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Research Article

Developing a Questionnaire to Assess the Knowledge, Attitude and Practice of Health-Care Workers about Blood-borne Diseases and its Psychometric Analysis

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ABSTRACT

Introduction: Prevention and control of cross infections for the personnel of dental offices and clinics are a critical issue in dental practice. In this study, a standardized questionnaire was developed to assess the knowledge, attitude and practice of the oral health-care workers in Tehran University Dental School regarding the blood-transmitted diseases and its validity and reliability were determined.

Material and Methods: The draft of the questionnaire was assessed by two experts and the necessary corrections were done. The questionnaire content validity was measured by 10 faculty members of Tehran University Dental School regarding relevance, simplicity, clarity, and importance of the questions. Furthermore, the reliability of the questions was assessed by 21 dental nurses. Inter-rater agreement (IRA) values were reported by both the conservative and less conservative approaches for the relevance, simplicity, clarity, and importance. Content validity items and the percentage of the reliable questions were determined according to the nurses' responses to each question.

Results: Content validity values were 90.24%, 73.17%, 73.17% and 39.02% for the relevance, simplicity, clarity and importance, respectively, using the general consensus approach. IRA values in two conservative and less conservative approaches were 90.24% and 92.68% for the relevance; 73.17% and 85.37% for the simplicity; 73.17% and 85.37% for the clarity, and 39.02% and 51.22% for the importance, respectively. The percentage of reliable questions was within the range of 80.9-100%.

Conclusion: The questionnaire had acceptable reliability.

Keywords: Blood-transmitted diseases; Blood-borne diseases; Reliability; Validity; Knowledge; Attitude; Practice

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Introduction

Dental clinic is an environment where transmission of infectious diseases can easily occur. Therefore, prevention and control of cross infections in dental practice are of serious importance. Training all health practitioners on infection control especially when dealing with dangerous cases is mandatory. Risk reduction includes the application of policies and procedures that reduce the risk of blood-borne infectious diseases in professional exposures (1, 2).

About blood-borne infectious diseases, particular attention has been paid to two important diseases of acquired immunodeficiency syndrome (AIDS) and hepatitis. AIDS is a disease caused by the human immune deficiency virus (HIV) affecting the immune system. This disease has three main stages. In the first stage of infection (acute infection), the person may experience flu-like symptoms for a short period of time. It is then usually followed by a long period of no symptoms, which is called the incubation period. As

the disease progresses, it interferes more with the normal function of immune system and makes the person more susceptible to infections such as opportunistic infections and tumors. Finally, the disease will enter the third stage known as AIDS (3).

HIV is mainly transmitted through unprotected sexual intercourse, infected blood transfusion, contaminated needles, from mother to child during pregnancy, childbirth, and breastfeeding. Blood and blood products are the second most common cause of HIV transmission (4). When contaminated blood is transfused infection occurs in 93% of cases (5).

Hepatitis means inflammation of the liver parenchyma that can occur for various reasons, some of which are contagious and some are not. Some of hepatitis etiologies include alcohol abuse, adverse effects of some medications, and also viral infections (6). Since hepatitis B can be transmitted very easily as opposed to AIDS, it is perhaps the most serious risk of infection in dentistry. Fortunately, active immunization has been effective and safe in this area (7).

Common paths of transmission of microbial pathogens in dental offices and clinics include direct contact with saliva, blood, respiratory secretions or lesions isolated from patients, alongside indirect contact with contaminated tools, and direct contact with aerosols (8, 9). Blood is a well-known carrier of pathogenic micro-organisms, and there is almost no case in which a blood contamination is not dangerous, and if such case exists at all it is very rare (10). In the meantime, ignoring precautions and preventive measures would seriously endanger dentists, assistants, patients and their families (10, 11).

The best way to assess knowledge and attitudes about a particular subject is using a standardized questionnaire. Since the dentists and oral health-care professionals are constantly in contact with blood and sharp tools and due to the high risk of transmission of infectious diseases in this group, the profession is considered as a high-risk job, and the need for more robust researches in this area is felt. In this regard, in recent years, a lot of attention has been paid to prevention of transmission of infectious diseases in high-risk occupations such as dentistry. In addition to dentists and allied oral health-care personnel, such as those working in clinics of dental schools, are also in the first line to control infection in dentistry settings.

