

Development of questionnaire on dentists' knowledge of HIV/AIDS

Desenvolvimento de um questionário sobre HIV/AIDS para dentistas

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ABSTRACT

Aim: This study aimed to construct and evaluate the cross-cultural adaptation of DK-HIV-Q in an Argentine Spanish version. **Methods:** A translation and back translation of the DK-HIV-Q questionnaire were completed, as the original questionnaire had been formulated in Portuguese by a Brazilian researcher. The DK-HIV-Q was tested in two pilot studies conducted with Argentine dentists. **Results:** The committee of experts, consisting of three bilingual dentists, an epidemiology dentist, a general clinical dentist, and an oral pathology specialist, fully agreed on the conceptual relevance of the general domain and the 4-domain structure for the DK-HIV-Q, such as the declarative knowledge of the transmission of HIV/AIDS, the declarative knowledge of oral manifestations of HIV/AIDS, the procedural knowledge of proper dental practice, and the procedural knowledge of infection control measures. A final version of the DK-HIV-Q showed a satisfactory degree of semantic accuracy and semantic equivalence with the original version, and proved to be satisfactorily conceptual and useful as an initial indicator for a subsequent study of construct validity. **Conclusion:** This study described the specific details of the construction of the DK-HIV-Q and aspects of the content validity process, which is one of the main procedures to be considered by healthcare researchers and professionals who are interested in using reliable and appropriate measurements and instrument scales for given population groups, such as HIV/AIDS patients.

Uniterms: HIV. Health knowledge, attitudes, practice. Questionnaires.

INTRODUCTION

Dentists play a key role in HIV/AIDS care; however, the fear of contamination can be a core source of anxiety for healthcare workers who deal with HIV/AIDS patients¹⁻⁹. A relatively high proportion of HIV-positive patients are reluctant to reveal their health status to their dentists because of their fear of being refused treatment¹⁰⁻¹³. A similar reluctance is found among dentists, including problems in the implementation of appropriate infection control precautions, as well as a fear of illness and contagion^{1,4-7}. Nevertheless, dentists can and should promote both ethically acceptable practices and the suitable clinical management of HIV-positive patients^{1,3,10-12}.

Considering the importance of the relevant knowledge of dentists worldwide regarding HIV/AIDS in primary healthcare settings, and the fact that, to the best of our knowledge, no prior studies of

questionnaires with construct validity on HIV/AIDS for dentists have been published in the literature, the present study represents the first step toward learning about dentists' knowledge regarding HIV/AIDS. This work was based on findings reported by Oliveira *et al.*¹⁴, who evaluated the knowledge of 250 Brazilian dental students concerning HIV infection, the infection control measures adopted by the dental students, and students' attitudes towards treating HIV/AIDS patients, by means of a self-administered questionnaire consisting of 32 pre-coded questions and two open-ended questions. One similar study was also conducted using a questionnaire with construct validity on HIV/AIDS; however, this study was carried out considering patients' opinions about their dentists¹³. Therefore, due to the lack of reliable studies for comparative purposes, it is important to develop questionnaires that can be reproduced and adapted in different countries and to different cultures¹⁵⁻¹⁷.

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Therefore, the aim of this study was to construct and evaluate the cross-cultural adaptation and translation of the DK-HIV-Q questionnaire on dentists' knowledge of HIV/AIDS into an Argentine Spanish version. The use of this questionnaire in a primary healthcare setting was able to identify the conduct of dentists in providing dental care for patients with HIV/AIDS. Considering that dentists are considered strategic professionals, their attitudes can influence the behavior of other key components of the oral healthcare team. These factors are reflected in the quality of the dental care offered to HIV/AIDS patients.

