages. Comparisons between groups were analysed by using Cox proportional hazards regression analysis, with cumulative hazard ratios for percutaneous contact calculated. Forward conditional regression was performed, with the probability for stepwise entry into the final model selected as 0.05. In addition to the beta coefficient and standard error of the variables remaining in the model, the multivariate findings were presented with statistical significance, estimated relative risk and 95% confidence interval (CI).Chi-square test was used to compare students' characteristics according to the accreditation certification of the medical schools they attended.

RESULTS

Table 1 summarizes the demographic characteristics of the participants, their medical school achievement, their level of knowledge

on blood-borne diseases, their invasive medical procedure application score, their use of PPE during invasive medical procedures, and their education in occupational health and safety subjects. Of the participants, 70.7% were in the 10th month of their final year of education and training, 66.9% had no education and training in the subject of occupational health and safety, and only 46.6% had used PPE in all invasive medical procedures.

Table 1: Participations' characteristics

	n	%
Gender		
Female	1122	48.1
Male	1213	51.9
Internship time		
9 months and below	684	29.3
10 months and over	1651	70.7
School achievement*		
express themselves more successfully	698	29.9
express themselves less successfully	1637	70.1
Repeating a semester		
who does not repeat any semester at all	1815	77.7
who repeats a semester at least	520	22.3
Student accommodation: those…		
staying with family	589	25.2
dormitory residents	338	14.5
who rent a house with their friends	898	38.5
who rent a house alone	510	21.8
Knowledge on blood-borne diseases**		
have a better knowledge (10 point+)	1102	47.2
have a poorer knowledge (0-9 point)	1233	52.8
Invasive medical procedure application score***		
5 point or less	1016	43.5
6 point or higher	1319	56.5
Usage of protective measures		
frequent protection user	1088	46.6
less frequent user ****	1247	53.4
Education on "invasive medical procedures and/or needle-stick injuries**"**		
Uneducated	635	27.2
Educated	1700	72.8
Education on"health workers' health**"**		
Uneducated	1538	65.9
Educated	797	34.1
Education on"working conditions, rules and risks in the hospital**"**		
Uneducated	1561	66.9
Educated	774	33.1
Total	**2335**	**100.0**

*self-expression of the students. **knowledge was measured by 13 question

***calculated according to; application about "taking a blood sample", "suture", "intravenous intervention", intramuscular or intravenous injection". ****less frequent user was those who don't use the protective materials in each intervention without any exception.

Types of exposures to blood or blood products experienced by participants in their last year were intact skin contact (75.2%), mucosal contact (20.0%), and percutaneous contact (35.4%). The prevalence of contaminated needle-stick injuries was 27.0%. Of the participants, 45.3% had not been vaccinated with sufficient doses in order to be immune to hepatitis B (Table 2).

Table 2: Contact types of participants on date of data collection and their immunization status

	n	%
Contact with intact skin		
Yes	1756	75.2
No	579	24.8
Mucosal contact		
Yes	466	20.0
No	1869	80.0
Percutaneous contact		
Yes	826	35.4
No	1509	64.6
Needle-stick injury		
Yes	631	27.0
No	1704	73.0
Immunization status for Hep B		
Natural immunity	73	3.1
Immunized with vaccine (3+doses)	1204	51.6
Not immunized (vaccinated 0-2 doses)	1058	45.3
Checking for Hep C with serological test		
Those who were checked	1427	61.1
Not checked	908	38.9

Table 3 shows the reporting-behaviour after percutaneous contact of students, according to the reasons for not reporting provided. Reporting rate of percutaneous contact among those who were exposed was only 13.0%. The most common reasons given for not reporting contact were, “knew the blood was not contaminated”, “had no knowledge of the reporting system” and “the injury was superficial”.

The average percutaneous contact time was 8.95 ± 0.09 months in the final year of education and training of participating medical students, calculated using the survival analysis technique (Figure 1). In the hazard analyses it was observed that the percutaneous contact rate approached 50% at the end of final year of medical education and training (12thmonth).