This study aimed to develop a questionnaire to determine knowledge, attitude and practice of oral health-care workers of dental schools regarding blood-borne diseases, and to investigate its validity and reliability.

Materials and methods

Preparation of the questionnaire draft

In this study, the overall objective was divided into smaller objectives, and the corresponding tree chart was drawn. Then, each branch of the tree chart was valued, and the questions bank was developed based on the branches. To this end, the questions were extracted based on the fields, which fulfilled the study objectives.

The draft of the questionnaire (46 questions) was the first presented to two faculty members (one from the Department of Oral and Maxillofacial Surgery and the other from Community Oral Health Department). They were asked to evaluate the questionnaire considering the subject of the study and make the required changes and if necessary, add required questions or remove redundant questions. At this stage, five questions were removed and one question was transformed into two questions. Finally, 41 questions remained (Tables 1-3).

Assessing the validity of the questionnaire

To assess the validity of the questionnaire, we estimated the inter-rater agreement (IRA) in both conservative and less conservative approaches. First, relevance, simplicity, clarity, and importance of the questions were determined separately. For this purpose, all the remaining 41 questions were presented to 10 faculty members of the School of Dentistry, Tehran University of Medical Sciences from Departments of Oral and Maxillofacial Surgery, Community Oral Health, and Periodontology. They were asked to determine the scores of relevance, simplicity, clarity, and the importance of questions. The alternatives for relevance, simplicity, and clarity were as follows: not relevant/simple/clear (Score 1), needs revision (Score 2), relevant/simple/clear but needs minor revision (Score 3), and completely relevant/simple/clear (Score 4).

The alternatives for importance were as follows: very important (Score 5), important (Score 4), relatively important (Score 3), low importance (Score 2), and not important (Score 1).

The number of experts who scored 3 and 4 for the relevance, simplicity and clarity of the questions and scored 3, 4 and 5 for the importance of the subject of the questions was divided by the total number of experts.

IRA

To calculate IRA in assessing the relevance/simplicity/clarity of the questions in the conservative approach, the number of questions that were considered as completely relevant/simple/clear by 100% of experts plus questions considered as irrelevant/not simple/unclear by 100% of experts was divided by the total number of questions. In the less conservative approach, the number of questions that were considered as completely relevant/simple/clear by 80% of experts plus questions considered as irrelevant/not simple/unclear by 80% of experts was divided by the total number of questions.

To calculate IRA in assessing the importance of the questions in the conservative approach, the number of questions that were considered very important by 100% of experts plus questions considered as not important by 100% of experts was divided by the total number of questions.

Table 1. The results of questions' relevance, simplicity, clarity and importance of a developed questionnaire to assess knowledge of health-care personnel in School of Dentistry about blood-borne diseases by asking the faculty members (n=10) of the School of Dentistry of Tehran University of Medical Sciences