METHODS

Development and description of the DK-HIV-Q

The initial format of the **DK-HIV-Q** questionnaire was based on the study of Oliveira *et al.*¹⁴. This instrument was intended to identify the general domain of dentists' knowledge of HIV/AIDS through 33 items within four specific domains: (1) the declarative knowledge of the transmission of HIV/AIDS, (2) the declarative knowledge of oral manifestations of HIV/AIDS, (3) the procedural knowledge of proper dental practice, and (4) the procedural knowledge of infection control measures. The items were grouped theoretically in each domain, as shown in Figure 1. The DK-HIV-Q questionnaire of this study was formulated in the Argentine Spanish version (Figure 1), but it was also translated into English (Figure 2) to facilitate reader comprehension within this article.

The score of each item of the DK-HIV-Q was based on the following options: 'Yes' = 1 and 'No' = 0.

Translation and back translation of the DK-HIV-Q

Because the original DK-HIV-Q questionnaire had been developed by a Brazilian researcher living in Argentina, the questionnaire required both a translation and a back translation. Subsequently, the content validity of the items to measure dentists' knowledge of HIV/AIDS was verified by comparing the Argentine Spanish translation of the original questionnaire to the back translation into Portuguese.

The translation from the original Brazilian Portuguese version of the instrument into Argentine Spanish was performed separately by two bilingual translators, an Argentine and a Brazilian, who have experience in health questionnaire translations and are fluent in both languages.

The translated version was analyzed by two other bilingual dentists who offered suggestions in an attempt to produce a final Argentine Spanish version with a satisfactory degree of semantic accuracy and

semantic equivalence to the original version. Special attention was given to the meaning of the words in the two versions so as to identify possible difficulties in understanding or misunderstandings of the questionnaire. The final result of this process was an Argentine Spanish version of the questionnaire.

This final Argentine Spanish version was then translated back into Brazilian Portuguese by a third Brazilian bilingual translator. This translator had no access to the original instrument.

A subsequent comparison between the original version and the back translated version was performed by another Argentine bilingual translator who had not previously been involved in the study.

Evaluation of the DK-HIV-Q by the committee of experts

The combined assessment of conceptual, item, semantic, operational, and measurement equivalence was performed by a committee of experts, consisting of three bilingual dentists, an epidemiology dentist, a general clinical dentist, and an oral pathology specialist, who provide dental services to HIV/AIDS patients and who had no prior knowledge of the study. The aim of this step was to assess the perspective of the referential meaning of the essential terms, words, and general meaning of each item. The review performed by the committee of experts also attempted to predict how dentists would fill out and understand the DK-HIV-Q questionnaire.

Application of the DK-HIV-Q

The DK-HIV-Q was submitted to two preliminary pilot studies, using the same criteria, and two convenience samples, each of which conducted with ten Argentine dentists of both genders and a wide range of ages, all living in the city of Córdoba, who filled out the instrument and were instructed to take note of all unclear words. The instrument was administered as an interview to reduce unreturned questionnaires.

A list of all registered dentists in Córdoba was obtained. Only dentists working at the time of the study were included. Written informed consent was also obtained from all participants. Prior to the interviews, the study received approval by the Committee of Bioethics in Research, logged under protocol number 545/07-COEP.

The first pilot test of the instrument was performed in an attempt to detect any discrepancies regarding the meaning of any item or the instructions on how to fill out the questionnaire. After some adjustments had been implemented to improve participant understanding, the DK-HIV-Q was tested again in a second pilot study.

RESULTS

Development and description of the DK-HIV-Q

In items 1 to 4, representing the first domain, the objective was to identify the main methods of HIV transmission. Items 5 to 15, representing the second domain, list the most frequently encountered oral manifestations of HIV/AIDS in HIV-positive patients, except for lichen planus, which is included here to evaluate the extent of the dentist's knowledge.

Items 16 to 26 were grouped into the third domain, assessing the procedural knowledge of general dental practices for HIV-positive patients. Items 27 to 33 were grouped into the fourth domain, related to the procedural knowledge of basic infection control that is most frequently used by dentists. The knowledge evaluated was mainly related to dentists' procedures in the use of specific equipment for personal protection and the protection of various surfaces (Figures 1 and 2).

