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Dental Patients' Knowledge, Beliefs, and Perceptions about Dentistry and AIDS

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Abstract

The majority of Americans view AIDS as the most important health problem faced today. Despite efforts to educate the public, the literature suggests that misperceptions exist concerning HIV transmission. The documented case of a Florida dentist who transmitted the HIV virus to five dental patients focused the public's attention on its perceived vulnerability to contracting HIV during a dental visit. The purpose of this descriptive study was to identify the dental patient's perceived risk of acquiring the AIDS virus during a dental visit and to then determine whether the perceived risk was related to the patient's level of oral hygiene. A convenience sample of 105 dental patients was assessed for level of oral hygiene and then completed a 25-item close-ended questionnaire. The results indicated that significant relationships existed between the patient's cumulative perceived risk of acquiring HIV during a dental visit and cumulative knowledge about the disease and education level. There was borderline significance in the relationship between perceived risk and level of oral hygiene.

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Introduction

The Centers for Disease Control (CDC, 1990) estimates that at least one million persons are infected with the human immunodeficiency virus (commonly known as HIV) which is also the causative agent of acquired immunodeficiency syndrome, better known to the general public as AIDS. The yearly incidence rate of new cases of HIV infection is estimated to be 40,000 persons per year. CDC statistics (1991) also predict that AIDS will rank among the five leading causes of death during the 1990's in adults between the ages of twenty-five and forty-five in the United States. By 1993, the CDC estimates the cumulative number of diagnosed full-blown AIDS cases in the U.S. will be between 330,000 and 405,000 people (1990).

Faced with the sobering statistic that as many as one in every two hundred Americans may be infected with HIV, it is no wonder that the majority of Americans now see AIDS as the most important health problem facing the country today (Blendon & Donelan, 1988). The media has focused considerable attention on AIDS in the last ten years in an effort to educate the general public about the disease. The Surgeon General launched a nationwide mail campaign in 1987 in an attempt to reach most households in order to provide

facts about the disease and its modes of transmission. To prevent the transmission of the HIV virus in the workplace, the CDC has promoted guidelines for universal precautions for all health care and public safety workers (1986, 1989, 1991).

The emotional fervor of the AIDS issue was heightened in 1990 when the CDC presented evidence that a dental patient apparently contracted the HIV virus from her dentist. This was the first documented case of a patient contracting the virus from a health care worker in the dental environment. The ensuing follow-up investigation identified four more patients from the same dental practice who tested positive for HIV. It was determined that none of these five patients were high-risk candidates for contracting the HIV virus; the precise mechanism of transmission from the dentist has not been determined (CDC, 1991). This isolated case of an unexplained transmission of the AIDS virus to five dental patients focused public attention on the perceived potential risk of HIV exposure resulting from a dental visit.

Significance

Education has been the mainstay of the public health effort to combat the spread of HIV and subsequent occurence of AIDS. Despite all the effort of public health officials to teach the population about the disease, its modes of

transmission, and the effectiveness of universal precautions in health care settings to prevent cross-infection (infection transmitted by provider to patient, patient to provider, or patient to patient), surveys of the general public suggest that misconceptions still exist about the disease and its modes of transmission (Blendon & Donelan, 1988; Gerbert, Maguire, & Spitzer, 1989; Hardy, 1991; Lancaster, Barsley, Boozer, & Lundgren, 1991).

In an effort to combat misconceptions about HIV transmission, the health educator must first try to identify these perceived misconceptions. Possibly as the result of the case in Florida, the public is concerned with the transmission of the HIV virus in dental settings. The public's awareness of the environment and elevated health consciousness should be encouraged, but conclusions about risks must be based on facts from reliable and credible sources (Banting & Robertson, 1991). An institution such as a dental practice that provides health care services should be aware of the concerns that the public may have regarding the transmission of infectious diseases such as AIDS. Awareness of these concerns is of particular importance because of the seriousness of the disease and the continuing misconceptions surrounding it (Lancaster, Barsley, Boozer, & Lundgren, 1991). Dental professionals are concerned with whether or not the public's knowledge and attitudes about HIV and AIDS will affect a person's behavior with regard to

dental care. Specifically, will the dental patient's knowledge and attitudes about AIDS affect his or her decision to seek dental treatment? Will a dental patient seek treatment if he or she has a fear of contracting the AIDS virus in the dental office? Also, will the patient who has a higher level of oral hygiene be more informed about the facts about AIDS, have fewer misconceptions about the disease, and feel less vulnerable for contracting the AIDS virus in the dental setting than a person with a lower level of oral hygiene?

Purpose

The purpose of this study was to focus on the issue of HIV transmission and the dental health care environment in order to present a descriptive analysis of the dental patient's general knowledge, beliefs, and attitudes about HIV transmission, cross-infection prevention, and testing.

Research questions

Along with determining what dental patients know and believe about HIV transmission, the following research questions were also addressed:

1. Do dental patients perceive a high vulnerability for contracting the AIDS virus in the dental environment?

2. Is there a relationship between perceived risk of contracting HIV in the dental office and patients' level of

oral hygiene?

Definition of terms

1. Oral hygiene: health of the mouth as reflected by the condition of the gingiva (gums) and the amount of dental plaque present on the teeth.
2. Plaque Index Gingival Index (PIGI): scale used to assess subjects' level of oral hygiene.
3. Barrier techniques: equipment recommended by the CDC to prevent transmission of AIDS virus and other blood-borne pathogens; includes gloves, masks, and safety eyewear to be worn by the health care provider.

Assumptions

It was assumed that the dental patients to be surveyed were representative of all patients of the private dental practice. It was also assumed that each patient would answer the survey questions honestly; this was encouraged by assuring each patient that his or her responses were completely confidential.