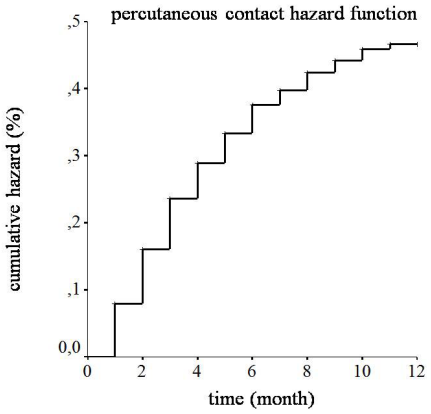

Figure 1: Cumulative hazard function for percutaneous contact by months

In the hazard analysis, adjusting for the timing of contact, the risk of percutaneous contact was significantly (HR 1.29: 95% CI: 1.11-1.50) higher in those who received no education and training on needle-stick injury. Risk was found to be significantly (HR 1.45; 95% CI: 1.26-1.66) higher in those educated at non-accredited medical schools. In addition, with each point increase in the invasive medical procedure application score the risk of percutaneous contact increased significantly (HR 1.06; 95% CI: 1.04-1.09) (Table 4).

Table 3: Students' reporting behaviour after percutaneous contact and reasons of not reporting.

Reporting behaviour	**n**	**%**
Those who reported *	107	13.0
Those who didn't report	719	87.0
Total	**826**	**100.0**
Reasons of not reporting percutaneous contact as stated by students (n=719)	**n**	**%****
I was sure that the patients' blood does not have any infection	371	51.6
I was unaware of the occupational accidents reporting system	145	20.2
Injury was superficial	115	16.0
I had no enough time to report	38	5.3
I thought that reporting costs too much time	36	5.0
I embarrassed from my friends	7	1.0
I was afraid of positive test results	7	1.0

*counted only reporting to Occupational Health and Safety (OHS) Unit
**percentages were calculated as according to those who didn't report the contact

Table 4: Factors effect the percutaneous contact (results of Cox regression)

Variables*	B±SE**	HR*** (95%CI)	p
†Those who uneducated on "invasive medical procedures and/or needle-stick injuries"[a]	0.255±0.075	1.29 (1.11-1.50)	0.001
†Invasive medical procedure application score	0.062±0.013	1.06 (1.04-1.09)	<0.001
†Those who were in the unaccredited medical school[b]	0.371±0.070	1.45 (1.26-1.66)	<0.001

*Variables included to analyse were:
Dependent variable; "percutaneous contact"
Independent variables; gender, student accommodation, school achievement, repeating a semester, education on "invasive medical procedures and/or needle-stick injuries", "health workers' health", and "working conditions, rules and risks in the hospital", usage of protective measures, invasive medical procedure application score, Hep B immunization status, knowledge on blood-borne diseases, whether the faculty is accredited
**B±SE: Cox regression coefficient and its standard error; ***HR: Hazard Ratio,
† referencecategories; a: those who educated, b: accredited school

Hazard analysis of percutaneous contact rates, adjusting for accreditation certification or education and training, were found to be statistically significant with Cox regression analysis as shown in Figure 2 and Figure 3.

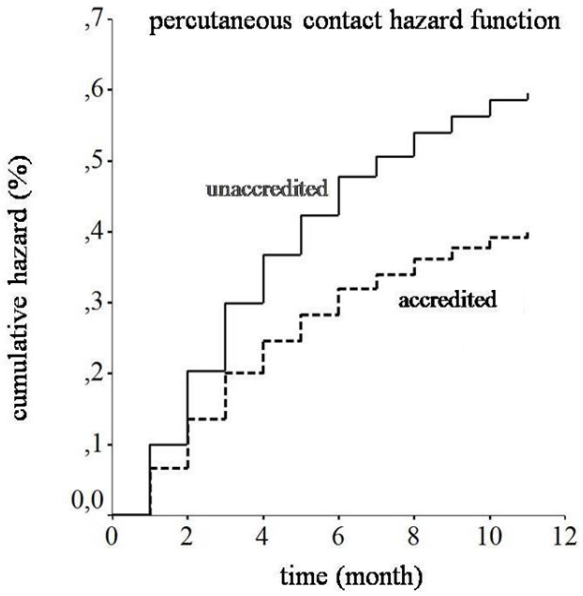

Figure 2: Comparison according to accreditation status about percutaneous contact