Questionnaires	Relevance		Simplicity		Clarity		Importance	
	Score	Percent of the total	Score	Percent of the total	Score	Percent of the total	Score	Percent of the total
(1) Chronic diarrhea lasting for more than 1 month could be an indicator of AIDS (a) Correct (b) Do not know (c) Incorrect	4 × 10	100	4 × 10	100	10 × 4	100	5 × 3 + 4 × 4 + 3 × 3	80.00
(2) Recurrent herpes can be an oral manifestation of AIDS (a) Correct (b) Do not know (c) Incorrect	4 × 10	100	2 × 3 + 4 × 8	95.5	2 × 3 + 4 × 8	95.0	5 × 2 + 4 × 8	84
(3) Anorexia is a primary symptom of acute hepatitis B infection (a) Correct (b) Do not know (c) Incorrect	3 × 3 + 4 × 7	92.50	3 × 3 + 4 × 7	92.5	3 × 3 + 4 × 7	92.5	5 × 10	100
(4) Weakness, malaise and precocious fatigue are the most important symptoms in patients suffering from chronic symptomatic hepatitis B (a) Correct (b) Do not know (c) Incorrect	3 × 3 + 4 × 7	92.5	2 × 3 + 4 × 8	95.5	2 × 3 + 4 × 8	95.0	5 × 10	100
(5) In a specific period of time, a person can have a negative HIV test despite being infected with the virus (a) Correct (b) Do not know (c) Incorrect	4 × 10	100	4 × 10	100	10 × 4	100	5 × 8 + 4 × 2	96.0
(6) The most important risk of viral transmission for dentists, dental health staff and patients is hepatitis B (a) Correct (b) Do not know (c) Incorrect	3 × 1 + 4 × 9	97.5	4 × 10	100	4 × 10	100	5 × 1 + 4 × 8 + 3 × 1	80.0
(7) HIV can be transmitted through contaminated blood products (such as packed cell, plasma, platelet and coagulation factors) (a) Correct (b) Do not know (c) Incorrect	4 × 10	100	4 × 10	100	4 × 10	100	5 × 1 + 4 × 9	82.0
(8) The chance of getting infected with hepatitis B following needle stick with a contaminated needle is more than 50% (a) Correct (b) Do not know (c) Incorrect	4 × 10	100	4 × 10	100	4 × 10	100	5 × 10	100
(9) The chance of getting infected with HIV following needle stick with a contaminated needle is < 1% (a) Correct (b) Do not know (c) Incorrect	4 × 10	100	4 × 10	100	4 × 10	100	5 × 10	100
(10) HIV (AIDS virus) can survive outside the body and dry environments for more than 1 day (a) Correct (b) Do not know (c) Incorrect	4 × 10	100	4 × 10	100	10 × 4	100	5 × 4 + 4 × 6	88.0
(11) Hepatitis B virus can survive outside the body and dry environments for a few hours (a) Correct (b) Do not know (c) Incorrect	4 × 10	100	4 × 10	100	10 × 4	100	5 × 4 + 4 × 6	88.0
(12) It is mandatory to perform HIV and hepatitis B tests for all patients visiting dental offices or clinics before starting any procedures (a) Correct (b) Do not know (c) Incorrect	4 × 10	100	4 × 10	100	10 × 4	100	4 × 8 + 3 × 2	76.0
(13) Dental impressions contaminated with patient's blood can contain HIV (a) Correct (b) Do not know (c) Incorrect	4 × 10	100	4 × 10	100	10 × 4	100	5 × 2 + 4 × 8	84.0
(14) Dental impressions contaminated with patient's blood can contain hepatitis B (a) Correct (b) Do not know (c) Incorrect	4 × 10	100	4 × 10	100	10 × 4	100	5 × 2 + 4 × 8	84.0
(15) Mark the routes through which HIV can be transmitted (mark more than one if necessary) (a) Saliva (b) Sexual intercourse (c) Cuddling an infected person (d) Insect bite (e) Through an infected mother to her embryo	4 × 10	100	3 × 3 + 4 × 7	92.50	3 × 3 + 4 × 7	92.5	5 × 8 + 3 × 2	92.0
(16) Mark the routes through which hepatitis B can be transmitted (mark more than one if necessary) (a) Saliva (b) Sexual intercourse (c) Cuddling an infected person (d) Insect bite (e) Through an infected mother to her embryo	4 × 10	100	3 × 3 + 4 × 7	92.5	3 × 3 + 4 × 7	92.5	5 × 8 + 3 × 2	92.0

AIDS: Acquired immunodeficiency syndrome, HIV: Human immune deficiency virus

Table 2. The results of questions' relevance, simplicity, clarity and importance of a developed questionnaire to assess attitude of health-care personnel in School of Dentistry about blood-borne diseases by asking the faculty members (n=10) of the School of Dentistry of Tehran University of Medical Sciences

