

ASSESSMENT OF PHYSICIANS' PERCEPTION OF HIV+ PATIENTS' ORAL HEALTH

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ABSTRACT

The aim of this study was to design and validate an instrument for establishing perceptions of oral health held by physicians treating people living with HIV/ AIDS. In order to design the instrument, four domains were identified that could measure the object of study and a 22-item questionnaire was created. The domains established were: knowledge of oral health; personal experience with oral health care; knowledge of oral health regarding HIV/ AIDS; professional medical practices. To validate the instrument 50 physicians specializing in infectious diseases from public hospitals of Buenos Aires city completed the questionnaire using a Likert-type scale with 5 categories. The reliability of the instrument was assessed with the test and retest method at 30 days; internal consistency with Cronbach's α coefficient; content validity was determined by expert opinion; construct validity with the extreme groups method (Mann

Whitney test, $p < 0.05$). All participants completed the test and retest questionnaires. Their mean age was 37.7 ± 0.9 years; 36% were female and 64% male. The average experience in medical practice was 8.7 ± 0.6 years. The instrument proved to be reliable as shown by the value of $r_s = 0.94$ in the test-retest method; a satisfactory intra-item consistency was shown by Cronbach's α coefficient value of 0.91. The differences between the results of the groups of physicians in the extreme groups were statistically significant ($p < 0.001$). It is concluded that the instrument designed to measure the perception of oral health of physicians treating people living with HIV/ AIDS is valid. However, it would be desirable to enlarge the sample and determine criterion validity by comparison with other instruments.

Keywords: healthcare delivery; HIV-AIDS clinical medicine; oral health; quality of life

EVALUACIÓN DE LA PERCEPCIÓN DE LOS MÉDICOS ACERCA DE LA SALUD BUCAL DE PACIENTES VIH+

RESUMEN

El objetivo del trabajo fue construir y validar un instrumento capaz de caracterizar las percepciones de los médicos tratantes de los pacientes que viven con VIH/SIDA respecto de la salud bucal. El diseño del instrumento consistió en la identificación de los cuatro dominios que podrían medir el objeto en estudio y en la elaboración de un cuestionario de 22 ítems. Los dominios establecidos fueron: conocimientos sobre la salud bucal; experiencia personal con la atención odontológica; conocimientos sobre la salud bucal respecto del VIH/SIDA; prácticas médicas profesionales. Para la validación del instrumento, participaron 50 médicos especialistas en infectología de hospitales públicos de la CABA, quienes completaron anónima y voluntariamente el cuestionario diseñado empleando una escala de frecuencia tipo Likert de 5 categorías. Se evaluó la confiabilidad mediante la aplicación de test y retest a los 30 días; consistencia interna, mediante el coeficiente α de Cronbach; la validez del contenido, se determinó por opinión de expertos; la validez de construcción fue

evaluada mediante el método de grupos extremos (prueba de Mann Whitney, $p < 0.001$). El 100 % de los participantes realizó el test y re-test del cuestionario. La edad promedio fue 37.7 ± 0.9 años; 36 % de género femenino y 64 % masculino, con una media de 8.7 ± 0.6 años de ejercicio profesional. El instrumento resultó confiable ya que en el test-retest se obtuvo una correlación de $r_s = 0.94$. El coeficiente α de Cronbach fue de 0.91, demostrando una satisfactoria coherencia intrattems. Las diferencias correspondientes a los resultados de los grupos de médicos ubicados en los extremos resultaron estadísticamente significativas ($p < 0.001$). Concluimos que el instrumento elaborado para medir la percepción de los médicos tratantes de los pacientes que viven con VIH/SIDA respecto de la salud bucal resultó válido. Sin embargo, sería recomendable ampliar la muestra de aplicación y determinar la validez de criterios mediante el contraste con otros instrumentos.

Palabras Clave: atención de salud; HIV-SIDA; clínica médica; salud bucal; calidad de vida.