Figure 1 - Dentists' knowledge of HIV/AIDS questionnaire (DK-HIV-Q) with 33 items

DK-HIV-Q	Dominio
¿Por qué medios puede ser transmitido el HIV?	
1. Sangre	1
2. Saliva	
3. Secreción vaginal	
4. Semen	
¿Cuáles son las manifestaciones bucales que se relacionan con los portadores de HIV/SIDA? Marque con una "X" (puede ser cualquier número de respuestas) aquellas que usted considere.	2
5. Sarcoma de Kaposi	
6. Leucoplasia Velloso	
7. Candidiasis	
8. Periodontitis Ulcero Necrotizante	
9. Gingivitis Ulcero Necrotizante Aguda (GUNA)	
10. Eritema gingival lineal	
11. Linfoma no Hodgkin	
12. Herpes Zoster	
13. Agrandamiento de parótida	
14. Líquen Plano	
15. Condiloma acuminado	
Lea el siguiente cuadro. En el mismo se realizan afirmaciones. Marque con un X la opción con la que se sienta más identificado. No deje ninguna sin marcar.	3
16. Usted se considera apto para atender a un portador del HIV/SIDA.	
17. Usted ya ha atendido algún paciente con HIV/SIDA.	
18. Usted sabe cómo proceder durante un accidente punzo cortante.	
19. Después de un accidente punzo cortante, usted se haría un análisis para verificar la posibilidad de infección con HIV.	
20. Sus conocimientos y aplicaciones sobre el control de la infección son adecuados para prevenir la infección cruzada.	
21. Usted necesita recibir un entrenamiento especial sobre cuidados y manejos del paciente portador de HIV/SIDA para atender a los mismos.	
22. Las personas portadoras de HIV/SIDA deben ser tratadas en ambiente aislado o en lugares especializados.	
23. Usted conoce la medicación más comúnmente usada por los pacientes portadores de HIV/SIDA.	
24. Usted ya se ha sometido a un análisis para saber si está infectado por el HIV.	
25. En su historia clínica, usted tiene incluido alguna pregunta sobre HIV/SIDA.	
26. Con qué frecuencia usted revisa la historia clínica de sus pacientes durante las consultas.	
¿Qué medios de control de infección usted adopta en su práctica odontológica?	
27. Barbijo	
28. Gafas de protección	4
29. Cofia	
30. Guantes (1 par)	
31. Guantes (2 pares)	
32. Guardapolvo o chaquetilla	
33. Protección de superficies con papel film	

Figure 2 - Translation of the dentists' knowledge of HIV/AIDS questionnaire (DK-HIV-Q) with 33 items

DK-HIV-Q	Domains
By what means can HIV be transmitted?	
1. blood	1
2. saliva	
3. vaginal fluid	
4. semen	
What are the oral manifestations related to HIV/AIDS patients? Mark with an X (there can be more than one answer) any choice that you consider to be related.	2
5. Kaposi's sarcoma	
6. Oral hairy leukoplakia	
7. Candidiasis	
8. Necrotizing ulcerative periodontitis	
9. Acute necrotizing ulcerative gingivitis (ANUG)	
10. Linear gingival erythema	
11. Non-Hodgkin linfoma	
12. Herpes zoster	
13. Parotid gland enlargement	
14. Oral lichen planus	
15. Condyloma acuminatum	3
Read the following. In this section, affirmative sentences are made. Mark with an X the option that you most identify with. Do not leave any options unmarked.	
16. You are able to attend HIV/AIDS patients.	
17. You have already treated an HIV/AIDS patient.	
18. You know how to proceed when an occupational accident occurs.	
19. After an occupational accident, you would do an analysis to verify the possibility of HIV infection.	
20. You have adequate knowledge of infection control to prevent cross infection.	
21. You need to receive special training on dental care to treat HIV/AIDS patients.	
22. HIV/AIDS patients should be treated in an isolated environment or in specialized places.	
23. You know the medicine most commonly used for HIV/AIDS patients.	
24. You have already submitted an analysis to know if you are infected with HIV.	
25. You have included some questions about HIV/AIDS in your dental records.	
26. You often review dental records of your patients during dental care.	
What kinds of infection control do you use in your dental care?	
27. Mask	
28. Goggles	4
29. Doctor's cap	
30. Gloves (1 pair)	
31. Gloves (2 pairs)	
32. Lab coat	
33. Plastic surface protection film	

