# Knowledge and attitudes of dental patients towards cross-infection control measures in dental practice

*Adel A. Mousa,[1] Nadia M. Mahmoud,[2] Azza M. Tag El-Din [3]*

## معارف مرضى الأسنان حول تدابير مكافحة انتقال العدوى في عيادات الأسنان ، ومواقفهم تجاهها

عادل أحمد موسى ونادية مصطفى محمود وعزة محمود محمد تاج الدين

**خلاصة** : تمت دراسة معارف ومواقف 460 من مرضى الأسنان المترددين على العيادات الخارجية لطب الأسنان بجامعات الإسكندرية وطنطا والمنصورة . فتم استجواب كل مريض على حدة بناء على استبيان حول الاستخدام الروتيني للقفازات والأقنعة والنظارات الواقية . وأسفرت النتائج عن أن 90% من المرضى كانوا يتوقعون أن يرتدي أطباء الأسنان القفازات ، وتوقع 73% من المرضى أن يرتدي الأطباء أقنعة الوجه ، بينما توقع 37% من المرضى أن يرتدوا النظارات الواقية . وكان معظم المرضى يعتقدون أن القفازات تحمي المرضى بينما الأقنعة والنظارات تحمي الأطباء . وكان حوالي 50% من المرضى يعتقدون أنهم يمكن أن يصابوا بأمراض معدية أثناء معالجة أسنانهم ، وكلما ازدادوا تعليماً زادت مخاوفهم من العدوى . ولوحظ أن مرضى طنطا كانوا أكثر من غيرهم تخوفا من انتقال العدوى .

ABSTRACT The knowledge and attitudes of 460 dental patients attending outpatient dental clinics in Alexandria, Tanta, and El-Mansoura universities were studied. Every patient was interviewed individually using a questionnaire concerning the routine use of protective gloves, masks and spectacles. The results revealed that 90% of the patients expected dentists to wear gloves, 73% expected them to wear face masks and 37% to wear spectacles. Most patients believed that gloves were for the patient's protection while face masks and spectacles were for the dentist's protection. About 50% of patients believed that they could contract infectious diseases during dental treatment; the more educated, the greater the concern of infection. Tanta patients were more concerned about cross infection than other patients.

**Connaissances et attitudes des patients des consultations dentaires en ce qui concerne les mesures de lutte contre les infections croisées en pratique dentaire**

RESUME Les connaissances et les attitudes de 460 patients qui fréquentent les services des consultations dentaires externes des universités d'Alexandrie, de Tanta et de Mansoura ont été étudiées. Chaque patient a été interviewé individuellement au moyen d'un questionnaire relatif à l'utilisation systématique des gants, masques et lunettes de protection. Les résultats ont montré que 90% des patients s'attendaient à ce que les dentistes portent des gants, que 73% s'attendaient à ce qu'ils portent un masque et 37% à ce qu'ils portent des lunettes. La majorité des patients pensaient que les gants servaient à la protection du patient alors que le masque et les lunettes étaient destinés à la protection du dentiste. Environ 50% des patients croyaient qu'ils pouvaient contracter des maladies infectieuses durant le traitement dentaire; plus le niveau d'éducation est élevé, plus le souci relatif à l'infection est important. Les patients de Tanta étaient davantage préoccupés par les infections croisées que les autres patients.

[1] *Professor of Public Health, Faculty of Dentistry, Alexandria University, Alexandria, Egypt.*
[2] *Lecturer in Pedodontics, Faculty of Dentistry, El-Mansoura University, El-Mansoura, Egypt.*
[3] *Lecturer in Pedodontics, Faculty of Dentistry, Tanta University, Tanta, Egypt.*
*Received: 07/04/96; accepted: 05/05/96*

## Introduction

Cross infection can be defined as the transmission of infectious agents between patients and staff within a clinical environment. Transmission may result from person to person contact or via contaminated objects. Transmission of infection from one person to another requires a source of infection. The infective agent is transmitted through blood, droplets of saliva and instruments contaminated with blood, saliva and tissue debris. The route of transmission may be inhalation or inoculation.