Limitations

Whether this sample was representative of the broader population could not be definitely determined; therefore, the conclusions apply only to this sample and groups similar in the characteristics of the sample.

Review of related literature

Before an appropriate survey could be administered to the dental patients who participated in the study, a thorough review of existing literature was conducted in order to provide a basis for the questions used in the survey. Since the purpose of this study was to focus on issues of concern for the dental patient regarding HIV transmission and the dental health care environment, the following topics related to the statement of purpose were investigated: general knowledge and beliefs about HIV and its transmission, sources of information and communication about HIV, attitudes about cross-infection prevention and testing for the virus, and perception regarding threat of HIV infection in the dental office. Next, there was a review of literature related to methodology, including pertinent information about the oral hygiene index used in determining each patient's level of oral health.

General knowledge and beliefs about HIV and its transmission

The AIDS virus is transmitted through sexual contact, exposure to infected blood or blood components, and perinatally from mother to neonate. Sexual contact with exchange of body fluids constitutes the major risk factor for transmitting or contracting HIV infection. Intravenous drug use with shared needles is also a major risk factor for HIV transmission. HIV cannot be transmitted by casual

contact, such as hugging, or shaking hands, for example (CDC, 1987). In the workplace, the Centers for Disease Control states blood is the single most important source of HIV (1989).

Many studies have investigated knowledge, perceptions, and beliefs about HIV and its transmission. A survey of five hundred seventy dental patients at Louisiana State University revealed that more than 96% of the subjects knew what AIDS was. Sixty-five percent were afraid of acquiring the AIDS virus, but only 7% actually knew someone who tested positive for HIV. Nearly 95% reported that they knew how to protect themselves against the virus. The vast majority knew that HIV could be transmitted: via heterosexual activity (95%), homosexual activity (99%), blood transfusions (97%), IV drug abuse (99%), and from mother to child at birth (97%). Many of the patients had misconceptions about other additional modes of transmission. Twenty-five percent believed that casual contact with an infected person could result in HIV infection. Slightly more than one third (35%) answered that kissing a person with HIV could transmit the virus; 30% believed transmission could occur after drinking from a glass used by a person with HIV (Lancaster, Barsley, Boozer, & Lundgren, 1991).

Blendon and Donelan (1988) collected data from fifty-three national opinion surveys which were conducted between 1983 and 1988, and concerned the public's perspective on

AIDS. Even though the public viewed AIDS as the most important health problem facing the country and 75% reported having read or heard something about the disease, the overwhelming majority (90%) said they did not know anyone with the disease. Mistaken views persist about how the virus is transmitted. According to this report, only 20% of Americans claimed to be very concerned about getting the HIV virus. One in four (25%) believed a person can get the AIDS virus by being coughed or sneezed upon by an HIV-infected person; 22% thought it can be transmitted from a drinking fountain. Other mistaken sources for HIV transmission included toilet seats (20%), mosquito bites (32%), swimming pools (21%), sharing a telephone (12%), sharing a locker (13%), jointly handling money (10%), and by being touched by someone who has AIDS (10%). Only 11% of Americans said that working near someone with HIV is a likely way to contract the virus; yet, paradoxically, one in four respondents said that he or she would refuse to work alongside a person with AIDS.

The Centers for Disease Control's National Center for Health Statistics has included questions about AIDS in the National Health Interview Survey (NHIS) since 1987. This survey is a continuous, cross-sectional household interview survey. Each week a sample of the civilian noninstitutionalized population is interviewed to obtain information on health, demographic, and other

characteristics of each household member. The sample yields about 3500 responses per month. Data concerning the adult population's knowledge and attitudes about AIDS and transmission of the HIV virus are collected to assist in the planning of educational programs.

The latest publication of this CDC data in July, 1991, revealed the following information concerning general AIDS knowledge and perceptions about HIV transmission: Nineteen percent of adults stated they knew a lot about AIDS, 46% said they knew some, 25% claimed a little knowledge, and 10% stated they knew nothing about AIDS. The proportions with the correct responses to general AIDS knowledge questions varied by sociodemographic factors. In general, adults less than fifty years of age were more knowledgeable than those fifty years of age and older; those with less than twelve years of education were less knowledgeable than those with twelve or more years of school. Despite the generally high levels of understanding about AIDS, particularly about the major modes of transmission, misperceptions about the likelihood of transmission through casual contact persist. With responses of "very likely" or "somewhat likely", 8% believed someone could get HIV from working near a person with the virus, 25% thought it could be transmitted from eating in a restaurant where the cook has AIDS, 32% from sharing plates, forks, or glasses with someone with the virus, 19% from using public toilets, 28% from being coughed

or sneezed on by someone with AIDS, 7% from attending school with a child with AIDS, and 29% from mosquitoes or other insects. In general, misperceptions about virus transmission varied by the same sociodemographic factors as general knowledge about AIDS. Adults fifty years of age and older and those with fewer than twelve years of education were more likely than younger and more educated adults to have misperceptions.

These studies seem to indicate that even though the majority of Americans are aware of HIV and its correct modes of transmission, there are still many with misconceptions about how the virus can be transmitted.

Sources of information and communication

Bender (1989) suggests that the general public's knowledge about AIDS is commonly obtained from newspapers and magazines which tend to sensationalize and distort facts.

When asked to identify their sources of information concerning AIDS, 90% of the sample in the Louisiana State University study (Lancaster, Barsley, Boozer, & Lundgren, 1991) reported that they relied on their doctors. Television news and magazine articles were the next two most frequently selected sources (86% each). Asked to whom they would direct a specific question concerning AIDS, 96% responded, "the physician." An AIDS hotline, counselor,

dentist, and clergyman followed in descending order. The dentist ranked low as an information source.