INTRODUCTION

HIV infection is a major global health problem affecting developing and developed countries alike¹. Associated oral lesions are important since

they affect the patient's quality of life and are useful markers of disease progression and immunosuppression. Moreover, the oral cavity is a readily accessible and visible part of the body and provides

health care providers and individuals with a window on their general health status. The mouth may show different signs and serve as an early warning system for diseases such as HIV infection and other immune system disorders. On one hand, the mouth can show signs of general infection and stress^{2, 3}, but on the other hand, oral infections can be the source of systemic infections in people with weakened immune systems, and oral signs and symptoms often are part of a general health condition^{4, 5}.

Several reports have described high levels of oral pathologies in HIV infected persons. Oral lesions associated with HIV commonly occur in children with HIV/AIDS, who often present early signs and symptoms of the disease⁶. These lesions cause discomfort, dysfunction, and disability, which should be taken into account during the oral and overall management of HIV-infected patients⁷. Furthermore, since the beginning of the AIDS epidemic, different studies have found that individuals with frequent oral care before their diagnosis changed their patterns of dental consultation after finding out that they were infected⁸⁻¹¹.

Previous studies have shown that primary-care medical providers can play an important role in helping individuals gain access to oral health care in developing countries and introducing successful preventive measures^{12, 13}. In primary care, physicians meet children and their families regularly at child-health clinics, with excellent opportunities to promote oral health^{14, 15}. The effectiveness of a medical-dental partnership has been apparent especially among lower socio-economic groups at risk for oral diseases. Obstacles to physicians' attending to oral health prevention can relate to their knowledge, work environment, and attitudes. Medical curricula may include only limited information on oral health care, and recent studies revealed that a high proportion of physicians working in pediatric health care lacked for sufficient knowledge on prevention of dental decay among children¹⁶.

In previous studies our group showed that teachers' perceptions assessed through a designed questionnaire reflect their preconceptions related to family, especially in the case of low income families. These findings revealed the need to explore perceptions and act on them before recruiting human resources for promotion and prevention programs. The application of another validated questionnaire in another sample of teachers confirmed previous observations

and may contribute to the knowledge of health planners regarding the social and emotional aspects involved and the needs of other participants in health management, which would favor the provision of adequate care, centered on the resolution of these needs¹⁷.

Our research team recently reported that unmet oral health care needs impair the quality of life of HIV+ patients¹⁸ and that erroneous dental beliefs concerning oral self-care influence the demand for dental treatment in Argentine HIV+ adult patients¹⁹. We have also observed that very few HIV+ patients are referred by physicians to the dentist for dental check-up. Bearing in mind the hypothesis that the attitude of physicians towards oral health may influence the referral of their patients to the dentist, we decided to undertake a study to explore preliminarily, through structured questionnaires, the perception of physicians regarding the oral health of HIV+ patients. The aim of this study was to design and validate an instrument to determine the knowledge, practices and attitudes regarding oral health of physicians treating HIV positive patients.

MATERIALS AND METHODS

Design of the instrument

The HIV-related physicians' perception of oral health profile (PPOH) was constructed in keeping with the process previously described^{20, 21}. The design of the instrument included several steps. First, four domains that could evaluate the study object based on scientific evidence were identified. The categories established were identified as fields associated to the data structure required for decision making for future actions. The following categories were identified: (1) Knowledge of oral health, (2) Personal experience with dental care, (3) Knowledge of HIV-related oral health and (4): Medical practices. Second, two researchers prepared twenty-two questions within the context of the categories mentioned above. Third, the questions were evaluated in terms of clarity, relevance and comprehensibility by five experts, i.e. five people in four different professions related to HIV patient care (one psychologist, one physician, two dentists and one social worker) according to the following criteria: reasonable and comprehensible, sensitive to variations, based on justifiable and instinctively reasonable assumptions, with clearly defined components and derived from data that are

feasible to obtain. None of the questions was excluded after evaluation and a 22-item questionnaire was agreed upon, which was named HIV-related Physicians Perception of Oral Health profile (PPOH). The resulting questionnaire had the following four domains: Domain 1: Knowledge of oral health (five questions), Domain 2: Personal experience with dental care (four questions), Domain 3: Knowledge of HIV-related oral health (eight questions) and Domain 4: Medical practices (five questions). Finally, a combined five point scale was established for each question, as previously proposed by Ventegodt et al.²² who combined three types of scales (Likert's scale, the visual analog scale and the numeric scale) into a single, reduced, valid and highly sensitive model. This scale can be applied as a numeric, ordinal or percentage scale²³. The Likert-type frequency scale ranged from "never" to "very often".