In dentistry, the source of infection may be the patients suffering from infectious diseases, those who are in the prodromal stage of certain infections, and healthy carriers of pathogens. Carriers of pathogens who pose a threat of disease transmission may be categorized as either convalescent carriers or asymptomatic carriers. An asymptomatic carrier has no past history of infection, as he/she may have unknowingly had a subclinical infection, and thus such carriers cannot be easily identified. Nevertheless, this individual may carry infective microbes in saliva and blood. Hepatitis B is a classic example of a disease which may manifest with or without symptoms. A convalescent carrier can be identified from the past history of infection and can be easily diagnosed [*1*].

Transmission of infection within a dental surgery may occur by direct contact of tissue with secretions or blood, from droplets containing infectious agent, or via contaminated sharps or instruments which have been improperly sterilized. The major route of cross infection in dental surgery is via infection through intact skin or mucosa due to accidents involving sharps, or direct inoculation onto cuts and abrasions in the skin [*1,2*].

Viral diseases such as hepatitis B, acquired immunodeficiency syndrome (AIDS), herpes simplex and cytomegalovirus are important risks, not only for dentists but also for their families, friends and other patients [*3–5*].

Wearing of gloves by dental personnel has been advised as an essential element of cross-infection control in dental surgery [*6–8*]. Dental surgery assistants, who are involved in the treatment of patients, cleaning of instruments and surgery disinfection, should also wear gloves, because their hands are considered to be a major source of infection [*9*], and potentially infected blood may be harboured beneath the fingernails for up to five days [*10*]. It is difficult to remove contaminated material from the hands, particularly from the subungual and nail fold areas, unless there is meticulous mechanical cleansing. It such care were taken before treatment of each patient, the risk of cross infection would be reduced, but the operator would still be unprotected in the patient's mouth. It is apparent, therefore, that the dentists' uncovered hands may be a vector in cross infection or may themselves become infected [*9*]. It is the duty of practitioners to ensure that all members of the dental team are adequately trained and suitably equipped to practise effective cross-infection control, not only to optimize protection of all personnel in the dental surgery, but also to prevent spread of infection from one patient to another [*8,11,12,13*]. The protection barrier works by protecting the dentist from the patient or the patient from the dentist, or both from the surrounding contaminated environment. These barriers include gloves, masks, eye protectors, tray covers, covers of the working surfaces and light handles [*11–15*].

The protective mask is a source of contamination because it becomes impregnat-

ed with microorganisms after 20 minutes. The same mask is sometimes worn by a dentist working at the chair for a half or full day. It is reasonable to conclude that a dentist who wears a mask for such a long period of time when operating is more at risk from cross infection than a dentist who operates unmasked [*16*].

In a survey conducted by Maguire et al. [*17*], they found that 69% of patients expected their dentist to wear gloves routinely, 47% expected them to use masks and 25% expected them to use protective eye wear. Few patients object to the use of these barriers. Only 4% preferred that gloves not be used, while 10% and 13% preferred masks and eye protectors, respectively, not be used.

Porter et al., surveyed the attitudes of dental patients in the United Kingdom and Hong Kong towards cross infection control [*18*]. Almost all patients expected the dentists to wear protective gloves, but only 73% expected dental staff to wear protective face masks and 40% to wear spectacles. Most patients were aware that such measures were for the benefit of both staff and patients. Over 50% of patients believed that they could contract human immunodeficiency virus (HIV) from an HIV-infected dentist.

A questionnaire survey was conducted among 301 dental hospital and general practice patients in the Glasgow region to assess their perception and awareness of cross-infection preventive methods used in dentistry. Sixty percent (60%) of the respondents expected dentists to wear gloves routinely, and a large majority thought that the gloves were for the dentist's own protection. Most respondents did not mind the dentist wearing either gloves or masks during treatment. One-third was ignorant about sterilization methods used in dentistry [*19*]. Bowden et al. reported that most patients believed that gloves and masks should be worn routinely [*20*]. They found that patients receiving care in a dental hospital were more concerned than patients in general practice about cross-infection control.

