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Factors related to the willingness of Palestinian dentists to treat patients with blood-borne diseases

Elham Kateeb^{1,2}, Rafat Amer³ and Musa Bajali¹

¹School of Dental Medicine, Al Quds University, University Main Street, East Jerusalem, Palestine; ²College of Dentistry, University of Iowa, 801 Newton Rd #451, Iowa City, IA, 52242, USA; ³College of Dentistry, The Ohio State University, 305 W. 12th Avenue, Columbus, OH, 43210, USA.

This study aimed to explore, using groups of simulated patients, the willingness of Palestinian dentists to treat patients with blood-borne diseases. Simulated patients conducted a telephone survey of a random sample of dentists registered with the Palestinian Dental Association. A random system was used to assign dentists to one of two groups, in which simulated patients randomly identified themselves with either human immunodeficiency virus (HIV) or hepatitis B virus (HBV) and asked for a dental appointment. Three-hundred and four dentists (76%) responded to our telephone survey. Sixty-six per cent accepted requests for appointments and 34% declined the appointment requests. Sixty-eight per cent of the dentists declined appointment requests from patients with HIV and 32% declined appointments from patients with HBV. Dentist's gender, 'blood-borne disease type', 'place of private practice', 'country of graduation' and 'years since graduation' were all significant predictors in the final logistic model. More than one-third of our respondents declined appointment requests from patients with blood-borne disease, two-thirds of which were for patients who identified themselves as having HIV. Education and training programmes are needed to improve attitudes of dentists – especially female dentists, older dentists and dentists practising in northern governorates – towards patients with blood-borne diseases.

Key words: Dentist, human immunodeficiency virus, Palestine, willingness, hepatitis B infection, patient-to-professional/prevention and control

INTRODUCTION

Dental treatment often includes direct contact with patients' blood and saliva, which puts dental professionals at a high risk for cross-infection with blood-borne diseases such as human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV)¹. Even though HIV and viral hepatitis have different epidemiological characteristics, all can be transmitted to the staff of a dental team by professional exposure, most often by a needlestick injury. However, the risks of infection with HIV and viral hepatitis after a single needlestick injury differ significantly: 0.3% for HIV, 1.8% for HCV and 30–50% for HBV^{2,3}. Dentists may therefore avoid treating patients who have blood-borne diseases⁴, which is an attitude that has serious public health consequences. For instance, in 60–70% of HIV-positive individuals, oral symptoms of HIV infection are the

first signs of progression to the acquired immunodeficiency syndrome (AIDS) and can be used as appropriate diagnostic criteria in the detection of AIDS⁵. Additionally, healthy asymptomatic HIV-, HBV-, HCV-positive patients may conceal their condition in order to receive appropriate treatment, which may lead to an increase in the risk of cross-infection⁶.

Previous literature has demonstrated a wide range of attitudes towards providing dental care for patients with blood-borne diseases, especially HIV/AIDS, across different cultures^{7–17}. However, the majority of the global literature that discusses dentists' attitudes towards treating HIV and viral hepatitis-positive patients is based only on dentists' stated behaviour, which might not be in line with their actual behaviour. To the best of our knowledge, only two studies have evaluated the reactions of dentists when patients with HIV or HBV request an appointment^{16,17} and no

studies have directly assessed actual behaviours during visits by those patients. Therefore, in this study, simulated patients were used to directly assess dentists' behaviour by measuring their willingness to schedule an appointment for a patient with a blood-borne disease at their private practices. This methodology has been used successfully in some examples of the dental literature^{16–18}.