The National Health Interview Survey (Hardy, 1991) for the last quarter of 1990 showed that 87% of adults claimed to have received information about AIDS from at least one source in the month preceding the NHIS AIDS survey. The most frequently cited sources of information were television (75%), newspapers (50%), magazines (41%), radio (28%), and health department brochures (16%). While the actual proportion of adults who mentioned these sources varied among sociodemographic groups, the ranking of these sources was the same in all subgroups. This rank ordering also remained the same throughout 1990.

A survey by Gerbert, Maguire, and Spitzer (1989) of two thousand civilian, noninstitutionalized adults on their attitudes toward dentistry and AIDS revealed that although 87% of the sample said they would be comfortable talking with their dentist about AIDS, only 13% reported actually discussing the topic with their dentist. In most instances (80%), the conversations were initiated by the patient. One significant finding of this study was that most patients are willing to talk to their dentist about AIDS, although most had not done so, suggesting an expanded role for the profession in educating or counselling the public about AIDS.

In summary, the physician seems to be the most reliable

source of information about AIDS. Television, newspapers, and magazines also appear to have an influential effect upon Americans. Even though dental patients express a willingness to talk to their dentist about AIDS, very few actually do so; the dentist is not cited as a highly informed source.

Attitudes toward cross-infection prevention

Several studies have investigated the attitudes of dental patients toward cross-infection prevention. The study by Lancaster, Barsley, Boozer, and Lundgren (1991) reported that 96% of the sample stated that they expected their dentist to wear gloves while treating them. In another study, Gerbert, Maguire, and Spitzer (1989) reported that seventy-two percent of the respondents preferred for their dentist to wear gloves, 47% preferred masks, and 25% preferred protective eyewear, thus suggesting that dental patients endorse the use of gloves more enthusiastically than they endorse masks and goggles, perhaps because they perceive gloves as primarily for their own benefit, and masks and goggles as a means to protect the provider. Seventy-two percent of the respondents preferred for their dentist to wear gloves, 47% preferred masks, and 25% preferred protective glasses.

Samaranayake and McDonald (1990) conducted a questionnaire survey among 101 general practice dental

patients in the Glasgow, Scotland area to assess their perception and awareness of cross-infection preventive methods used in dentistry. Fifty-seven percent of the survey population were aware that dentists had been advised to wear gloves in routine dental practice. Eighty-two percent believed that the gloves were for the dentist's own protection, 62% believed that the gloves were for the patient's protection, and an overwhelming 94% did not mind the dentist wearing gloves during dental treatment. All of the respondents except one did not mind if the dentist wore a face mask during treatment. The results of this survey suggest that dental patients approve of the use of gloves and face masks, although they believe these practices are principally for the dentist's own protection, as opposed to their own protection.

A study of 277 patients at the Ohio State University dental hygiene clinic assessed patient understanding of the purpose for the use of gloves, their likes and dislikes about being treated by gloved practitioners, and their future expectations about the use of gloves by hygienists and dentists (Uldricks, Whitacre, Beck, & Odom, 1988). Results of the survey indicated that 89% of the patients surveyed believed that gloves protect both the dental clinician and patient from disease transmission. Sixty-two percent liked having dental clinicians wear gloves; only 3% did not like the gloves. The most commonly reported

feelings about being treated by a gloved clinician were: 46% thought they were protected; 40% indicated that it made no difference to them; 36% felt confident and safe about receiving treatment from a gloved clinician; 34% felt pleased. The majority of respondents (55%) indicated protection from disease transmission as the main reason for liking the gloves. Although 47% expected dentists to wear gloves in an office setting, only 18% would refuse treatment if the dentist was ungloved. Fifty percent expected hygienists to be gloved; however, only 19% indicated they would refuse treatment if the hygienist was ungloved. This study shows that although dental hygiene patients indicated that they liked gloves and felt that gloves protected them from disease transmission, they did not view gloves as a necessary, routine protective measure, suggesting a need for consumer education regarding the importance of gloves as a protective barrier against disease transmission.

Dental patients in the United Kingdom were surveyed in 1987 to determine their views on whether dentists should wear gloves and masks (Bowden, Scully, Bell, & Levers, 1989). Forty-seven percent of 266 respondents thought that dentists should wear both gloves and masks during treatment; 22.5% thought that only gloves were necessary, 9% thought that only masks were necessary, and 21.5% felt like neither gloves nor masks were necessary. The main reasons patients perceived health providers wear gloves/masks were as

follows: 31% felt like they were for the protection of the dentist; 29% felt like they were for the protection of the patient from the dentist; 23% considered gloves and masks important for protection from infection from other patients; 27% believed that all types of transmission were of equal importance.

According to these cited studies, patients generally accept the use of barrier techniques to prevent HIV transmission, especially gloves. There still remains a substantial minority of the public, however, that does not seem to realize the importance of barrier techniques during dental treatment to prevent HIV transmission from both the provider to the patient, and the patient to the provider.

Perceived vulnerability to AIDS in the dental office

In the only documented case of possible transmission of the AIDS virus from a health care worker to a patient, in this case a dentist in Florida to five dental patients, the CDC stated these facts: (1) the patients had surgical procedures performed by a dentist with AIDS; (2) epidemiologic investigation did not identify any other risk factors for HIV infection; (3) viral DNA sequences from the patients closely resembled those taken from the dentist. No mechanism of transmission was proposed, nor was the efficacy of universal precautions questioned (CDC, 1990, 1991). Thus, the public's attention was dramatically focused on its

perceived vulnerability of contracting the AIDS virus from a seemingly innocent trip to the dentist; however, the following literature will suggest that the public felt vulnerable to HIV transmission in a health care setting even before the case in Florida ever occurred.