The aim of this work was:

- to study and analyse the knowledge and attitudes of dental patients towards cross-infection control measures in dental practice;
- to study factors influencing knowledge and attitudes of dental patients towards cross infection.

## Subjects and methods

A random sample of 460 individuals (210 males, 250 females) was selected from people attending the outpatient dental clinics of Alexandria, Tanta and El-Mansoura universities. The sample comprised 150 patients from Alexandria, 160 from Tanta and 150 from El-Mansoura. Their ages ranged from 19 to 60 years. The sample members were interviewed in the waiting place on an individual basis using a questionnaire (see Box 1). The questionnaire contained a series of questions regarding attitudes towards cross-infection control measures in dental practice and the perceived risk of cross infection during dental treatment. The education and occupation of different individuals were classified into high, medium and low levels according to the sum of education and occupation scores. The data were collected and statistically analysed using chi-square ($\chi^2$) and $Z$ tests.

## Results

Tanta patients attend dental clinics more regularly than those in Alexandria and El-

Box 1 **Questionnaire**

Age: Sex : Male ( ) Female ( )

Type of education: illiterate ( ) primary or preparatory ( )
secondary ( ) university ( )

Type of occupation: labourer ( ) mother/housewife ( )
skilled/craftsman ( ) clerical/office ( )
professional ( )

1. Are you a regular dental attendee? Yes ( ) No ( )

2. Do you feel that your dentist should routinely wear gloves ? Yes ( ) No ( )
   If you answered yes then what is/are your reason(s)?
   - to prevent infection from the dentist to you Yes ( ) No ( )
   - to prevent infection from you to the dentist Yes ( ) No ( )
   - to prevent infection from other patients to you Yes ( ) No ( )

3. Do you feel that your dentist should routinely wear a face mask? Yes ( ) No ( )
   If you answered yes then what is/are your reason(s)?
   - to stop the dentist infecting you Yes ( ) No ( )
   - to stop you infecting the dentist Yes ( ) No ( )
   - to stop other patients infecting you via the dentist Yes ( ) No ( )

4. Do you feel that your dentist should routinely wear safety spectacles? Yes ( )No ( )
   If you answered yes then what is/are your reason(s)?
   - to stop the dentist infecting you Yes ( ) No ( )
   - to stop you infecting the dentist Yes ( ) No ( )
   - to stop other patients infecting you via the dentist Yes ( ) No ( )

5. Do you feel that your dentist should:
   - use new gloves for each patient ( )
   - thoroughly wash gloves in antiseptic between patients ( )
   - use new gloves when the dentist feels it is necessary ( )

6. How often do you feel that the dentist should change his mask?
   - after every patient ( ) – when visibly contaminated ( )
   - when the dentist feels it is necessary ( )

7. How often do you feel the dentist should disinfect his/her safety spectacles ?
   - after every patient ( ) – when visibly contaminated ( )
   - when the dentist feels it is necessary ( )

8. Are you concerned about contracting infections when visiting a dentist?
   - not concerned ( )
   - somewhat concerned ( )
   - very concerned ( )

Table 1 **Percentage of regular attendance of patients according to different variables**

| Variable | Regular attendance Yes | % | No | % | Total N | $\chi^2$ value |
|---|---|---|---|---|---|---|
| *University* | | | | | | |
| Alexandria | 71 | 51.1 | 68 | 48.9 | 139 | |
| Tanta | 114 | 71.3 | 46 | 28.7 | 160 | 16.189 |
| El-Mansoura | 77 | 52.4 | 70 | 47.6 | 147 | (significant) |
| *Sex* | | | | | | |
| Males | 126 | 60.9 | 81 | 39.1 | 207 | 0.72 |
| Females | 136 | 56.9 | 103 | 43.1 | 239 | |
| *Education/occupation level* | | | | | | |
| High | 24 | 70.6 | 10 | 29.4 | 34 | |
| Medium | 108 | 68.8 | 49 | 31.2 | 157 | 14.95 |
| Low | 130 | 51.0 | 125 | 49.0 | 255 | (significant) |
| Total | 262 | 58.7 | 184 | 41.3 | 446 | |