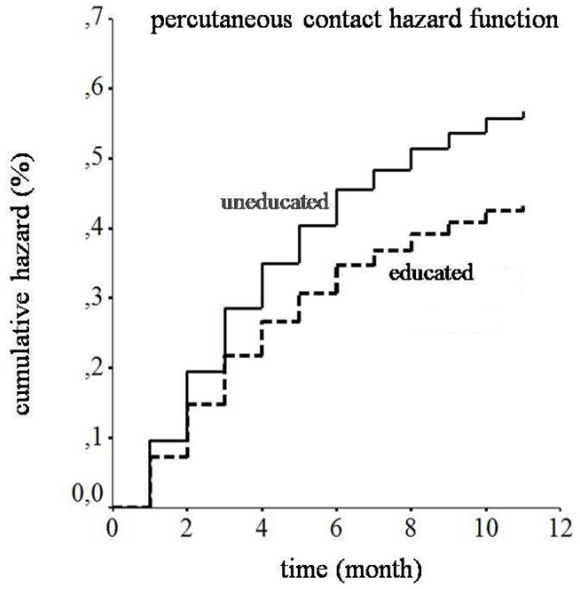

Figure 3: Comparison according to education status about percutaneous contact

The characteristics of participants, according to the accreditation status of the medical school attended, are compared. Participants at accredited medical schools reported higher rates of receiving education and training on "needle-stick injuries" (75.8%), "health of health workers" (37.8%), and "occupational rules, regulation and hazards in hospitals" (44.1%) than those at non-accredited medical schools (in order of 67.7%, 27.8% and 14.5%) ($p<0.05$). The Hepatitis B immunity rate was higher among the participants at accredited medical schools (56.5%) than among the participants at non-accredited medical schools (51.6%) ($p<0.05$). Participants at accredited medical schools reported that they performed fewer invasive medical procedures (46.4%) than participants at non-accredited medical schools (38.6%) ($p<0.05$).

DISCUSSION

The medical student sample analysed in the present study fully represents final-year medical students attending Turkish medical schools in 2017. The outcomes obtained, therefore, accurately reflect the prevailing blood contact and needle-stick injury risks among final-year medical students. Moreover, rather than contradicting, as envisioned at the design of the study, the outcomes of the present study corroborate the outcomes of previous studies. Contrary to the present study, medical students were often not the primary focus in previous studies, with study samples including general HCW, graduated doctors, nurses, and medical students. The more focussed and comprehensive investigation performed in the present study, therefore, strengthens the value of its evidence and significantly improves the understanding of blood contact and needle-stick injury relationships with the attributes of final-year medical students and the accreditation certification of medical schools.

While the percutaneous contact rate (35.4%) obtained from the reports of final-year medical students in the present study was high, it was not dissimilar to the percutaneous contact rates found among HCW in previous studies.[4,5,21,22,23,24] This, therefore, suggests that needle-stick and sharp-object injury risks of medical students were more similar to those of other HCW groups than previously thought. In two studies investigating medical students only, needle-stick and sharp object injury rates of 39.3% and 28.0% were reported in Iran and the US (Maryland, 4th year medical students), respectively .[7,25] Higher exposure rates, however, were expected to be found in the present study, as only final-year medical students were included in the analyses. In the final year of medical education and training, medical students generally perform more invasive medical procedures. Kessler et al reported that the most likely year of contact was the internship year of medical students,[26] with a contact rate of only 24.2% reported

by 5th year German medical students.[27]While the contact rate in the present study (35.4%) was only slightly lower than that of the Iran study,[7]the rate was half (62.7%) that reported by final-year medical students at Akdeniz University Medical School in an earlier study.[12] The large absolute rate difference between the two studieswas probably the result of one or more of the following: the introduction and implementation of an occupational health and safety education and training program in the undergraduate curriculum following the earlier study, a decrease in the frequency of final-year medical students performing invasive medical procedures, and a difference in exposure reporting period (i.e., the average duration of an internship).

The outcomes of the present study confirm that final-year medical students who had undergone appropriate blood contact and needle-stick injury education and training had significantly lower blood contact and sharp-object injury risks, which may be the main reason for the decrease in these rates observed between the past and present study.

The consequence of most concern following percutaneous contactis the contraction of an infectious disease as the result of blood-borne disease transmission. Based upon the percutaneous contactratefound among final-year medical students (n=7900) in Turkey ,[28] the estimated total number of percutaneous contactsin a 12 month period among final-year medical students was expected to be 2686 and based upon infectious disease transmission rates observed worldwide,the estimated numbers of the different types of infectious disease transmissions were expected to be 15 HCV, 59 HBV and 1 HIV.[6] While the projected estimates of percutaneous contactsand infectious disease transmissions are a concern, the possibility of underestimation due to variability in exposure reporting period of some of the medical students participating in the study increases the seriousness of the probability of contacts among final-year medical students. The contracting of a blood-borne infectious may result in death or in significant long-term quality-of-life problems. The fact that these disease transmissions are preventable and occur during medical students' education and training makes addressing the conditions that increase the risks of blood contact and needle-stick injury all the more pressing. It is also important to take in consideration that blood contactsand sharp-object injuries will continue to occur after graduation.[4,29,30] The observation that occupational health and safety education and training reducesexposure risks certainly points to the importance of developing and implementing appropriate occupational health and safety education and training programs for inclusion in undergraduate curricula. Providing medical students with effective education and training will not only reduce their blood contact risks during their undergraduate years but also during their post-graduate years and in their professional careers.