Questionnaires	Relevance		Simplicity		Clarity		Importance	
	Score	Percent of the total	Score	Percent of the total	Score	Percent of the total	Score	Percent of the total
(17) I consider giving care to patients infected with HIV or hepatitis B my moral and conscience duty (a) Completely agree (b) Agree (c) No idea (d) Disagree (e) Disagree	4 × 10	100	4 × 10	100	10 × 4	100	5 × 10	100
(18) I consider giving care to patients infected with HIV or hepatitis B my professional duty (a) Completely agree (b) Agree (c) No idea (d) Disagree (e) Disagree	4 × 10	100	4 × 10	100	10 × 4	100	5 × 10	100
(19) I suppose all patients are infected with HIV or hepatitis B (a) Completely agree (b) Agree (c) No idea (d) Disagree (e) Disagree	4 × 10	100	4 × 10	100	10 × 4	100	5 × 8 + 4 × 2	96
(20) Infection control should be stricter in patients infected with HIV than in normal patients (a) Completely agree (b) Agree (c) No idea (d) Disagree (e) Disagree	4 × 10	100	4 × 10	100	10 × 4	100	5 × 8 + 4 × 2	96
(21) Infection control should be stricter in patients infected with hepatitis B than in normal patients (a) Completely agree (b) Agree (c) No idea (d) Disagree (e) Disagree	4 × 10	100	4 × 10	100	10 × 4	100	5 × 10	100
(22) There should be a specific center for patients infected with HIV so that all patients could be referred to that center (a) Completely agree (b) Agree (c) No idea (d) Disagree (e) Disagree	4 × 10	100	4 × 10	100	10 × 4	100	5 × 2 + 4 × 7 + 3 × 1	82
(23) There should be a specific center for patients infected with hepatitis B so that all patients could be referred to that center (a) Completely agree (b) Agree (c) No idea (d) Disagree (e) Disagree	4 × 10	100	4 × 10	100	10 × 4	100	5 × 1 + 4 × 6 + 3 × 3	76
(24) Talking about HIV and hepatitis B among friends, acquaintances and family can be effective in promoting community awareness regarding these diseases (a) Completely agree (b) Agree (c) No idea (d) Disagree (e) Disagree	4 × 10	100	4 × 10	100	10 × 4	100	5 × 3 + 4 × 7	86
(25) If my friend gets infected with HIV or hepatitis B I will cut my relationship with him/her (a) Completely agree (b) Agree (c) No idea (d) Disagree (e) Disagree	4 × 10	100	3 × 3 + 4 × 7	92.5	3 × 3 + 4 × 7	92.5	5 × 3 + 4 × 4 + 3 × 3	80
(26) I think I am at greater risk in comparison with general population (a) Completely agree (b) Agree (c) No idea (d) Disagree (e) Disagree	3 × 3 + 4 × 7	92.5	3 × 3 + 4 × 7	92.5	3 × 3 + 4 × 7	92.5	5 × 4 + 4 × 4 + 3 × 2	84

AIDS: Acquired immunodeficiency syndrome, HIV: Human immune deficiency virus

Table 3. The results of questions' relevance, simplicity, clarity and importance of a developed questionnaire to assess practice of health-care personnel in School of Dentistry about blood-borne diseases by asking the faculty members (n=10) of the School of Dentistry of Tehran University of Medical Sciences