Table 2 **Attitude towards cross-infection measures according to level of education/ occupation**

| Protective measure | Level of education/occupation | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | High | | Medium | | Low | | Total | |
| | No. | % | No. | % | No. | % | No. | % |
| A dentist should routinely wear: | ($n$ = 34) | | ($n$ = 157) | | ($n$ = 255) | | ($n$ = 446) | |
| Protective gloves | 32 | 94.1 | 151 | 96.2 | 216 | 84.7 | 399 | 89.5 |
| Face mask | 29 | 85.3 | 126 | 80.3 | 168 | 65.9 | 323 | 72.4 |
| Spectacles | 22 | 64.7 | 59 | 37.6 | 83 | 32.5 | 164 | 36.8 |

Mansoura (Table 1). The difference was statistically significant between Alexandria and Tanta patients ($\chi^2$ = 16.189). Some answers from Alexandria and El-Mansoura patients were excluded from the data. There was no significant difference by sex ($\chi^2$ = 0.72). Table 1 also indicates that the level of education and occupation is associated with the degree of regular attendance of patients. The higher the level of education and occupation the more regular the attendance of patients at dental clinics. There was a statistically significant difference between high and low level ($\chi^2$ = 14.95).

Most patients (89.5%) agreed that dentists should routinely wear protective gloves and 72.4% agreed that dentists should routinely wear face masks. However, only 36.8% believed that dentists should wear spectacles. There was a significant difference between high and low levels of profession and education regarding wearing face masks ($\chi^2$ = 14.346). There were significant differences between high and both low and medium levels of profession and education regarding wearing spectacles ($\chi^2$ = 13.148 and $\chi^2$ = 13.431 respectively) (Table 2). With regard to patients'

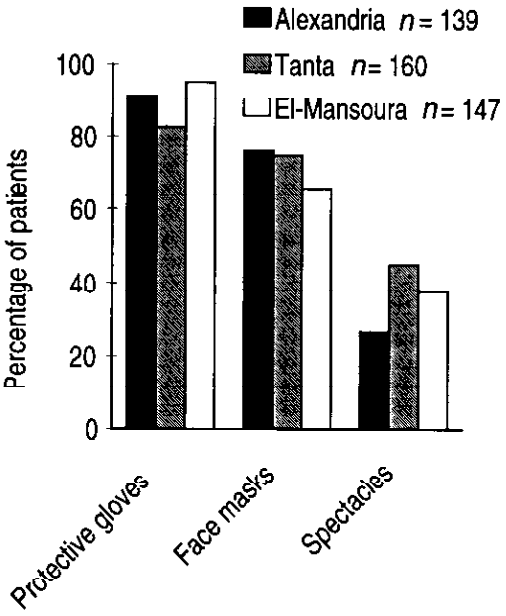


Figure 1 **Patient attitudes to cross-infection control measures according to location**

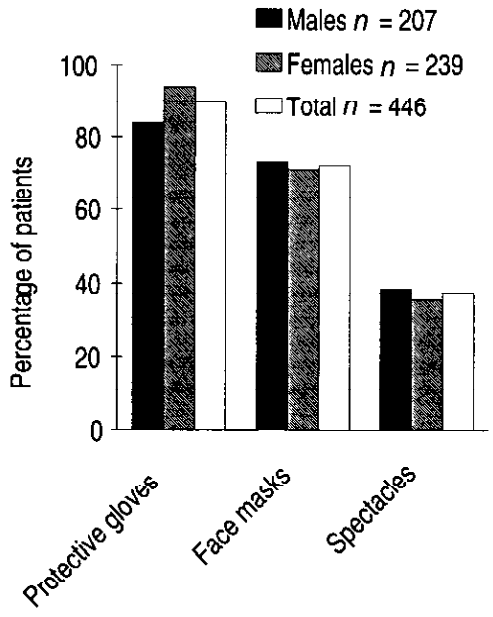


Figure 2 **Patient attitudes to cross-infection control measures according to sex**

attitudes towards wearing gloves (Figure 1), there was a significant difference between Tanta and El-Mansoura patients ($\chi^2 = 13.879$). There were also significant differences between Alexandria and Tanta patients regarding wearing spectacles ($\chi^2 = 10.86$). There was a significant difference between males and females regarding wearing gloves ($\chi^2 = 11.995$) (Figure 2).