This study is the first of its kind to investigate Palestinian dentists' attitudes and behaviours towards such ethical dilemmas in dentistry. Palestine or the Occupied Palestinian Territories, as called by the United Nations (UN)¹⁹ comprise the West Bank (including East Jerusalem) and the Gaza Strip. In 1993, following the Oslo Accords, parts of the territories politically came under the jurisdiction of the Palestinian National Authority. However, Israel still exercises full military control and, according to the Oslo Accords, civil control, over 61% of the West Bank²⁰. The West Bank and Gaza are totally separated geographically, politically and administratively, which resulted in Gaza having its own dental association. This isolation made inclusion of Gaza in this study logistically difficult. In general, Palestine is considered an area of intermediate endemicity of hepatitis B²¹. The West Bank region of Palestine had 31 cases of hepatitis B in 2008, 21 cases in 2009, 27 cases in 2010 and 23 cases in 2011. In addition, there were 847 HBV carriers in 2011 in the West Bank compared with 966 in 2010²¹. The case is different for HIV/AIDS statistics; some reports suggest that the numbers of patients with HIV/AIDS are under-diagnosed and under-reported in Palestine²². This may be a result of the lack of free systematic HIV testing, except for that performed at the West Bank's blood banks²². The available data for Palestine show that the incidence rate of HIV/AIDS is low. According to the HIV/AIDS Surveillance Report 2011, the cumulative reported cases since 1988 total 72, of which there were 60 patients with AIDS and 12 HIV-positive carriers²¹. Palestine is a special case and can be considered at higher risk of HIV/AIDS than neighbouring countries because of the lingering Israeli–Palestinian political and military conflict. This conflict has negative effects on the access to medical care of Palestinian patients in general, on the access to diagnostic services and on the consistency and the quality of therapy and follow-up visits for patients with HIV/AIDS in particular²³. In addition, despite the sharp drop in Israelis hiring Palestinian workers since the 1990s, in 2009, still around 40,000 Palestinians continued to work inside Israel²⁴. Most of those workers, as a result of closures, spend their nights in Israel, a relatively high risk place for HIV/AIDS, with 11,000 accumulative diagnosed cases reported by the UN until 2012²⁵. All this suggests higher spread of the

disease than reported and that the need of these individuals for medical care, including dental care, is greater than previously thought. Therefore, there is an urgent need to establish the cause of, in order to resolve, any unwillingness of dentists to treat HIV-infected persons.

Evidence shows that legal measures alone cannot change health-care providers' attitudes towards those patients²⁶. In contrast, increasing the awareness of dental professionals about how to deal with patients with blood-borne diseases and improving infection-control measures at dental clinics might play a more positive role in improving dentists' attitude and confidence towards treating those patients^{11,27}. The literature showed that high awareness of the disease process and the measures that minimise the risk of transmission increases dentists' willingness to treat those patients^{28,29}.

Thus, this study was carried out to investigate the willingness of dentists in the West Bank area of Palestine to treat patients with transmissible blood-borne diseases, specifically HIV and HBV. The results from this study can help policy makers in professional associations and educational institutions to design educational courses and develop infection-control guidelines to increase awareness, change attitudes and avoid discrimination against patients with blood-borne diseases.

METHODS

The Palestinian Dental Association (PDA) list of registered dentists for 2008 was used as a sampling frame for this study. Dentists in the ten governorates of the West Bank (Qalqilya, Salfit, Tulkarm, Jenin, Tubas, Ramallah, Bethlehem, Nablus, Hebron and Jerusalem) are required to register in the PDA to practice the profession legally in Palestine. Demographic data, including age, gender, year of graduation, place of graduation, place of work and dental specialties, were obtained from this list.

From 1,261 dentists registered in the PDA in 2008, a systematic random sample (using a random starting point and a fixed, 4th periodic interval) of 400 dentists were selected. Four senior dental students at Al Quds University School of Dental Medicine were responsible for conducting the telephone survey of this study. A random system (using odd and even numbers) was used to assign dentists to one of two groups. Students (simulated patients) spoke directly with the dentist responsible for the dental practice and randomly identified themselves as having one of either HIV or HBV. Students asked the question 'Are you willing to treat me as a patient with HIV or HBV?', and then wrote down the dentist's response. The response variable had four categories: 'Accept',

‘Accept with hesitance’, ‘Reject with excuse’ and ‘Reject’. HCV was not included in this study because its prevalence is low in Palestine²¹ and the risk of transmission of this virus through professional exposure is low compared with HBV^{2,3}.

The representativeness of the sample was assessed by comparing the whole list of dentists registered in the PDA and our sample using some available demographic data, such as gender, years since graduation, country of graduation and place of private practice.