Translation and back translation of the DK-HIV-Q

During this stage, the committee of experts fully agreed with the conceptual relevance of the general domain and the 4-domain structure for the DK-HIV-Q. The committee of experts also stated that the conception of the dentists' knowledge of HIV/AIDS used for the development of the new instrument was pertinent to Argentine culture. Considering the meaning of the translated text, 93.9% of the 33 items showed "complete meaning agreement," that is, the general meaning remained unaltered in 93.9% of the pairs of statements.

Interviewees reported that they enjoyed answering the questions and considered the research to be of utmost importance. However, these dentistry experts made some key suggestions for the substitution of words and expressions. The two suggested

substitutions were made in two different domains. The first adjustment was made in the instructions of the second domain, changing what was previously *¿Cuáles son las manifestaciones bucales que se relacionan con los portadores de HIV/SIDA?* (The translation: What are the oral manifestations related to HIV/AIDS patients) to include the following phrase: *Marque con una "X" cualquier número de respuestas que usted considere* (The translation: Mark with an X (there can be more than one answer) any choice that you consider to be related). These have also been translated into English for better understanding within this article.

Another adjustment was made to the fourth domain's instructions, which previously was: *Cuál es la combinación de medios de control de infección usted adopta en su práctica odontológica?* (The

translation: What kinds of infection controls do you use in your dental care?) Interviewees asked for exclusion of the words *Cuál es la combinación de*, (The translation: What kinds of) and the final, corrected statement read: *Qué medios de control de infección usted adopta en su práctica odontológica* (The translation: What kinds of infection controls do you use in your dental practice?) (Figures 1 and 2).

Application of the DK-HIV-Q

During the first application of the preliminary pilot of the DK-HIV-Q, six dentists mentioned difficulties in filling out the questionnaire because of the format. However, none of them reported having any trouble understanding the document. Modifications in the format of the questionnaire were made according to the comments made by the dentists to clarify the content of the questionnaire and to facilitate comprehension. After having adjusted the format of the DK-HIV-Q, a new version, considered the final version, was then prepared by the investigators. After the second application, no difficulties were reported by participants in filling out the questionnaire or in understanding the items. All 20 dentists answered the DK-HIV-Q in these two pilot studies.

The final version of the DK-HIV-Q is presented in Figures 1 and 2.

DISCUSSION

This work described how the DK-HIV-Q was constructed in an attempt to, investigate its construct validity in future studies, helping researchers understand the importance of the initial construction of the instrument and its cross-cultural adaptation as the first step in validating an instrument in a new population, which can subsequently lead to comparisons among different populations. Instruments without proper validation may generate significant errors that can interfere in scientific progress¹⁸⁻²².

Rigorous cross-cultural translation and evaluation of the DK-HIV-Q, using up-to-date international guidelines and standardized analytical methods for a widespread release were integral components of its development¹⁸⁻²². The use of the translation and back translation of the DK-HIV-Q, a critical examination of the two versions, and suggestions made by the committee of experts resulted in a final Argentine Spanish version with a satisfactory degree of semantic accuracy and semantic equivalence to the original version. The involvement of the committee of experts during this stage of cross-cultural adaptation assessment should be emphasized, as these specialists contributed to both the reflections on and discussions of key terms, thereby promoting suitable adjustments to the developed final version¹⁹⁻²².