The use of gloves, face masks and spectacles was considered to be important in preventing the three routes of transmission (dentist to patient, patient to dentist, patient to patient) by 49.0%, 55.2% and 51.6% of all respondents, respectively (Table 3). Only 10.8% believed that dentists wore gloves for their own protection. On the other hand, 19.7% and 21.6% believed that dentists used face masks and spectacles for their own protection. There were significant differences between the route of infection transmission perceived by respondents regarding the use of gloves ($\chi^2 = 22.279$) and face masks ($\chi^2 = 18.272$). There was no significant difference regarding wearing of spectacles.

The results indicate that 60.5% of respondents believed that dentists should use new gloves for every patient, while 29.1% and 27.8% believed that dentists should change or wash face masks or spectacles if visibly contaminated (Table 4). There were significant differences between the perceived reasons for changing gloves, masks and spectacles and the respondents' location ($\chi^2 = 33.666$, $\chi^2 = 65.319$ and $\chi^2 = 74.064$ respectively).

There was no significant difference between patients' concern regarding the risk of cross infection and sex ($\chi^2 = 1.49$), but the level of education and occupation significantly affected patient concern about the risk of cross infection ($\chi^2 = 22.391$) (Table 5). In addition, there was a signifi-

Table 3 **Perceived reasons for using protective gloves, masks and spectacles according to location**

| Protective measure | Total | Route of transmission stopped | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Dentist to patient | | Patient to dentist | | Patient to patient | | All 3 routes | |
| | | No. | % | No. | % | No. | % | No. | % |
| *Gloves* | | | | | | | | | |
| Alexandria | 132 | 3 | 2.3 | 13 | 9.8 | 53 | 40.2 | 63 | 47.7 |
| Tanta | 124 | 11 | 8.9 | 8 | 6.5 | 38 | 30.6 | 67 | 54.0 |
| El-Mansoura | 134 | 2 | 1.5 | 19 | 14.2 | 52 | 38.8 | 61 | 45.5 |
| Total | 390 | 16 | 4.1 | 40 | 10.3 | 143 | 36.7 | 191 | 49.0 |
| | | | | | $\chi^2 = 22.279$ | | | | |
| *Face masks* | | | | | | | | | |
| Alexandria | 109 | 4 | 3.7 | 19 | 17.4 | 30 | 27.5 | 56 | 51.4 |
| Tanta | 113 | 9 | 8.0 | 19 | 16.8 | 12 | 10.6 | 73 | 64.6 |
| El-Mansoura | 93 | 10 | 10.8 | 24 | 25.8 | 14 | 15.1 | 45 | 48.4 |
| Total | 315 | 23 | 7.3 | 62 | 19.7 | 56 | 17.8 | 174 | 55.2 |
| | | | | | $\chi^2 = 18.272$ | | | | |
| *Spectacles* | | | | | | | | | |
| Alexandria | 49 | 2 | 4.1 | 12 | 24.5 | 8 | 16.3 | 27 | 55.1 |
| Tanta | 60 | 11 | 18.3 | 10 | 16.7 | 8 | 13.3 | 31 | 51.7 |
| El-Mansoura | 48 | 4 | 8.3 | 12 | 25.0 | 9 | 18.8 | 23 | 48.0 |
| Total | 157 | 17 | 10.8 | 34 | 21.6 | 25 | 16.6 | 81 | 51.6 |
| | | | | | $\chi^2 = 6.97$ | | | | |

cant difference between patient concern about cross infection in different places ($\chi^2 = 17.564$).

## Discussion

Today there is considerable awareness in the dental profession of the possibility for cross infection occurring in the dental clinic. This awareness has been heightened by the advent of HIV, hepatitis B virus and other infectious diseases [*14*].