The identification of accreditation certification as an independent variable that significantly impacts blood contact and needle-stick injury risksof final-year medical students was another important observation made in the present study. The evidence suggests that the quality of education and training received and lower numbers of invasive medical procedures performed at accredited medical schools result in significantly lower contact exposure risks among final-year medical students. The large absolute rate difference

between the two groups, however, cannot simply be explained by the latter two variables. This, therefore, suggests the need for a cultural change at non-accredited medical schools, with consistent norms, values, and standards in the education and training of medical students and accreditation certification implemented at all medical schools. Most importantly, occupational health and safety education and training needs to be included in undergraduate curricula and the norms, standards, and procedures related to blood contact exposure, reporting, follow-up, and education and training needs to be included in accreditation certification. Meeting and maintaining consistent standards across all medical schools will most effectively protect the health and safety of medical students during their education and training.

The low contact reporting rate (13%) was another important observation made in the present study. While Kassa et al [31] and a multi-centre study [29] reported blood contact reporting rates of 37% and 48% among HCW, respectively, the reporting rates among medical students were reported to be much lower. Kessler et al estimated the reporting rate among medical students to be 14.3% .[26] Kuruüzüm et al reported a 15.4% rate among medical students, which was lower than in any other of the HCW groups included in the study.[13] Bernard et al reported that 43% of medical students never reported blood contact, with only 39% reportingcontact correctly and only 12.5% following correct post-contact procedures.[25] Resistance to blood contact reporting has not only been found to be an issue among medical students but also among HCW. Moreover, in a study among HCW, the introduction of appropriate (and mostly simple) interventionswas found to improve blood contact reporting.[32] Medical students, therefore, should participate in the"occupational health and safety services" provided by hospitals, which should include these interventions.

Limitations

Data was retrospectively collected from final-year medical students who attended medical schools selected by cross-sectional sampling. The data collection date was chosen as the month of June, as the academic year of most medical schools ended in June. However, not all students had a 12month exposure period at data collection, because some students started their final year in different months and some medical schools operated on a different calendar year.These inconsistencies could have resulted in an underestimation of contact rates reported; however, using the survival technique to analyse data may have helped to overcome this limitation. In the Cox proportional hazards regression analysis (Figure 1) the percutaneous contact rate at 12 months was 50% as compared to 35.4% obtained from the descriptive statistical analysis (Table 2). In the present study only final-year medical students participated in the reporting, therefore, the outcomes cannot be generalized to all medical students. Moreover, the large sample size investigatesmeans that blood contact rates and needle-stick injury rates may more accurately reflect the population rates than in previous studies.Participants in previous studies were also very often heterogeneous and not fully representative of the population .[7,13,14]

While performing Cox regression analysis and survival calculations, the denominator changes after each event as required by the analysis. However, in reality, the risk of repeated percu-

taneous injury to the same student remains. Defining the cases as "first event" and recurrent events that may continue in the same case were not included in the calculation. Therefore, the contact frequencies presented in our findings are the number of people who encounter contact, and the number of percutaneous contact events (accidents) is much higher than these numbers

CONCLUSION

The final year of medical education and training is a high-risk period in terms of blood contact and needle-stick injury, with the evidence suggesting that appropriate education and training programs could effectively mediate these risks. In addition, the accreditation status of medical schools was found to be a significant independent variable in contact risk. The low reporting rate of contact among the medical students is a serious concern that requires appropriate intervention measures.

Suggestions

It should be compulsory for final-year medical students to comply with the occupational health and safety standards set by hospitals affiliated to medical schools and essential for medical schools to actively monitor contacts and to include effective occupational health and safety education and training programs to undergraduate curriculums. In addition, revised norms, standards and procedures related to blood contact exposure, reporting, follow-up, and education and training should be included in accreditation certifications.

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Ethical Declaration: Health Science University Antalya Training and Research Hospital Clinical Research Ethics Committee approved this study with the date of 20.04.2017 and the number of 8/04. Administrative permissions were obtained from each of the medical school included in the study. At the end of the study, the medical schools included were informed of the results.

Author Contribution: Concept: MAA, LD, Design: MAA, LD, Supervising: MAA, LD, Financing and equipment: MAA, LD, Data collection end entry:MAA, EG, LD, Analysis or interpretation:MAA, EG, LD, Literature search:MAA, EG, LD, Writing:MAA, EG, LD, Critical review:MAA, EG, LD.

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