When the sample in the Louisiana State University Dental School study was asked about the desirability of requiring HIV testing, the sample gave a wide variety of responses. Twenty-four percent thought that no one should be required to be tested; forty-six percent responded that everyone should be tested. In response to a list of seven groups of people to be tested for HIV, which included any person arrested for a crime, military recruits, health care workers, food service workers, all workers with public contact, anyone admitted to a hospital, and marriage license applicants, at least a majority of the respondents (57% or greater) recommended testing for each of the groups. Health care workers were ranked first, with 92% of the sample favoring testing for this group (Lancaster, Barsley, Boozer, & Lundgren, 1991).

In the study by Samaranayake and McDonald (1990) of dental patients in the Glasgow, Scotland area, 30% of the general practice patients thought the possibility of contracting an infectious disease via the dentist himself or his instruments was likely. It is significant to note that an additional 32% of the patients did not respond to this

question. When asked about the likelihood of transmission of the AIDS virus in the dental clinic, 37% believed this was possible. One half of the general practice patients stated they were unwilling to visit the dentist if the dentist was known to treat patients in a pre-AIDS stage or with AIDS.

The survey conducted by Gerbert, Maguire, and Spitzer (1989) also reflects the public's perceived reluctance to be treated by a dentist who has HIV or has patients with HIV. Thirty percent of the two thousand respondents indicated that they had thought about the possibility of contracting HIV infection in the dental office; of these, 63% expressed serious concern. Sixty-percent were unsure whether their dentist treated HIV patients. Even if they believed their dentist was treating HIV-infected patients, 56% said they would continue to seek care from the same provider. The reaction was more negative when the participants were asked if they would continue treatment with their dentist if the dentist was HIV-infected, with 66% indicating that they would switch providers, 23% said they would continue with the HIV-infected dentist, and 12% were undecided. Patients were also more likely to change providers if the dentist was HIV-infected (66%) than if their physician was HIV-infected (54%), possibly due to the patient's perception of the likelihood of infection in the dental office. Half of the patients who said they would seek treatment elsewhere if the

dentist was HIV-infected believed that it was very or somewhat likely that they could get HIV from being treated by an infected dentist. Another indication of people's negative views of HIV-infected dentists was the finding that 80% of the patients wanted to be advised if the dentist was HIV-positive.

An SRI Gallup Poll (1987) conducted on one thousand Americans nationwide suggests that Americans strongly believe that health care workers should be screened for HIV and the patients should be told if they are receiving treatment from someone with the AIDS virus. Eighty percent of the adults polled believed that health care workers should be screened, with women favoring the screening more than men (84% to 76%), as well as lower-income (84% to 75%) and less-educated (82% to 72%) favoring the screening more. An even greater majority believed that patients should be told if the health care worker treating them has HIV, with 86% agreeing with full disclosure. Strong support for this issue again was seen from lower-income (90%) and less-educated (89%). When asked if health care workers with HIV should actually treat patients, 57% felt that HIV-infected workers should be denied the right to treat patients.

All of these cited studies seem to indicate that Americans do feel vulnerable to contracting the AIDS virus in the dental environment. They do not feel comfortable being treated by a dentist with HIV, nor do they feel

comfortable being treated in a practice with HIV patients. Dental patients also want to be informed if their dentist is HIV-positive, allowing them the opportunity to seek treatment elsewhere if desired.

In summary of the review of related literature, various studies suggest that the general public, while being aware of the correct modes of HIV transmission, also has misperceptions on how the virus is transmitted. The main sources of information seem to be the physician, television, newspapers, and magazines. The public accepts the use of barrier techniques and universal precautions to prevent cross-infection of the disease; however, many people are not aware that these precautions protect not only patient to provider and provider to patient, but also patient to patient transmission. Americans expressed a feeling of vulnerability to being infected with HIV from their dentist, whether directly from the dentist or indirectly from HIV patients who may be seen by the dentist in the practice.

Literature related to methodology

There did not seem to be any evidence in the literature that addressed a possible relationship between a dental patient's perceived vulnerability to contracting HIV in the dental office and the patient's level of oral hygiene. For the purpose of this study, Loe's Plaque Index/Gingival Index (PIGI) was examined in the literature. The combination of

these two indices was used to evaluate the oral hygiene of the dental patients who participated in this study.

The Gingival Index was created by Loe and Silness (1963) to introduce a system for the assessment of the gingival condition based on color, consistency, and bleeding upon probing. This index does not consider periodontal pocket depth, degrees of bone loss, or any other quantitative change of the periodontium; only the state of health of the soft tissues is considered. The criteria are entirely confined to qualitative changes in the gingival soft tissue. The Gingival Index may be used for the assessment of prevalence and severity of gingivitis (inflammation of the gums) in large population groups as well as in the individual dentition (Loe, 1967).

The Plaque Index was introduced by Silness and Loe in 1964 to match the Gingival Index completely. This index assesses the thickness of dental plaque at the gingival area of tooth surfaces. It may be used in large scale epidemiological investigations, as well as in the examination of smaller groups or within the definition of the individual (Loe, 1967).

Each of the studies which were cited in the literature review devised its own instrument to meet its specific needs in determining patient attitudes about AIDS. This study did likewise, using the cited references as a guideline in creating an appropriate instrument for the sample of dental

patients that were surveyed in this study.

Methodology

This research project was a descriptive study designed to determine and report the knowledge, attitudes, and perceptions of patients in a private dental practice toward dentistry and AIDS. As with any self-report study, the major limitation was the degree of cooperation and honesty on behalf of the study participants. Also, the results are limited to the population in the study.