In the present study, 90% of respondents overall expected dentists to wear protective gloves. This highly positive result is in agreement with most previous studies of United States and United Kingdom patients, Yorden 87% [*20*], Burke et al. 84% [*21*], Gerbert et al. 76% [*22*], Bowden et al. 70% [*23*], Maguire et al. 69% [*17*], and Samaranayake and McDonald 60% [*19*]. It appears that a high proportion of respondents consider that glove-wearing by the dentist is an essential part of cross-infection control, indicating a high degree of awareness of such matters. It is the currently accepted norm that to reduce cross-infection risks gloves should be worn for all aspects of routine dentistry except when a no-touch technique is used [*24*].

Nearly sixty per cent (60%) of all respondents expected dentist to wear new gloves when treating each patient. Alexan-

Table 4 **Perceived reasons for changing gloves, face masks and cleaning spectacles during dental treatment**

| Perceived reasons | Treatment | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | Alexandria | | Tanta | | Mansoura | | |
| | No. | % | No. | % | No. | % | % |
| *For changing gloves the dentist should:* | | | | | | | |
| Use new gloves for every patient | 80 | 57.6 | 111 | 69.4 | 79 | 53.7 | 60.5 |
| Wash gloves with antiseptic solution | 30 | 21.6 | 17 | 10.6 | 41 | 27.9 | 19.7 |
| Change gloves if necessary | 17 | 12.2 | 10 | 6.3 | 12 | 8.2 | 8.7 |
| Don't know | 12 | 8.9 | 22 | 13.7 | 15 | 10.2 | 10.9 |
| | $\chi^2$ = 33.666 significant | | | | | | |
| *For changing face masks the dentist should:* | | | | | | | |
| Use new mask for every patient | 27 | 19.0 | 61 | 38.1 | 30 | 20.4 | 26.5 |
| Change it if contaminated | 33 | 32.7 | 66 | 41.2 | 31 | 21.1 | 29.1 |
| Change it if necessary | 29 | 21.0 | 4 | 2.5 | 39 | 26.5 | 16.1 |
| Don't know | 50 | 36.0 | 29 | 18.2 | 47 | 41.9 | 28.3 |
| | $\chi^2$ = 65.319 significant | | | | | | |
| *For cleaning spectacles the dentist should:* | | | | | | | |
| Wash spectacles after every patient | 26 | 18.7 | 60 | 37.5 | 24 | 16.3 | 24.2 |
| Wash them if visibly contaminated | 32 | 23.0 | 63 | 39.4 | 29 | 19.7 | 27.8 |
| Wash them if necessary | 20 | 14.4 | – | – | 33 | 22.4 | 11.9 |
| Don't know | 61 | 43.9 | 37 | 23.1 | 61 | 41.5 | 35.7 |
| | $\chi^2$ = 74.064 significant | | | | | | |

dria and El-Mansoura patients had lower expectations than Tanta patients. Such view is in accordance with those of many investigators; Porter et al. 79% [*18*], Samranayake and McDonald 43% [*19*] and Bowden et al. 86% [*23*]. Others have concluded that it is for the dentist to use his professional judgement in such matters [*25*]. The perceived reasons for the objections to washing the gloves included the danger of cross infection and the lack of belief in the efficacy of washing gloves. In this respect, the Dental Health and Science Committee of the British Dental Association have recommended that gloves be changed if a puncture is suspected and if there is blood contamination. The only safe approach is to assume that any patient is a carrier of a blood-borne disease [*26*]. It is noteworthy that the American Dental Association has not approved the reuse of gloves in clinical practice [*14*].

Seventy-two per cent (72%) of the respondents expected dentists to wear face masks routinely. This response is similar to that reported by Porter et al., 73% [*18*] but lower than that of Bowden et al., 56% [*23*]. However, only 26% believed that the face masks should be changed between patients, contrary to current professional opinion which advises face masks to be regularly changed, particularly to minimize airborne transmission of infection such as tuberculosis, and to minimize the inhalation of air