Descriptive statistics were used to describe our sample and the chi-square test was used to explore relationships between our predictor variables and our outcome. To build a logistic regression model, the response variable was collapsed into two categories: Accept (‘Accept’, ‘Accept with hesitance’) and Reject (‘Reject with excuse’ and ‘Reject’). Logistic regression was used in this study to model the relationship between the odds ratio of the binary outcome (Accept/Reject) and a set of predictor variables consisting of the dentists’ demographics, gender of the simulated patient and type of blood-borne disease (HIV or HBV). All categorical predictor variables were entered into the model using SPSS reference coding; the last category of each predictor variable was set as the reference category. The predictor variables and the outcome variable and their categories are shown in *Table 1*.

All aspects of the study were approved by the research committee at the School of Dental Medicine at Al Quds University and it was conducted in full accordance with the World Medical Association Declaration of Helsinki. This study was an observational

non-interventional audit study which required subjects to remain unaware of their participation; thus, the conditions of informed consent were not met. However, data in this study were collected anonymously and all necessary steps were taken during data collection to protect all identifying information on the subject.

RESULTS

Of our sample of 400 dentists, 304 responded to our telephone survey (giving a response rate of 76%). Eighty-nine per cent were men and 11% were women. Fifty per cent of the sample were dentists who had been practising for 9–18 years and only 7% had been in practice for more than 28 years. Fresh graduates (<8 years) made up 26% of the sample. Eighty-two per cent of our sample were general practitioners, and 53% of the sample had graduated from universities in Eastern European countries, whereas 33% had graduated from universities in Arab countries. The majority of our sample practiced in the governorates of Hebron (24%), Jerusalem (21%) and Nablus (14%). More demographic data are shown in *Table 1*.

Sixty-six per cent of our sample agreed to schedule appointments for patients with blood-borne diseases in general, although 16% were hesitant. On the other hand, 34% of our sample declined the appointment request, with 12% rejecting the appointment without giving a reason.

Dental appointment requests from patients who identified themselves as HIV positive were declined by 68% of the dentists. In contrast, callers who identified

Table 1 Dentists’ demographics that were used as predictor variables in the final model

Predictor variables	Categorical levels	Frequency (%)
Dentist’s gender	Male	271 (89.1)
	Female*	33 (10.9)
Dentist’s year of graduation	1970–1979	21 (7.1)
	1980–1989	53 (17.9)
	1990–1999	149 (49.3)
	2000+*	76 (25.7)
Dentist’s specialty	General practitioner	251 (90)
	Specialist*	28 (10)
Country of study	Arab countries	97 (32.7)
	Western European countries and the USA	44 (14.8)
	Eastern European countries*	156 (52.8)
Place of private practice	Jerusalem	62 (20.6)
	Governorates of the middle: Ramallah, Bethlehem, Nablus	109 (36.2)
	Governorates of the South: Hebron	72 (23.9)
	Governorates of the North: Qalqilya, Salfit, Tulkarm, Jenin, Tubas*	58 (19.3)
Gender of the simulated patient	Male	93 (30.6)
	Female*	211 (69.4)
Disease of the simulated patient	HIV	147 (48.4)
	HBV*	157 (51.6)
Response variable (outcome)	Categorical levels	Frequency (%)
Response of the dentist	Accept the appointment	201 (66.1)
	Reject the appointment*	103 (33.9)

*Levels used as reference cells in logistic regression.

themselves as infected with HBV were refused appointments by only 32% of the dentists.

The results of bivariate analysis demonstrated that gender of the dentist, type of blood-borne disease and place of dentist's practice were significant variables. Female dentists [$\chi^2(1, n = 304) = 5.1 (P < 0.02)$] and dentists practising in Jerusalem [$\chi^2(1, n = 304) = 4.7 (P < 0.03)$] were less willing to accept patients with blood-borne diseases. On the other hand, dentists in general were more willing to accept appointments from patients with HBV than from patients with HIV [$\chi^2(1, n = 304) = 23.9 (P < 0.000)$].

Logistic regression analysis was employed to predict the log odds that a dentist would agree to schedule an appointment of a patient with a blood-borne disease. The predictor variables included dentist's demographic data, type of blood-borne disease that simulated patients claimed to have and the gender of the simulated patient. A test of the full model *versus* a model with intercept only was statistically significant [$\chi^2(12, n = 265) = 54.5 (P < 0.000)$]. The model was able to classify correctly 81% of those who agreed to schedule an appointment with the simulated patients and 39% of those who refused to schedule an appointment, for an overall success rate of 71%.