Statement of the population

The study population consisted of the adult patients of a private general dentistry practice located in a mid-sized city in the southeastern region of the United States.

Sampling design

The sample derived from this population was a convenience sample of 105 dental patients who were seen for a routine prophylaxis during a two-week time period of data collection.

Design

A survey was conducted to assess the relationship of PIGI and perceived vulnerability, and to determine dental patients' knowledge and beliefs about AIDS. Subjects

volunteered to participate in the study, and signed an informed consent form. The subjects completed the questionnaire after having their teeth cleaned. PIGI was determined by one registered dental hygienist (the researcher). Identification numbers were assigned to each subject to ensure confidentiality.

Instrumentation

The instrument used for this study was comprised by the researcher. It included questions from surveys that were cited in the review of literature (Hardy, 1991; Lancaster, Barsley, Boozer, & Lundgren, 1991; Samaranayake & McDonald, 1990; Gerbert, Maguire, & Spitzer, 1989; Bowden, Scully, Bell, & Levers, 1989; Uldricks, Whitacre, Beck & Odom, 1988). The twenty-five item questionnaire included five items concerning demographics, four items concerning patient beliefs about HIV transmission, four items about sources of information and communication about AIDS, two items concerning cross-infection prevention, and ten items dealing with perceived vulnerability to contracting HIV in the dental office. Prior to being administered to the sample population, the instrument was pilot tested on a small group of patients (n=10) within the same dental practice in an effort to strengthen the validity and reliability of the survey. The participants did not express any difficulty in comprehending and responding to the questions in the survey.

Collection of data

Each adult patient who was seen by the researcher (who was the dental hygienist in the participating dental practice) during a two-week period of data collection was asked to participate in the study. Since the research project included the participation of human subjects, permission was granted by the participants before the research was conducted. Each member of the sample was asked to sign an informed consent form prior to treatment which identified the purpose the project and assured complete confidentiality of responses.

After obtaining the patient's permission, the patient was seated in the dental operatory for the ensuing prophylaxis and examination. Prior to cleaning the patient's teeth, the researcher determined the patient's level of oral hygiene according to Loe's Plaque Index and Gingival Index (PIGI) cited earlier, recording the appropriate score on the instrument. Criteria for the Plaque Index system were as follows: 0=no plaque in the gingival area; 1=a film of plaque adhering to the free gingival margin and adjacent area of the tooth; 2=moderate accumulation of soft deposits within the gingival pocket, on the gingival margin, and/or adjacent tooth surface, which could be seen by the naked eye; 3=abundance of soft matter within the gingival pocket and/or on the gingival margin and adjacent tooth surface (Silness & Loe, 1964).

Criteria for the Gingival Index system were as follows: 0=normal gingiva; 1=mild inflammation; slight change in color, slight edema; no bleeding upon probing; 2=moderate inflammation; redness, edema, bleeding upon probing; 3=severe inflammation; marked redness and edema; ulceration; tendency to spontaneous bleeding (Loe & Silness, 1963).

The following nominal scale was used for rating patient PIGI scores: 0=excellent (healthy tissue); 0.1-0.9=good; 1.0-1.9=fair; 2.0-3.0=poor.

After completing the prophylaxis, the researcher explained the procedure for completing the questionnaire to the patient. The patient completed the instrument in the reception area of the office and gave it to the receptionist before leaving. Two separate envelopes were used for the accumulation of data: the informed consent forms were put in one envelope and the actual survey was put in a second envelope, thus ensuring confidentiality for the source of each questionnaire.

Analysis of data

Preanalysis procedures involved coding the respondents' answers for input into the SPSS studentware program. The initial crude data analysis, which used categorical data, yielded descriptive statistics of frequencies and percentages for all questionnaire items, as well as for oral hygiene assessment by the Plaque Index Gingival Index

(PIGI). The chi square statistic was then computed to test for relationships between the major outcome variable of cumulative perceived risk score for acquiring HIV in the dental office with the demographic variables of age, gender, education, income, cumulative knowledge about HIV, and the major independent variable of PIGI score. Chi squares were also used to analyze possible significant relationships between PIGI score and age, gender, education, income, and cumulative knowledge score about HIV. Significance for each relationship was based on $p \leq 0.05$. One-way analysis of variance was then used to evaluate factors related to the cumulative perceived risk score; variables tested for significant differences included age, gender, education, income, cumulative knowledge, and PIGI. Finally, a multiple variable analysis of variance was used to create a model to analyze the combined extraneous variables found significant in the one-way analysis of variance in order to determine if oral hygiene was related to cumulative perceived risk of acquiring HIV in the dental office after adjusting for these extraneous factors.

Results

During the two week period of data collection, one hundred five dental patients in the sample population completed the questionnaire. Two patients, one male and one female, declined participation. One male patient partially

completed the questionnaire; therefore, he was not included in the final sample.

Demographic information for the sample (Table 1) revealed that fourteen of the participants (13.3%) were 18-29 years in age, forty-two (40.0%) were 30-49 years old, twenty-six (24.8%) were 50-65 years old, and twenty-three (21.9%) were over 65 years of age. There were sixty-two (59.0 %) females and forty-three (41.0%) males. One hundred two whites comprised 97.1% of the sample; there was one (1.0%) black and two (1.9%) others. Eight participants (7.6%) had less than twelve years of education, forty-three (41.0%) were high school graduates, and fifty-four (51.4%) had more than twelve years of education. Thirty people (28.6%) reported an annual household income of less than $30,000, fifty-four (51.4%) earned $30,000 to $60,000 annually, and twenty-one (20.0%) earned in excess of $60,000 each year.