Validation of the instrument and data collection

The validation sample consisted of 100 volunteers, all physicians providing medical care to HIV patients at four public hospitals in the City of Buenos Aires, Argentina. The questionnaire was prepared for self-administration and was administered simultaneously to all the physicians at the four hospitals, in order to ensure independent responses. Re-testing was performed thirty days later by distributing the same questionnaire with no intervening recommendation.

Reliability was evaluated by the test-retest method. Internal congruence was determined by Cronbach's α coefficient. Content validity was established by the experts. Construct validity was evaluated by the extreme groups method and Mann Whitney test to analyze the variation coefficient of each of the fields. Together with the questionnaire, data regarding age, gender, years' medical clinical experience and use of information source regarding oral health were collected.

Data analysis

Mean values and SEM were calculated for age and years of clinical medical practice. The distribution of participants according to gender and the use of information sources regarding oral health were described as percentages. To analyze physicians' the level of perception regarding HIV-related oral

health, the responses to the individual questions of the four domains of the PPOH profile were standardized and added to produce a single summary score. The method involved the multiplication of coded responses for individual questions (coded 0 for "never" through 4 for "very often"). The statistical significance between the test and retest sets of records was analyzed by Wilcoxon signed rank test. Correlation between domain scores was assessed through Spearman's correlation coefficient. Mann Whitney test was used to assess differences in total score and for each domain score obtained comparing male and female respondents. Differences in median total score and for each domain score according to age, years' clinical practice and preferred information source were analyzed by Kruskal-Wallis test. All data were analyzed using GraphPad Prism version 5.03 for Windows (GraphPad Software, San Diego, CA, USA). The level of significance used was $p < 0.05$.

RESULTS

Sixty-four percent of the participants were male and 36% were female. Mean participant age was 37.7 ± 0.9 y. Seventy two percent of the respondents majored in medicine at the University of Buenos Aires, while 28% did so at other public universities of Argentina. The average length of clinical practice was 8.7 ± 0.6 y. The information sources regarding oral health preferred by participants were: (A) medical journals only (15%), (B) clinical experience only (6%), (C) internet only (6%), combination of (A), (B) and (C) (23%), (A) and (B) (21%), (D) brochures edited by dental associations, (A) and (C) (4%), (D) and (A) (4%), (A) and (C) (17%), (B) and (C) (4%). Mean age, clinical practice and the use of information sources regarding oral health did not differ significantly between male and female respondents (data not shown).

Fig. 1 shows median, range and minimal/maximal score values for each domain and the complete questionnaire the first time it was administered and thirty days later. The use of the test-retest method revealed stability of the instrument since no significant difference was found between applications for the total score ($p = 0.97$) or for domain 1 ($p = 0.38$), domain 2 ($p = 0.44$), domain 3 ($p = 0.13$) and domain 4 ($p = 0.98$). This demonstrated the reliability of the questionnaire. In addition, Spearman's correlation analysis of total score showed $r_s = 0.94$ ($p < 0.001$).

Table 1 shows the dependence relationship among domains. Domains were significantly dependent on one another, but the strength of the correlation differed. The highest degree of correlation was found between domains 3 and 4, and the lowest between 2 and 4.

Fig. 2 shows no influence of gender either on the total score ($p = 0.26$) or in the score for each domain of the questionnaire.

Fig. 3 shows the independence of the HIV-related PPOH profile from age either for the total score ($p = 0.37$) or for each domain score.

Years' experience of clinical practice were not found to influence either the questionnaire total score ($p = 0.078$) or the scores for each domain, as shown by Fig. 4.

Fig. 5 shows no influence ($p = 0.053$) of the use of information sources regarding oral health preferred by physicians on the total score for the questionnaire. The analysis of the internal consistency of the instrument through Cronbach's α coefficient demonstrated satisfactory intra-items congruence ($\alpha = 0.91$).

Table 2 shows the analysis of the test of the extremes. When the medians were disregarded and the data for the extreme groups for each item and each domain were compared, statistically significant differences were observed. These differences

Table 1: Correlation between domains of HIV-related PPOH profile.