Table 2 shows the logistic regression coefficients, significance levels, odds ratio (OR) and confidence intervals (CI) for each of the predictors. Employing a 0.05 criterion of statistical significance, dentist's gender, blood-borne disease type and three of the dummy predictor variables had significant partial effects. The OR for dentist's gender indicates that when holding all other variables constant, a male dentist is 4.59

times more likely to accept the simulated patient with blood-borne disease than is a female dentist. In addition, the odds of scheduling an appointment for a patient with HBV were 5.05 times more likely than for a patient with HIV. A dentist who graduated from an Arab country had higher odds of accepting a patient with blood-borne disease (OR = 3.1) compared with a dentist who graduated from an Eastern European country.

Practices in the governorates of the Middle or the South were 2.2 and 2.6 times as likely to accept patients with blood-borne diseases than the governorates of the North of the West Bank. Although significant, the effect of year of graduation was much smaller than the other factors. Dentists who graduated in the 1970s were less likely to accept patients with blood-borne disease (OR = 0.27) than were dentists who graduated in, or after, 2000.

DISCUSSION

The unique situation of Palestine, geographically and politically, puts it at a higher risk of both the blood-borne diseases HBV and HIV. Statistics always underestimate the size of the problem when it comes to diseases that have a social stigma, such as HIV, or, to a lesser extent, HBV. Patients with blood-borne diseases are at high risk of dental disease and their chance of finding dentists who are willing to care for them is lower than for patients who do not have blood-borne diseases^{30,31}. Dentists are required to provide care to patients with blood-borne disease as part of their ethical commitment to provide care to individuals, regardless of their gender, ethnicity, age, sexual orientation or disease status³².

The methodology that is used to assess dentists' willingness to care for such patients is usually biased. Most previous studies conducted surveys that asked dentists to state their willingness to accept those patients; however, social desirability can overestimate the results. To overcome social desirability in this study, we assessed the willingness of dentists in the West Bank part of Palestine to treat patients identifying themselves as either HIV positive or HBV positive by investigating their actual behaviour towards a simulated infected patient rather than their stated behaviour on questionnaires.

This survey considered one of the few times that data were collected from Palestinian health-care providers in general and dentists, in particular, to assess their behaviour towards an important professional practice. Although 24% of registered dentists overall were included in this survey, it revealed several important points that could impact the improvement of dental management of cross-infection practices and attitudes towards people with blood-borne diseases.

Table 2 Logistic regression of the binary outcome (Accept the patient/Reject the patient)

Predictor variables*	B	Sig.	OR	95% CI of the OR
Dentist gender	1.524	0.003	4.590	1.70–12.38
Specialty status	-0.157	0.756	0.855	0.31–2.30
Patient gender	-0.384	0.230	0.681	0.36–1.27
Blood disease type	1.619	0.000	5.046	2.78–9.13
Arab countries	1.128	0.003	3.090	1.45–6.56
Western European countries	.518	0.240	1.678	0.71–3.97
Jerusalem	.169	0.704	1.185	0.49–2.84
Governorates of the Middle	.794	0.047	2.211	1.01–4.84
Governorates of the South	.952	0.045	2.591	1.02–6.57
Year of graduation: 1970–1979	-1.297	0.035	0.273	0.08–0.92
Year of graduation: 1980–1989	-0.317	0.509	0.728	0.28–1.86
Year of graduation: 1990–1999	-0.160	0.663	0.852	0.42–1.75
Constant	-1.943	0.021	0.143	-

CI, confidence interval; OR, odds ratio; Sig., significance.

*Reference levels are not shown here.

Thirty-four per cent of respondents declined, and 16% were hesitant to accept, a request to schedule an appointment for simulated patients who identified themselves as having blood-borne diseases. This may reflect negative attitudes of dentists towards patients with blood-borne infections or lack of confidence in their ability, or their practice's readiness, to treat such patients²⁸. This negative attitude may force patients infected with HIV or HBV to conceal their infection from their treating dentists for fear of being denied dental treatment³³. Based on this consideration, infection-control precautions must be strictly followed with every patient.