When asked if they knew what HIV was, an overwhelming majority of one hundred two subjects (97.1%) indicated yes, three (2.9%) indicated no, and no one was unsure. Eighty-five subjects (81.0%) said they did not personally know anyone with the AIDS virus, fifteen (14.3%) did know someone with the AIDS virus, and five (4.8%) were unsure. When asked if they knew how to protect themselves from HIV, ninety-seven (92.4%) indicated yes, two (1.9%) said no, and six (5.4%) were unsure.

TABLE 1 Demographics: Frequencies and Percentages For Selected Study Categorical Data (N=105)

Factor	N	Percentage
Age (years)		
18-29	14	13.3
30-49	42	40.0
50-65	26	24.8
>65	23	21.9
Gender		
Female	62	59.0
Male	43	41.0
Race		
White	102	97.1
Black	1	1.0
Other	2	1.9
Education		
<12 yrs.	8	7.6
High school grad.	43	41.0
>12 yrs.	54	51.4
Income (annual)		
<$30,000	30	28.6
$30,000-$60,000	54	51.4
>$60,000	21	20.0

Cumulative knowledge scores were derived from responses to fourteen questions about HIV transmission, five of which were documented sources of HIV infection (heterosexual activity, homosexual activity, blood transfusions, IV drug use, and transmission from mother to child at birth). The remaining eight questions included casual contact with HIV-infected person, kissing a person with AIDS, drinking from a glass used by a person with AIDS, using public toilets, being coughed or sneezed on by a person with AIDS, mosquito

Table 2 Knowledge Of HIV For Total Sample (N=105)

Factor	No N	No %	Unsure N	Unsure %	Yes N	Yes %
Knows what HIV is?	3	2.9	0	0.0	102	97.1
Knows person with HIV?	85	81.0	5	4.8	15	14.3
Knows how to protect self from HIV?	2	1.9	6	5.7	97	92.4

Cumulative knowledge score*	N	%
36	5	4.8
43	3	2.9
50	4	3.8
57	13	12.4
71	4	3.8
78	8	7.6
86	14	13.3
93	17	16.2
100	37	35.2

*Measures sum of correct responses to 14 questions about AIDS transmission; 14/14 correct=score of 100.

or insect bites, attending school with a child who has AIDS, eating in a restaurant where the cook has AIDS, and working with someone who has AIDS. Thirty-seven participants (35.2%) scored a perfect 100, which indicated that they did not miss any of the fourteen questions. Seventeen (16.2%) missed one question out of the fourteen, scoring a 93; fourteen (13.3%) missed two questions, scoring a 86; eight (7.6%) missed three and scored 78; four (3.8%) missed four

and scored 71; thirteen (12.4%) missed six and scored 57; four (3.8%) missed seven, scoring 50; three (2.9%) missed eight and scored 43; and five (4.8%) missed nine and scored 36.

When asked if they had ever talked to their dentist about AIDS, seventy-nine (75.2%) said no, while twenty-six (24.8%) said yes. When asked if they would like to talk to their dentist about AIDS, forty-four (41.9%) indicated no and sixty-one (58.1%) indicated yes (Table 3).

Participants were asked about their preference for protective equipment in the dental office, including gloves, masks, and glasses (Table 4). Ninety-eight (93.3%) preferred for the dentist to wear gloves; seven (6.7%) said that it did not matter. Seventy-seven (73.3%) preferred for the dentist to wear a face mask; twenty-seven (25.7%) indicated that it did not matter about a mask; one person (1.0%) did not want the dentist to wear a mask. When asked about the dentist wearing protective eyewear, forty-seven (44.8%) preferred it, fifty-two (49.5%) said it did not matter, and six (5.7%) did not prefer glasses.

Ninety-five of the sample members (90.5%) felt like protective equipment protected HIV transmission from provider to patient, while six (5.7%) did not and four (3.8%) were unsure. Ninety-nine (94.3%) believed that protective equipment prevented HIV transmission from patient to provider; one (1.0%) did not believe this and five (4.8%)

Table 3 HIV Communication With Dentist (N=105)

Factor	No N	No %	Yes N	Yes %
Has talked to DDS about AIDS?	79	75.2	26	24.8
Wants to talk to DDS about AIDS?	44	41.9	61	58.1

Table 4 Attitudes/Knowledge About Protective Equipment (N=105)

Protective Equipment	No N	No %	Does not matter N	Does not matter %	Yes N	Yes %
Does pt. prefer DDS to wear:						
Gloves?	0	0.0	7	6.7	98	93.3
Mask?	1	1.0	27	25.7	77	73.3
Glasses?	6	5.7	52	49.5	47	44.8

Attitudes/ Knowledge	No N	No %	Unsure N	Unsure %	Yes N	Yes %
Does protective equipment prevent transmission of HIV from:						
Provider to pt?	6	5.7	4	3.8	95	90.5
Pt to provider?	1	1.0	5	4.8	99	94.3
Pt to pt?	18	17.1	15	14.3	72	68.6

were unsure. Seventy-two (68.6%) believed that protective equipment prevented HIV transmission from patient to patient, while eighteen (17.1%) did not and fifteen (14.3%) were unsure.

When asked about mandatory testing for the AIDS virus

Table 5 Attitudes About Mandatory Testing For HIV (N=105)

Should the following be mandatorily tested for HIV:	No		Unsure		Yes	
	N	%	N	%	N	%
Provider?	17	16.2	23	21.9	65	61.9
Patient?	30	28.6	45	42.9	30	28.6

(Table 5), sixty-five respondents (61.9%) believed that all dental health care workers should be tested; seventeen (16.2%) did not believe that dental health care workers should be tested; twenty-three (21.9%) were unsure. Thirty (28.6%) believed that all dental patients should be tested, while an equal number of thirty (28.6%) did not believe that all dental patients should be tested mandatorily; forty-five (42.9%) were unsure about this issue.