	Total Score	Domain 1	Domain 2	Domain 3	Domain 4
Domain 1	rho: 0.83**	-	rho: 0.53**	rho: 0.69**	rho: 0.60**
Domain 2	rho: 0.74**	rho: 0.53**	-	rho: 0.71**	rho: 0.40**
Domain 3	rho: 0.94**	rho: 0.69**	rho: 0.71**	-	rho: 0.82**
Domain 4	rho: 0.82**	rho: 0.60**	rho: 0.40**	rho: 0.82**	-

Correlation coefficients obtained through Spearman's correlation analysis are shown
 **Statistically significant ($p < 0.01$)

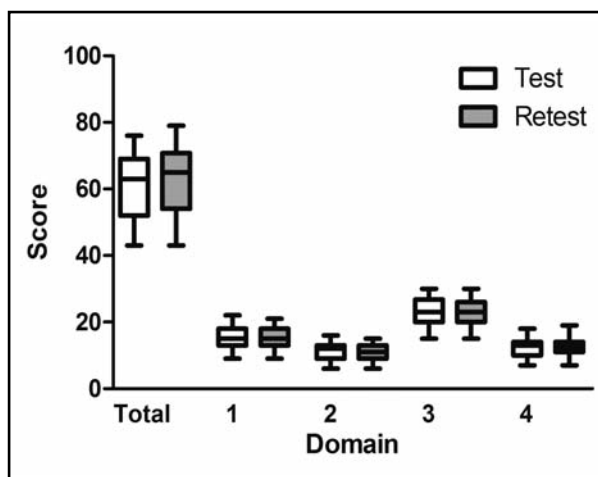


Fig.1: Physicians' perception of HIV-related oral health. Box-plots of the scores obtained from 100 respondents using the HIV-related PPOH profile at baseline (test) and after 30 days (retest). Domains are 1: Knowledge of oral health, 2: Personal experience with dental care, 3: Knowledge of HIV-related oral health, 4: Medical practices.

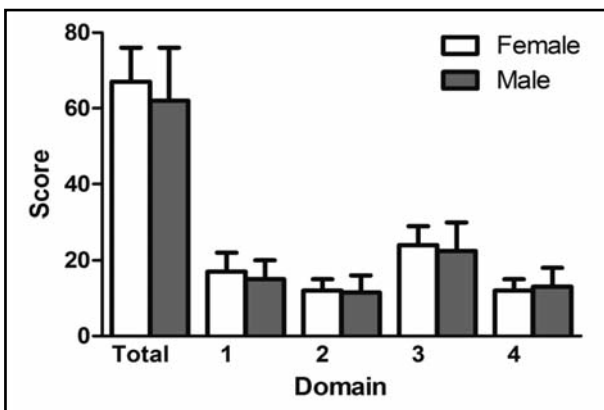


Fig.2: Influence of gender on physicians' perception of HIV-related oral health. Median and range of scores obtained from female ($n = 36$) and male ($n = 64$) respondents using the HIV-related PPOH profile at the beginning of the study. Domains are as in Fig. 1.

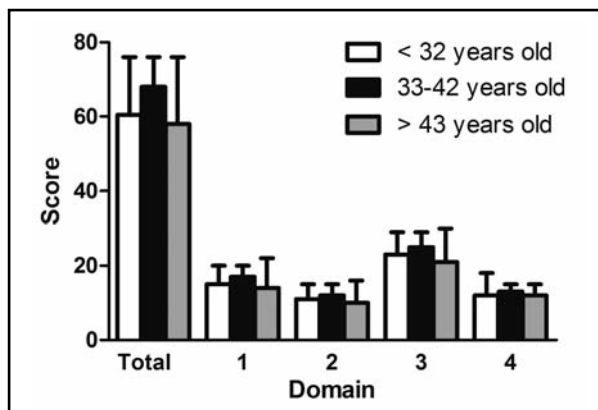


Fig.3: Influence of age on physicians' perception of HIV-related oral health. Median and range of scores obtained from 100 respondents grouped according to age younger than 32 y ($n = 38$), 33 to 42 y ($n = 28$) and older than 43 y ($n = 34$), using the HIV-related PPOH profile at the beginning of the study. Domains are as in Fig. 1.