Questionnaire	Relevance		Simplicity		Clarity		Importance	
	Score	Percent of the total	Score	Percent of the total	Score	Percent of the total	Score	Percent of the total
(27) Do you wear a white coat in the office or clinic? (a) Yes (b) No	4 × 10	100	4 × 10	100	10 × 4	100	5 × 3 + 4 × 7	86
(28) Do you wear disposable latex gloves during procedures? (a) Yes (b) No	4 × 10	100	4 × 10	100	10 × 4	100	5 × 5 + 4 × 5	90
(29) Do you rub your hands with disinfectants before wearing gloves and after taking them off? (a) Yes (b) No	4 × 10	100	4 × 10	100	10 × 4	100	5 × 2 + 4 × 8	84
(30) Do you wear a mask during procedures? (a) Yes (b) No	4 × 10	100	4 × 10	100	10 × 4	100	5 × 4 + 4 × 6	88
(31) Do you change your mask in case of getting wet or contaminated? (a) Yes (b) No	4 × 10	100	4 × 10	100	10 × 4	100	5 × 4 + 4 × 6	88
(32) Are the rotating devices (angel, turbines, handpieces) disinfected and sterilized at intervals between each patient's treatment? (a) Yes (b) No	4 × 10	100	1 × 3 + 4 × 9	97.5	1 × 3 + 4 × 9	97.5	5 × 10	100
(33) Are the sets of sterilized and disinfected after use? (a) Yes (b) No	4 × 10	100	1 × 3 + 4 × 9	97.5	1 × 3 + 4 × 9	97.5	5 × 10	100
(34) Are the impressions disinfected before being sent to the laboratory? (a) Yes (b) No	4 × 10	100	4 × 10	100	10 × 4	100	5 × 10	100
(35) Is an exclusive sterile set used for each patient? (a) Yes (b) No	4 × 10	100	4 × 10	100	10 × 4	100	5 × 10	100
(36) Are the wastes contaminated with blood or body fluids collected separately? (a) Yes (b) No	4 × 10	100	4 × 10	100	4 × 10	100	5 × 10	100
(37) Are the hazardous wastes such as carpools and needles and surgical blades collected in separate metal boxes? (a) Yes (b) No	4 × 10	100	4 × 10	100	10 × 4	100	5 × 10	100
(38) Are the hazardous wastes sterilized in an autoclave before disposal? (a) Yes (b) No	4 × 10	100	1 × 3 + 4 × 9	97.5	1 × 3 + 4 × 9	97.5	5 × 10	100
(39) Are the equipment stored in closed containers made of metal or plastic? (a) Yes (b) No	4 × 10	100	3 × 3 + 4 × 7	97.5	3 × 3 + 4 × 7	92.5	5 × 5 + 4 × 5	90
(40) Have you received hepatitis B vaccination? (a) Yes (b) No	4 × 10	100	4 × 10	100	10 × 4	100	5 × 10	100
(41) If you have received hepatitis B vaccination, do you check the antibody level against hepatitis B virus every 1-4 months? (a) Yes (b) No	4 × 10	100	4 × 10	100	10 × 4	100	5 × 10	100

In the less conservative approach, the number of questions that were considered as very important by 80% of experts plus questions considered as not important by 80% of experts was divided by the total number of questions.

Relevance, simplicity, clarity and the overall importance of the instrument [Scale-level-Content validity index (S-CVI)]

According to the general consensus approach, the total number of questions that were considered completely relevant, completely simple, completely clear and completely important by all experts was divided by the total number of questions.

Relevance, simplicity, clarity and the importance of each question [item-CVI (I-CVI)]

The number of experts who considered any given question as relevant or completely relevant, simple or completely simple, clear or completely clear and important or very important was divided by the total number of experts participating in the study and then multiplied by 100.

Assessing the reliability of the questionnaire

Reliability is defined as an assessment of the reproducibility and consistency of an instrument. Test-retest reliability can be assessed by asking people to complete the questionnaire on two separate occasions approximately 2-3 weeks apart. The two sets of responses can then be compared statistically. The internal consistency of a questionnaire can also be determined by asking a question or questions in more than one-way during the questionnaire. The responses given can be compared as before.

To determine the reliability of the questionnaire, it was distributed among 40 nurses working in a dental school and 21 of them cooperated to fill the questionnaire for the second time 2 weeks later.

Results

IRA in assessing the relevance of the questions

Of the 41 questions, 35 questions had been considered as completely relevant. No question had been considered as irrelevant. Accordingly, the IRA in assessing the relevance of questions calculated through conservative approach was 90.24%.

Furthermore, since no question had been considered as irrelevant and 38 questions were considered as completely relevant, the IRA in assessing the relevance of the questions through less conservative approach was 92.68%.

IRA in assessing the simplicity of the questions

Of the 41 questions, 30 questions had been considered as completely simple. No question had been considered as "not simple." Accordingly, the IRA in assessing the simplicity of questions through conservative approach was 73.17%.

No question had been considered as "not simple," and 35 questions were considered as completely simple by experts. Thus, the IRA in assessing the simplicity of the questions was calculated to be 85.37% through less conservative approach.

IRA in assessing the clarity of the questions

Since 30 questions had been considered as completely clear, no question as unclear, the IRA in assessing the clarity of questions through conservative approach was 73.17%. The corresponding figure through less conservative approach was 85.37% since no question had been considered as unclear and 35 questions were considered as completely clear by experts.