If a dentist had the AIDS virus, would the subject continue to patronize the dental practice (Table 6). Five (4.8%) indicated yes, seventy-six (72.4%) indicated no, and twenty-four (22.9%) were unsure. When asked if a dentist with HIV should inform his patients, ninety-eight (93.3%) said yes, three (2.9%) said no, and four (3.8%) were unsure. Thirteen (12.4%) participants believed that their dentist currently treats HIV-infecsted patients; twenty-six (24.8%) did not believe this to be true, while sixty-six (62.9%) were unsure. Fifty-two (49.5%) felt like all patients should be informed if the practice included HIV patients. With regard to continued patronization if the practice

Table 6 Attitudes About Continued Patronization In Regard To Dentist With HIV Or HIV Patients (N=105)

Factor	No N	No %	Unsure N	Unsure %	Yes N	Yes %
DDS with HIV:						
Continue to patronize?	76	72.4	24	22.9	5	4.8
Should all pts be informed?	3	2.9	4	3.8	98	93.3
DDS with HIV patients:						
Believe DDS treats HIV pts?	26	24.8	66	62.9	13	12.4
Should all pts be informed?	29	27.6	24	22.9	52	49.5
Continue to patronize?	22	21.0	42	40.0	41	39.0

included HIV patients, forty-one (39.0%) responded that they would continue to patronize the practice, twenty-two (21.0%) indicated they would not, and forty-two (40.0%) were unsure.

When the participants were asked about their concern of AIDS infection from a dental visit (Table 7), seventeen (16.2%) responded that they were very concerned, twenty (19.0%) were somewhat concerned, forty-nine (46.7%) were not very concerned, and nineteen (18.1%) were definitely not concerned. Twenty (19.0%) felt the risk of acquiring HIV

Table 7 Perceived Risk Of Acquiring HIV At Dental Office (N=105)

Perceived risk:	Def. not concerned N	%	Not very concerned N	%	Somewhat concerned N	%	Very concerned N	%
Concern of HIV infection from dental visit?	19	18.1	49	46.7	20	19.0	17	16.2

	Very unlikely N	%	Somewhat unlikely N	%	Somewhat likely N	%	Very likely N	%
Risk of HIV infection from DDS w/ HIV?	20	19.0	33	31.4	32	30.5	20	19.0
Risk of HIV from practice w/ HIV pts?	22	21.0	39	37.1	31	29.5	13	12.4

Cumulative perceived risk score*

Value	N	%
0.00	10	9.5
1.00	8	7.6
2.00	7	6.7
3.00	22	21.0
4.00	12	11.4
5.00	11	10.5
6.00	16	15.2
7.00	9	8.6
8.00	3	2.9
9.00	7	6.7

*Score is cumulative sum of scores from above 3 categories of perceived risk.

from a dentist with the disease was very likely; thirty-two (30.5%) felt such a risk was somewhat likely, thirty-three (31.4%) felt it was somewhat unlikely, and twenty (19.0%) felt it was very unlikely. The risk of acquiring HIV

infection from a practice with HIV patients was very likely, according to thirteen (12.4%) members of the sample; thirty-one (29.5%) said it was somewhat likely, thirty-nine (37.1%) believed it was somewhat unlikely, and twenty-two (21.0%) thought it was very unlikely.

The cumulative perceived risk score combined the values from the three individual questions about risk: concern of HIV infection from a dental visit, perceived risk of HIV infection from a dentist with HIV, and perceived risk of HIV infection from a dental practice with HIV patients. With scores ranging from 0.00 (no concern) to 9.00 (extreme concern), the sample yielded the following scores: ten (9.5%) scored 0.00, eight (7.6%) scored 1.00, seven (6.7%) scored 2.00, twenty-two (21.0%) scored 3.00, twelve (11.4%) scored 4.00, eleven (10.5%) scored 5.00, sixteen (15.2%) scored 6.00, nine (8.6%) scored 7.00, three (2.9%) scored 8.00, and seven (6.7%) scored 9.00.

For oral hygiene assessment (Table 8), six people (5.7%) had an excellent PIGI ranking (<0.10), sixty-five (61.9%) were categorized as good (0.10-0.99), thirty-one (29.5%) were categorized as fair (1.00-1.99), and three (2.9%) were assessed as poor ($\geq$2.00).

The mean cumulative knowledge score (N=105) was 82.314, with a standard deviation of 20.152 and a range of 36.000-100.00 (Table 9). The mean cumulative perceived risk score (N=105) was 4.162, with a standard deviation of 2.516 and a

Table 8 Oral Hygiene Assessment: Plaque Index Gingival Index (PIGI)--Categorical (N=105)

Category*	N	%
Excellent	6	5.7
Good	65	61.9
Fair	31	29.5
Poor	3	2.9

*Criteria for PIGI categories: Excellent=<0.10; Good=0.10-0.99; Fair=1.00-1.99; Poor=≥2.00.

Table 9 Means, Standard Deviations, and Ranges For Cumulative Knowledge Scores, Cumulative Perceived Risk Scores, and PIGI Scores (N=105)

Factor	N	Mean	StDev	Range
Cumulative Knowledge	105	82.314	20.152	36.000-100.000
Cumulative Perceived Risk	105	4.162	2.516	0.000-9.000
PIGI	105	0.769	0.548	0.040-2.610

range of 0.000 to 9.000. The mean PIGI score (N=105) was 0.769, with a standard deviation of 0.548 and a range of 0.040 to 2.610.