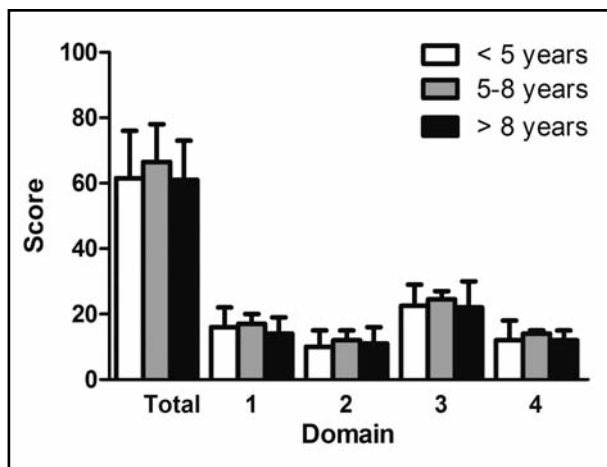


Fig.4: Impact of clinical practice on physicians' perception of HIV-related oral health. Median and range of scores obtained from 100 respondents grouped according to years' medical clinical practice. Categories were less than 5 y ($n = 46$), between 5 and 8 y ($n = 20$), and more than 8 y, ($n = 34$). Domains are as in Fig. 1.

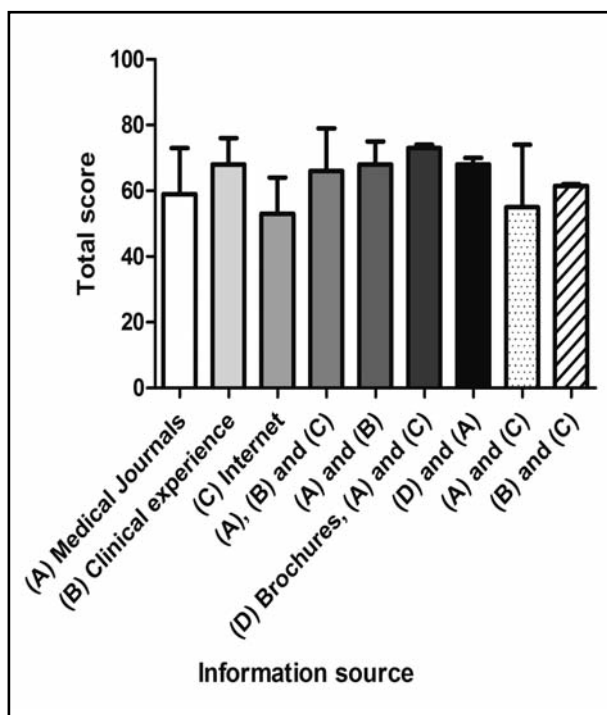


Fig.5: Impact of medical information sources on physicians' perception of HIV-related oral health. Median scores and ranges of the HIV-related PPOH profile obtained from 100 respondents physicians grouped according to HIV-related oral health information source. Information sources were (A) medical journals only ($n = 15$), (B) clinical experience only ($n = 6$), (C) internet only ($n = 6$), combination of (A), (B) and (C) ($n = 23$), (A) and (B) ($n = 21$), (D) brochures, (A) and (C) ($n = 4$), (D) and (A) ($n = 4$), (A) and (C) ($n = 17$), (B) and (C) ($n = 4$).

Table 2: Analysis of construct validity by the technique of extreme groups applied to each of the domains.

Domain	Smaller values	Larger values	p
Domain 1	9 (0-14)	18 (15-22)	<0.001***
Domain 2	5 (3-8)	12 (10-16)	<0.001***
Domain 3	14 (10-16)	25 (21-30)	<0.001***
Domain 4	8 (3-8)	10 (9-18)	<0.001***

Median and range of score values for each domain are shown.
***Statistically significant

were found both when each item was considered with its confidence limits and when only the extreme scores were considered and the 3 middle scores were disregarded. Table 2 shows the results obtained upon disregarding the middle score.