Table 5 **Patient concern regarding risk of cross infection according to sex, level of education/ occupation and location**

| Variable | Total | Concerns | | | | | | $\chi^2$ value |
|---|---|---|---|---|---|---|---|---|
| | | Very | | Somewhat | | None | | |
| | | No. | % | No. | % | No. | % | |
| *Sex* | | | | | | | | |
| Males | 207 | 102 | 49.2 | 50 | 24.2 | 55 | 26.6 | 1.49 |
| Females | 239 | 133 | 55.6 | 52 | 21.8 | 54 | 22.6 | (not |
| Total | 446 | 235 | 52.8 | 102 | 22.9 | 109 | 24.3 | significant) |
| *Education/occupation level* | | | | | | | | |
| High level | 34 | 21 | 61.8 | 6 | 18.6 | 7 | 20.6 | |
| Medium | 157 | 105 | 66.8 | 33 | 21.0 | 19 | 12.1 | 22.39 |
| Low | 255 | 109 | 42.7 | 63 | 24.8 | 83 | 32.5 | (significant) |
| Total | 446 | 235 | 52.9 | 102 | 23.1 | 109 | 24.0 | |
| *Location* | | | | | | | | |
| Alexandria | 139 | 70 | 50.4 | 29 | 20.8 | 40 | 28.8 | |
| Tanta | 160 | 100 | 62.5 | 37 | 23.1 | 23 | 14.4 | 17.564 |
| El-Mansoura | 147 | 63 | 42.8 | 36 | 24.5 | 48 | 32.7 | (significant) |
| Total | 446 | 233 | 52.2 | 102 | 22.9 | 111 | 24.9 | |

constantly polluted with mercury and aerosols. Interestingly, Alexandria and Tanta patients are more likely to expect the dentist to wear face masks routinely than El-Mansoura patients.

Only 37% of all respondents expected the dentist to wear protective spectacles routinely. The result is similar to that reported by Porter et al. who reported 37% for Hong Kong patients and 44% for British patients [*18*]. This low response may reflect patients' lack of knowledge about the risk of infection transmission from dentist to patient via lachrymal secretions and/ or lack of awareness of the potential spread of infection via debris from the patients mouth to the eyes of dental staff and vice versa.

In the present study, 26% and 22% of all patients believed that the dentist should use a new face mask and spectacles for every patient. This finding agrees with the results of other studies [*22,23*]. Patients endorse the use of gloves more enthusiastically than the use of masks and spectacles, perhaps because they perceive gloves as primarily for their benefit but masks and spectacles as a means of protecting the dentist. Forty-nine percent (49%) of respondents were aware that the wearing of gloves is for the benefit of both patient and dentist. This finding is lower than Porter et al., 83% [*18*], and Burke et al. 88%, [*21*]. In contrast, investigations of Scottish dental patients and United Kingdom patients indicated that only 27% and 31% respectively of the patients believed that the wearing of gloves was a means of minimizing transmission of infection between staff and patients [*19,22*].

The three routes of infection transmission in the dental practice are very important; about 49% of the patients were aware of this, but only about 4% believed that the

most important reason for wearing gloves was to protect patients from the dentist.

In agreement with Bowden et al. [22] there is a significant difference between sex regarding cross-infection control measures (use of gloves, $\chi^2 = 11.99$). This may be because males in general are less concerned with hygiene in relation to dentistry than females.

The majority of patients (52%) are concerned about contracting infections during dental treatment and this is in agreement with Porter et al. [18]. In contrast, the study of Gerbert et al. showed that 30% of the public in the USA who use dental services had thought about the possibility of contracting HIV [22].

In general, Alexandria and Tanta patients have similar attitudes regarding cross-infection protection and the likelihood of infection transmission in dental practice. However, Alexandria patients are more positively influenced by the routine use of masks and spectacles and more concerned about the possible transmission of infection during dental treatment than El-Mansoura patients (Table 2).

The results presented indicate the opinions of Egyptian dental patients in certain areas. Whether such opinions would be widely held on a nationwide basis remains to be determined by conducting similar surveys in other parts of Egypt.

## Conclusions and recommendations

### Conclusions

The present results give encouragement to the effort for improving the standards of cross-infection control in dental care. The majority of patients in this study now accept, or even insist on, the dentist wearing gloves.

