

Occupational exposure to blood and body fluids among health care workers in Ankara, Turkey

Alpay Azap, MD,^a Önder Ergönül, MD, MPH,^b Kemal O. Memikoğlu, MD,^a Aypegül Yeşilkaya, MD,^a Adalet Altunsoy, MD,^a Güliden-Yılmaz Bozkurt, MD,^a and Emil Tekeli, MD^a
Ankara, Turkey

Background: The risk of occupational acquisition of bloodborne pathogens via exposure to blood and body fluids is a serious problem for health care workers in Turkey. Because there are no systematic recording programs in Turkey, national data concerning frequency of exposures are not readily available.

Objective: To determine the risk factors of exposure to blood and body fluids among health care workers (HCWs).

Methods: This study was conducted in the hospitals of Ankara University School of Medicine. A structured survey form was administered by person-to-person interview.

Results: The study included 988 HCWs: 500 nurses (51 %), 212 residents (21 %), 152 nurse assistants (15 %), and others (13 %). Six hundred thirty-four (64 %) of the HCWs had been exposed to blood and body fluids at least once in their professional life (0.85 exposure per person-year). The most frequent cause of the sharps injuries was recapping the needle (45 %). Of the injured HCWs, 60 (28 %) were not using any personal protective equipment, and 144 (67 %) did not seek any medical advice for injury.

Conclusions: Systematic control measures, including an effective and goal-oriented education program targeting HCWs, prospective record keeping, and instillation of a special unit for the health of HCWs should be implemented in the hospital setting. (Am J Infect Control 2005;33:48-52.)

Health care workers (HCWs) are at risk for transmission of hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) via exposure to blood and body fluids (BBFs). An occupational exposure that places HCW at risk for HBV, HCV, or HIV infection may be either a percutaneous injury (eg, a needlestick, cut with a sharp object) or contact of mucous membrane or nonintact skin with blood, tissue, or other potentially infectious body fluids.¹ It is estimated that more than 600,000 percutaneous and 200,000 mucocutaneous BBF exposures occur each year in the United States.^{2,3} Because there are no systematic recording programs in Turkey, national data

concerning frequency of exposures are not readily available. The hepatitis B surface antigen (HBsAg) seropositivity among the healthy population was reported to be 6.8 % (2 %-14 %) in Turkey and 5.5 % in Ankara region.^{4,5} Anti-HCV antibody positivity was reported to be similar (0.5 %) both in the Ankara region and in Turkey.^{4,5} HBsAg and anti-HCV positivities were reported as 4.8 % and 0.7 % among HCWs, respectively.⁴ In this study, we aimed to survey the risk factors for BBFs in one of the largest medical centers in Turkey.

METHODS

Subjects

The study was conducted in 2 tertiary hospitals of the Ankara University School of Medicine. These 2 hospitals have a total of 2100 beds: 1100 in one and 1000 in the other. The study was approved by the research board of the hospital. We intended to reach the maximum number of HCWs. Therefore, HCWs active in patient care (physicians, nurses, nurse assistants, laboratory technicians, dentists, and anesthesiology technicians) were asked to participate to the study. The housekeeping personnel were not included because of their separate insurance and compensation status.

From the Clinical Microbiology and Infectious Diseases Department, School of Medicine, Ankara University^a; and Clinical Microbiology and Infectious Diseases Department, Numune Education and Research Hospital, Ministry of Health, Ankara, Turkey.^b

Reprint requests: Alpay Azap, MD, Ankara Üniversitesi Tıp Fakültesi, Klinik Bakteriyoloji ve Enfeksiyon Hastalıkları AD, 06100 Sıhhiye, Ankara, Turkey; E-mail: alpayazap@yahoo.com.