A notable benefit of translation work to

instrument standardization and dissemination is the identification and adaptation of problem items, ambiguous phrases, idiomatic expressions, and conceptual discrepancies^{13,15,20-22}. Regarding the assessment of semantic aspects, it could be concluded that the comparisons of statements from the translation to the back translation achieved an adequate equivalence to the original questionnaire¹⁸⁻²². The cross-cultural adaptation of instruments developed in other linguistic, social, and cultural contexts shows the combination of the literal translation of words and phrases from one language to another, and a meticulous process of fine-tuning of language that covers the cultural context and lifestyle of the target population, trying to ensure consistency between the content validity of the original and target language versions^{15,20-22}.

The 4-domain structure for the DK-HIV-Q was formulated to facilitate its construction so as to include these basic and important items related to dentists' knowledge about HIV/AIDS. The declarative knowledge presented in the first and second domains consisted of an understanding of the transmission and recognition of the oral manifestations of HIV/AIDS, presumably created in the process of dentistry education and postgraduate training. However, with repeated experience, routines for performing specific tasks can be set by triggering procedural learning mechanisms, as shown in domains 3 and 4. In this light, declarative knowledge is transformed into qualitatively distinct procedural knowledge; subsequently, a gradual automation process takes place. To achieve this, the DK-HIV-Q was elaborated with 33 items, including specific items for each domain.

The use of an anonymous self-administered questionnaire is preferable in population studies due to its lower cost and its ability to assess a wider range of people^{1-4,10-12,20,23-25}. Because some HIV/AIDS patients had been experiencing difficulties in accessing dental care, the evaluation of dentists' knowledge could help to understand what may affect dentists' willingness to treat HIV/AIDS patients^{2,4,24}. Dentists' knowledge about HIV/AIDS is highly important, as it can interfere in the clinical management of these patients. However, the DK-HIV-Q is limited as a measurement of dentists' knowledge, given that it is the first instrument of this nature and that it includes only basic questions, such as the transmission and oral manifestations of HIV/AIDS, which are not always sufficient to assess the entire knowledge of the dentist regarding HIV/AIDS. On the other hand, the DK-HIV-Q did prove to be relevant in that it showed just how relevant the initial construction of the instrument was, especially considering the importance of cross-cultural adaptation assessment.

The present study described the details of the construction of the DK-HIV-Q and aspects of the content validity process, one of the procedures to be considered by healthcare researchers and professionals who are interested in using reliable and appropriate measurements and instrument scales for given population groups, such as HIV/AIDS patients. Therefore, the self-administered questionnaire is important for dentists from different cultures to have a common instrument to assess multicultural forces^{2,23,25}.

RESUMO

Objetivo: O objetivo deste estudo foi construir o DK-HIV-Q na versão espanhola Argentina e avaliar sua adaptação transcultural. **Materiais e Métodos:** Foi realizada a tradução e a retro-tradução, porque o DK-HIV-Q foi feito em português pela pesquisadora brasileira. O DK-HIV-Q foi testado em dois estudos-piloto entre dentistas argentinos. **Resultados:** O comitê de especialistas, composto por três cirurgiões-dentistas bilíngues, um epidemiologista, um clínico geral e um especialista em patologia oral, concordaram completamente com a relevância conceitual do domínio geral e com a estrutura de quatro domínios para o DK-HIV-Q, que foram conhecimento declarativo dos métodos de transmissão do HIV, conhecimento declarativo das manifestações orais de HIV/AIDS, conhecimento processual de práticas gerais odontológicas, e conhecimento processual de controle de infecção. A versão final do DK-HIV-Q mostrou um grau satisfatório de precisão e de equivalência semânticas com a versão original e provou ser satisfatoriamente conceitual e útil como um indicador inicial para realizar um estudo posterior de validade de construto. **Conclusão:** Este estudo descreveu detalhes da construção do DK-HIV-Q e aspectos do processo de validade de conteúdo, um dos procedimentos a serem considerados por pesquisadores de saúde e profissionais que estão interessados em usar medidas confiáveis e adequadas e escalas de instrumentos para determinados grupos de população, tais como pacientes com HIV/AIDS.

Descritores: HIV. Conhecimentos, atitudes e prática em saúde. Questionários.

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