DISCUSSION

This is the first study investigating knowledge, attitudes and practices of physicians treating HIV/AIDS patients using a questionnaire. In developing countries, health systems may have poor degree of integration and the evaluated features may act as a barrier for oral health care. Collaboration and coordination between physicians and dentists are needed to provide comprehensive medical and oral health care for people living with HIV. In this respect, integration of oral health promotion into general health care has been highly recommended by the World Health Organization²⁴. Primary-care physicians can, as part of their general health care, promote and contribute to improve oral health care.

The report titled "Oral health in America: A report of the surgeon general" (2000)²⁵ highlighted the importance of medical curricula providing education in order to deliver efficient oral health care. Similarly, The American Association of Medical Colleges (2008) admitted the importance of oral health education by describing the changes that needed to be made to medical and dental curricula²⁶. It was also suggested that the oral health education approach should include different aspects, such as theoretical knowledge, clinical skills development and attitude changes. The recommendations proposed by these associations should also be considered in our country, since medical undergraduate courses were not reported as primary informa-

tion sources regarding oral health by the physicians who participated in our study.

Different studies have reported knowledge, attitude and practices of physicians regarding several dental topics. For instance, Vallée and Kandelman (1991)²⁷ evaluated knowledge, attitudes and practices with regard to fluoride and dental fluorosis among all the general practitioners and pediatricians of the Montreal West Island territory. Pediatricians knew the fluoridation status of the cities of the territory better than the general practitioners did; as did physicians with more than fifteen years' experience since graduation versus the younger physicians. In practice, 92.3% of the physicians prescribed fluoride supplements or vitamins for at least some of their patients aged less than six years. As many as 76.3% of the physicians believed that the pediatricians and the general practitioners were responsible for prescribing fluoride to children less than six years old who visited them; only 59.4% believed themselves responsible for the dental health of these children. Similarly, our results showed strong correlation between knowledge regarding oral health and medical clinical practices. Moreover, if the PPOH score is taken as an index of responsibility for oral health, comparable figures are obtained from our results (56 - 80 %).

Mbanya et al. (2001)²⁸ studied the impact of several determinants (lack of promotion in health services, lack of information and low income) on health education practices of nurses regarding HIV/AIDS, and recommended that information, education and tools for control of HIV channeled through compliance with international working norms, be provided. In agreement with the authors, our study identified the lack of information regarding HIV-related oral health as a determinant of medical practices, as can be inferred from the strong correlation between domains 3 and 4 of the questionnaire validated here.

Recent studies have focused on the use of evidence to prevent community chronic diseases^{29, 30}. This is why it is important to include the oral component in health care for HIV-infected patients.

ACKNOWLEDGMENTS

This work was supported by grant UBACyT 20020090100228 and grant UBACyT R001 from the University of Buenos Aires.

The existing gap between the evidence and the comprehensive treatment of the disease supports this assumption. Klement et al. (2011)³¹ conducted a study at a medical school in Germany on a sample of newly graduated physicians whose undergraduate program included the interdisciplinary subject "Health education and promotion". The students regarded the acquired knowledge as poor, raising a challenge for future curricular development. The high relevance reported by the students for topics related to prevention is a potential resource to be used in the selection of didactic formats to increase curriculum subjects with practical efficacy. Moreover, it should be borne in mind that in the context of oral health care, the medical component includes dentists, physicians, nurses, and allied health professionals whose services are provided through hospitals, nursing homes, ambulatory care facilities, and health professional offices. Although in developed countries, the medical component provides comprehensive care, often working together with dental specialists and general practitioners, in other parts of the world and for certain conditions like AIDS, physicians do not recruit dental professionals as members of the treating team. In this respect, our study will contribute, through the use of a self-report, non-invasive and easy to administer questionnaire, to reduce the gap between the evidence and the comprehensive treatment of HIV+ patients, as it provides background for expanding the knowledge about determinant factors influencing physicians' attitudes and practices regarding the oral health of their patients.

It is concluded that the instrument designed to measure the perception of oral health of physicians treating people living with HIV/AIDS appeared to be valid regardless of the characteristics of the physician with regard to undergraduate and postgraduate education, age, gender, years' medical practice and information sources about oral health. However, it would be desirable to enlarge the validation sample and determine criterion validity by comparison with other instruments.

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