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Table 1. Characteristics of subjects

Characteristics	Subjects, N = 988
Female (%)	693 (70)
Mean age, years (minimum-maximum)	31 (19-62)
Mean working experience (range)	9 years (0.1-35)
Profession (%)	
Nurses	500 (51)
Physicians	248 (25)
Nurse assistants	152 (15)
Laboratory technicians	46 (5)
Others	42 (4)
Departments (%)	
Surgical wards	303 (31)
Internal medicine wards	378 (38)
Intensive care unit	73 (7)
Operating room	79 (8)
Others	155 (16)

Three infectious diseases residents administered a structured survey form by person-to-person interview after a brief course provided by an epidemiologist to standardize the attitude of the interviewers. The survey included questions related to demographics, injury, attitude of the HCW after exposure, status of serology, and history of vaccination (none or 3 times) against hepatitis B. The last injury that occurred in the last 6 months was detailed to determine the risk factors for exposure and attitude of the HCW.

Definitions

HCWs who participated in postgraduate courses (seminars and conferences) on occupational exposures to bloodborne pathogens and prevention of nosocomial infections were defined as "educated." "Working longer" was defined as working more than the usual 8 hours of shift work daily. The needlestick injuries (NSIs) or cuts with sharp objects were defined as sharps injuries (SIs). HCWs with more than 10 years of tenure on the job were defined as "experienced."

Analysis of data

Data were analyzed using Stata Statistical Software, version 8.0 (Stata Corporation, College Station, TX). Mean comparisons for continuous variables were done using independent groups *t* tests. Proportion comparisons for categorical variables were done using χ^2 tests, although Fisher exact test was used when data were sparse.

By a multivariate analysis, the risk factors for recapping as one of the causes of injury were studied. The departments, professions, age, and education were included in the study, and logistic regression was performed. The stepwise, backward selection approach was used. Significance was set at $P < .05$, using 2-sided comparisons.

RESULTS

Of the 1680 HCWs, 988 (59%) were interviewed. The mean age was 31 years, and 70% were female (Table 1). Six hundred thirty-four (64%) of the HCWs had been exposed to BBFs at least once in their professional life (0.85 exposure per person-year). In the last 6 months, 343 HCWs (35%) had the history of BBF exposure, and 214 (62%) of them claimed SIs, with an average number of injuries per HCWs as 2 (minimum, 1; maximum, 20) (Table 2). Although none was proven, 10 subjects in our study self-reported occupational acquisition of HBV and 1 subject HCV infections.

Subanalysis of the 214 most recent SIs in the last 6 months

There was no significant difference between the risk ratio of nurses and physicians (27% vs 27%, respectively, $P = .967$), whereas the SIs were reported 2 times more in surgical wards (not in operating room) than in internal wards (30% vs 16%, respectively, $P < .001$). In subanalysis of the departments and professions, no significant difference was detected between nurses working in surgical and internal wards (28% vs 25%, respectively, $P = .482$), whereas surgical residents had 5.5 times more SIs than the residents in internal wards (44% vs 8%, respectively, $P < .001$). The nurses who participated in educational sessions had reported less SIs than the ones who did not ($P = .048$). Distribution of ages ($P = .506$) and departments ($P = .856$) were similar between educated and noneducated nurses. The SI risk was not associated with working longer than 8 hours ($P = .974$).

The most frequent cause of the SIs was recapping the needle (45%). Being a nurse and working in the internal medicine department were found to be the risk factors for recapping as a cause of injury (Table 3). The most common procedures ongoing when SIs occurred were surgery (17%), phlebotomy (10%), suturing (10%), and resuscitation (5%). Of the injured HCWs, 60 (28%) were not using any personal protective equipment (masks, gloves, and others). The most common (63%) reason for not using personal protective equipment was being in a hurry. The other self-declared reasons were unavailability of the protective equipment in the unit (17%), feeling of discomfort while working with the protective equipment (10%), and personal neglectfulness (4%).

Seeking medical advice

One hundred forty-four (67%) of the 214 injured HCWs did not seek any medical advice. Ten percent (7 in 67) of the physicians and 41% (56 in 136) of the nurses sought medical advice following injury ($P <$

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