IRA in assessing the importance of the questions

The number of questions considered as very important by experts was 16 questions while no question had been considered as unimportant. Thus, the IRA in assessing the importance of questions was calculated to be 39.02% through conservative approach. When using less conservative approach, the IRA in assessing the importance of the questions was 51.22% since 21 questions were considered as very important and no question had been considered as unimportant.

Relevance, simplicity, clarity and the overall importance of the instrument (S-CVI)

According to the experts' opinion, the content validity index of relevance, simplicity, clarity and importance were 90.24%, 73.17%, 73.17% and 39.02%, respectively.

Relevance, simplicity, clarity and the importance of each question (I-CVI)

All the questions were considered relevant, simple, and clear by the experts. Thus, the index was 100% in all cases. The corresponded figure regarding importance of the questions was in the range of 70-100% (Table 3).

The results of questions' relevance, simplicity, clarity and importance of a developed questionnaire to assess attitude of health-care personnel in School of Dentistry about blood-borne diseases by asking the faculty members is presented in table 2.

Reliability

The percentage of reliable questions to the total number of questions, based on the estimate of the nurses working in Dentistry School of Tehran University was within the range of 80.9-100%, which is considered to be acceptable.

Discussion

This study aimed to develop a questionnaire to assess the knowledge, attitude and practice of health-care personnel of dental schools regarding blood-borne diseases and also to investigate its psychometric indices. The results showed the content validity index in the fields of relevance, simplicity, clarity and importance of the questions to be in acceptable range.

The questionnaire also seemed to benefit from acceptable reliability.

IRA expresses the degree of agreement among the raters or experts participating in the research on indices such as relevance, simplicity, clarity, and the importance of the tool. The acceptable level for IRA has been reported 70% and in some cases 80%. An acceptable level of IRA rules out the need for revision while an IRA below the acceptable level indicates the need to revise the questions (12).

Based on the results of this study, the degree of agreement (IRA) on a conservative approach and a less conservative approach was 90.24% and 92.68% for the relevance of questions; 73.17% and 85.37% for the simplicity of questions, 73.17% and 85.37% for the clarity of questions, and 39.02% and 51.22% for the importance of question, respectively.

In Kheirandish study (13) in developing a standardized questionnaire to assess the attitude of patients visiting the clinic of Tehran University School of Dentistry about X-ray protection methods, the relevance of the questions in the conservative and less conservative approaches, was reported 53.0% and 93.3%, the simplicity of the questions, 60.0% and 93.3% and the clarity of the questions 33.0% and 80.0%, respectively, which are higher than this study in some cases.

In Fakhkhar and Rad study (14) in developing a standard questionnaire on protection against X-ray among medical students, the IRA in two conservative and less conservative approaches was estimated 83.3% and 96.6%, respectively, which are higher than this study.

Content validity index using the general consensus approach in the fields of relevance, simplicity and clarity in Kheirandish study (13), has been reported 87.0%, 91.0% and 85.0%, respectively. In Fakhkhar and Rad study (14), the overall content validity index of the instrument using the general consensus approach has been reported 100.0%.

In general, high content validity index can indicate the acceptability of the content validity of the developed instrument (15). However, a higher number of experts makes is more likely to have lower content validity index because the number of questions which are simultaneously considered to be relevant by all experts would be less as the number of experts increases (16). In this study, we consulted 10 experts. It seems that the lower content validity index in this study in comparison with Fakhkhar and Rad (14) is due to consulting a smaller number of experts in their research, which has been three experts. In Kheirandish study (13), six experts were consulted, which is less than this study. Therefore, the lower content validity index values in this study may be associated with the greater number of experts consulted.

In this study, content validity index was calculated for all the questions, in most cases it has been 100% or slightly less than this; implying the acceptability of the content validity of the developed instrument.

In this study, a significant number of faculty members took part in the process of evaluating the questions' relevance, simplicity, clarity and importance - which is one of its major points of strengths. On the other hand, despite the increase in the number of faculty members participating in this research, cooperation and summing up their views were somewhat time-consuming and difficult.