It is interesting to note that more dentists declined to treat simulated HIV-infected patients than simulated HBV-infected patients (68% and 32%, respectively), even though the reports of HIV transmission through the oral cavity route are very rare (although it cannot be completely excluded), compared with HBV³⁴. This finding might indicate the misconception of the disease pathogenicity or the social stigma associated with HIV-infected people. These results conform to dentists' attitude towards patients with HIV/AIDS in published reports from other regions in the world^{16,29,35,36}. In a similar study in Jordan, a country that is considered to be the closest in culture and beliefs to Palestine, 45% of the respondent dentists were willing to treat HBV-infected patients¹⁷ compared with 15% who agreed to provide care for HIV-infected patients¹⁶.

Although reports from other countries showed that female dentists appear to follow infection-control measures more closely than their male colleagues^{28,37}, our results found that female dentists are less likely to agree to treat a simulated patient with a blood-borne disease in general compared with a male dentist. This may lead us to assume that this refusal reflects the exaggerated fear of transmission of infection among female dentists owing to the social stigma attached to blood-borne diseases, especially in HIV/AIDS.

The country of graduation had a significant influence on willingness to treat the simulated HIV/HBV patient (OR = 3.1). Dental schools in Palestine and other Arab countries are more recent than those in Eastern European countries. In our sample, more dentists of older age had graduated from Eastern European countries and this difference was statistically significant [χ^2 (3, $n = 291$) = 25.4, $P < 0.000$]. Thus, the 'Country of graduation' variable could be confounded by the 'Years since graduation' variable, which was also significant in the final model. This may reflect that more recent dental graduates may have received more formal training related to HIV/ HBV than older dentists²⁶. However, it is still worthwhile reviewing what is covered in the dental

curricula of applicants for dental license from different countries to make sure that crucial infection-control elements and basic knowledge about the management of patients with transmissible diseases are provided.

Another interesting result was the significant differences in the odds of accepting those patients in the governorates of the centre and the south compared with the governorates of the north. This can be explained by the cultural differences among those areas and the degree of urbanisation, where northern governorates are the most conservative and the least urbanised among other governorates.

The ability to generalise our results to the current attitudes and behaviors of Palestinian dentists towards patients with blood-borne diseases could be a limitation of the current study. Although the response rate was relatively high (76%), the study sample differed significantly from the PDA list in some demographics. Female dentists and recent graduates were under-represented in our sample, and graduates from western countries and dentists practicing in Hebron were over-represented. Additionally, these data were extracted from the 2008 PDA list, and the current status of dentists may differ from what we captured in our study. However, to the best of our knowledge, there were no organised campaigns or educational courses about how to deal with blood-borne diseases or updates to the infection-control guidelines since then. The only change would be that new dentists entering the profession are bringing updated knowledge on how to treat patients infected with blood-borne diseases.

More than one-third of our respondents declined appointment requests from patients with blood-borne disease and two-thirds declined dental appointment requests of patients who identified themselves as infected with HIV. This suggests that: (i) many dentists are still holding unfounded negative attitudes toward patients with blood-borne diseases; (ii) patients infected with HIV or HBV will have difficulty obtaining dental health care in Palestine; and (iii) lack of confidence among dentists in their ability or their practices' readiness to treat such patients. Strict professional guidelines on infection-control measures are needed to increase readiness of private practices and boost confidence among dentists to treat patients with blood-borne diseases. In addition, management of those patients should be emphasised in educational and continuous training programmes, to increase dentists' knowledge about the disease process and the risks of transmission, which may lead to an improvement of dentists' attitudes – especially female dentists, older dentists and dentists practising in northern governorates – towards such patients.

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Conflict of interests

Authors of this article have NO affiliations with or involvement in any organisation or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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Correspondence to:

Elham Kateeb,

School of Dental Medicine/Al Quds University,
University Main Street, East Jerusalem, Palestine.

and

Research Associate at Public Policy Center/
University of Iowa Iowa City, IA 52242,

USA.

Email: elhame20@gmail.com