### Recommendations

The media must draw the public's attention to the transmission in the dental clinic of infectious diseases such as influenza, common cold, tuberculosis, hepatitis B and AIDS. This will encourage patients to become more concerned about the safety of dental care. Patients in rural areas need more information about infection-control measures in dental clinics from the television or radio.

## *References*


1. Verrusio AC et al. The dentist and infectious diseases: a national survey of attitudes and behavior. *Journal of the American Dental Association*, 1989, 118:553–62.
2. Girdler NM, Matthews RW, Scully C. Use and acceptability of rubber gloves for outpatient dental treatment. *Journal of dentistry*, 1987, 15:209–212.
3. Walkinson AC. Primary herpes simplex in a dentist. *British dental journal*, 1982, 153:190–1.
4. Tullman AB et al. The threat of hepatitis B from dental school patients. *Oral surgery, oral medicine and oral pathology*, 1980, 44:214–16.
5. Sins W. The problem of cross infection in dental hepatitis with particular reference

to serum hepatitis. *Journal of dentistry*, 1980, 8:20–6.

6. Rustage KJ, Rothwell PS, Brook IM. Evaluation of a dedicated dental procedure glove for clinical dentistry. *British dental journal*, 1987, 103:193–5.
7. Olnsted RN. Reusable gloves. *Journal of the American Dental Association*, 1978, 114:14–15.
8. Crawford TJ. State of the art practical infection control in dentistry. *Journal of the American Dental Association*, 1985, 110:629–33.
9. Burke FJT, Wilson NHF and Boggo HFJ. Glove wearing by dental surgery assistants. *Dental update*, 1993, 20:385–7.
10. Allen AL and Organ RJ. Occult blood accumulation under the finger nails. A mechanism for the spread of blood borne infection. *Journal of the American Dental Association*, 1982, 105:455–9.
11. Cowan DDJ. Infection control in general dental practice. *British dental journal*, 1987, 162:292–7.
12. Martin MV. Infection control in general dental practice. *British dental journal*, 162:37–8.
13. Samaranayake LP. Infection control in general dental practice. *British dental journal*, 1987, 162:413–4.
14. American Dental Association. Infection control recommendations for the dental office and dental laboratory. *Journal of the American Dental Association*. 1988. 116:241–8.
15. Croser D. Infection control—the dental perspective. *Dental health*, 1991, 30(6):92–6.
16. Croig DC and Quale AA. The efficiency of face masks. *British dental journal*, 1985, 158:87–90.
17. Maguire B, Gerbert B, Spitser S. Dental patients, opinions about infection control. *Journal of dental research*, (Abst), 1989, 68:298.
18. Porter SR et al. Attitude to cross infection measures of UK and Hong Kong patients. *British dental journal*, 1993, 175:245–57.
19. Samaranayake LP and McDonald KC. Patient perception of cross infection prevention in dentistry. *Oral surgery, oral medicine and oral pathology*, 1990, 69:427–40.
20. Yorden KS. Patients' attitudes towards the routine use of rubber gloves in a dental office. *Journal of the Indianna Dental Association*, 1985, 64:25–8.
21. Burke FJT, Baggett FJ, Wilson NHF. Patient attitudes to the wearing of gloves by dentists. *Dental update*, 1991, 18:261–5.
22. Gerbert B, Maguire BT and Spitzer S. Patients' attitudes toward dentistry and AIDS. *Journal of the American Dental Association*, 1989, suppl. 1: 16S–21S.
23. Bowden JR et al. Cross infection control, attitudes of patients toward wearing of gloves and masks by the dentist in the United Kingdom in 1987. Oral surgery, oral pathology and oral medicine, 1989, 67(1):45–8
24. Mitchell R et al. The use of operating gloves in dental practice. *British dental journal*, 1983, 154:372–4.
25. Gobetti JP, Cernminara M, Shipman C. Hand asepsis: the efficacy of different soaps in the removal of bacteria from sterile, gloved hands. *Journal of the American Dental Association*, 1986, 113:291–2.
26. British Dental Association Dental Health and Science Committee. The control of cross infection in dentistry. *British dental journal*, 1988, 165:353–9.