In addition, developing the questionnaire using the content validity process is another point of strength for this study. Deploying the content validity process in this research aimed to reduce the need for revision, to reduce the resources and references required for correction, and to increase the likelihood of achieving the acceptable validity and reliability indices at the same time.

Most of the methods of assessing the reliability emphasize on repeating a single test or doing more than one assessment. But usually, the main problem is that researchers often do not have the possibility of repeating a test or doing the equivalent tests. Even doing a test for the second time or using two instruments is also often impossible. Therefore, methods of internal consistency are used more often. In these methods, the researchers once assess an instrument (here a questionnaire) in a single group of respondents and then repeat the assessment again (17). In this study, the percentage of valid questions in the total number of question assessed by dental nurses was in the range of 80.9-100%, which indicates the reliability of the developed instrument based on this index.

Conclusion

In total, considering the recruitment of standard techniques to develop the questionnaire, and the results, it can be concluded that the developed questionnaire could be used with adequate certainty as a reliable, valid and convenient instrument to determine knowledge, attitude and practice of health-care workers in dental schools regarding the diseases transmitted through blood.

Conflict of Interests

Authors have no conflict of interests.

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REFERENCES

1. Danila S, Harfst S. Mosby's dental hygiene. Philadelphia, PA: Mosby Co; 2002.
2. Taiwo JO, Aderinokun GA. Assessing cross infection prevention measures at the Dental Clinic,

University College Hospital, Ibadan. Afr J Med Med Sci 2002; 31(3): 213-7.
3. Sepkowitz KA. AIDS--the first 20 years. N Engl J Med 2001; 344(23): 1764-72.
4. Rom WN, Markowitz SB. Environmental and occupational medicine. Philadelphia, PA: Lippincott Williams & Wilkins; 2007.
5. Baggaley RF, Boily MC, White RG, Alary M. Risk of HIV-1 transmission for parenteral exposure and blood transfusion: A systematic review and meta-analysis. AIDS 2006; 20(6): 805-12.
6. Clemente MG, Schwarz K. Hepatitis: General principles. Pediatr Rev 2011; 32(8): 333-40.
7. Murtomaa H. Work-related complaints of dentists and dental assistants. Int Arch Occup Environ Health 1982; 50(3): 231-6.
8. Cottone JA, Terezhalmy GT, Molinari JA. Practical infection control in dentistry. Philadelphia, PA: Lea & Febiger, 1991.
9. Terezhalmy GT, Gitto CA. Today's minimal requirements for a practical dental office infection control and exposure control program. Dent Clin North Am 1998; 42(4): 629-42.
10. Centers for Disease Control and Prevention. Recommended infection-control practices for dentistry. Morbidity and Mortality Weekly Report 1993; 42(RR-8): 1-12.
11. Mehta A, Gupta M, Upadhyaya N. Status of occupational hazards and their prevention among dental professionals in Chandigarh, India: A comprehensive questionnaire survey. Dent Res J (Isfahan) 2013; 10(4): 446-51.
12. Halboub ES, Al-Maweri SA, Al-Jamaei AA, Tarakji B, Al-Soneidar WA. Knowledge, attitudes, and practice of infection control among dental students at Sana'a University, Yemen. J Int Oral Health 2015; 7(5): 15-9.
13. Kheirandish BF. Developing a standardized questionnaire to assess the attitude of patients visiting Tehran University Dental School clinic regarding the methods of protection against x-ray. [Thesis]. Tehran, Iran: Tehran University of Medical Sciences; 2013. [In Persian].
14. Fakhkhar SA, Rad NK. Designing an standard valid and reliable questionnaire for assessing the knowledge and attitude of medical students about radiation protection. [Thesis]. Tehran, Iran: Tehran University of Medical Sciences; 2011. [In Persian].
15. Schutz AL, Counte MA, Meurer S. Development of a patient safety culture measurement tool for ambulatory health care settings: analysis of content validity. Health Care Manag Sci 2007; 10(2): 139-49.
16. Polit DF, Beck CT. The content validity index: are you sure you know what's being reported? Critique and recommendations. Res Nurs Health 2006; 29(5): 489-97.
17. Williams A. How to...write and analyse a questionnaire. J Orthod 2003; 30(3): 245-52.