For the analytical data analysis, categories within several variables were dichotomized due to small numbers in the extreme groups (either lowest values or highest values). The demographic variable of age was dichotomized into two categories from the original four subgroups. The younger

age groups of 18-29 years and 30-49 years were combined into one group of ≤49; the older age groups of 50-65 years and >65 years were combined into one group of >49. Since one hundred two members of the total sample (N=105) were white, the category of race was not included in the analytical analysis. The variable of education was dichotomized into two subsets: those with a high school education or less and those with more than a high school education. PIGI categories were also dichotomized from four subsets into three: excellent, good, and fair/poor.

The results of the chi square analysis for testing the relationship between the cumulative perceived risk and the demographic variables produced the following information. There was not a significant relationship with age ($p=0.44093$) (Table 10). Gender also did not yield a significant relationship ($p=0.17492$) (Table 11). There was a significant finding with education as the independent variable ($p=0.01419$) (Table 12). Sample members with less education perceived a much higher risk for acquiring the AIDS virus from a dental visit than those with a higher education. Almost half of the lesser educated group (47.1%) were in the highest tertile of perceived risk, compared to approximately 20% of the more educated group.

Income also produced a significant relationship, having a p-value of 0.00166 (Table 13). Over half (53.3%) of those earning less than $30,000 annually were in the highest

Table 10 Chi Square Analysis For Testing Relationship Between Cumulative Perceived Risk and Age (N=105)

	Age				
	≤49 yrs		>49 yrs		
Cum. Perceived Risk*	N	%	N	%	p-value**
Tertile 1	13	23.2	12	11.7	0.44093
Tertile 2	27	48.2	18	36.7	
Tertile 3	16	28.6	19	38.8	

*Cum. perceived risk is presented in tertiles based upon following categorization of scores:
Tertile 1=<3.000; Tertile 2=≥3.000 & <5.596;
Tertile 3=≥5.596.

**Significance based on p≤0.05.

Table 11 Chi Square Analysis For Testing Relationship Between Cumulative Perceived Risk and Gender (N=105)

	Gender				
	Female		Male		
Cum. Perceived Risk*	N	%	N	%	p-value**
Tertile 1	16	25.8	9	20.9	0.17492
Tertile 2	22	35.5	23	53.5	
Tertile 3	24	38.7	11	25.6	

*Cum. perceived risk is presented in tertiles based upon following categorization of scores:
Tertile 1=<3.000; Tertile 2=≥3.000 & <5.596;
Tertile 3=≥5.596.

**Significance based on p≤0.05.

tertile of perceived risk. Almost 17% of those in the middle income category of $30,000 to $60,000 and approximately 48% of those in the highest income bracket were in the highest tertile of perceived risk.

Table 12 Chi Square Analysis For Testing Relationship Between Cumulative Perceived Risk and Education (N=105)

Cumulative Perceived Risk*	Education ≤High School N	%	>High School N	%	P-value**
Tertile 1	9	17.6	16	29.6	0.01419
Tertile 2	18	35.3	27	50.0	
Tertile 3	24	47.1	11	20.4	

*Cumulative perceived risk is presented in tertiles based upon following categorization of scores: Tertile 1=<3.000; Tertile 2=≥3.000 & <5.596; Tertile 3=≥5.596.

**Significance based on p≤0.05.

Table 13 Chi Square Analysis For Testing Relationship Between Cumulative Perceived Risk and Income (N=105)

Cumulative Perceived Risk*	Income <$30K N	%	$30K-$60K N	%	>$60K N	%	P-value**
Tertile 1	8	26.7	15	27.8	2	9.5	0.00166
Tertile 2	6	20.0	30	55.6	9	42.9	
Tertile 3	16	53.3	9	16.7	10	47.6	

*Cumulative perceived risk is presented in tertiles based upon following categorization of scores: Tertile 1=<3.000; Tertile 2=≥3.000 & <5.596; Tertile 3=≥5.596.

**Significance based on p≤0.05.

There was a significant relationship between cumulative perceived risk and cumulative knowledge of HIV transmission (p=0.00051) (Table 14). Sixty-eight percent of those in the

Table 14 Chi Square Analysis For Testing Relationship Between Cumulative Perceived Risk and Cumulative Knowledge (N=105)

Cumulative Perceived Risk**	Cumulative Knowledge* Quartile 1 N	%	Quartile 2 N	%	Quartile 3 N	%	Quartile 4 N	%	P-value+
Tertile 1	2	8.0	5	19.2	6	35.3	12	32.4	0.0005
Tertile 2	6	24.0	11	42.3	7	41.2	21	56.8	
Tertile 3	17	68.0	10	38.5	4	23.5	4	10.8	

*Cumulative knowledge is presented in quartiles based upon following categorization of scores:
Quartile 1=100; Quartile 2=93-99; Quartile 3=71-92; Quartile 4=<71.

**Cumulative perceived risk is presented in tertiles based upon following categorization of scores:
Tertile 1=<3.000; Tertile 2=≥3.000 & <5.596; Tertile 3=≥5.596.

+Significance based on $p \leq 0.05$.

lowest knowledge quartile were in the highest tertile of perceived risk, while 10.8% of those in the highest knowledge quartile (scored perfect 100 on knowledge) were in the highest tertile.

A significant relationship also existed between cumulative perceived risk and PIGI score, with the p-value being 0.00804 (Table 15). For subjects with good oral hygiene, twenty percent were in the highest tertile of perceived risk, while 55.9% of those with fair/poor oral hygiene were in the highest tertile.

Chi square analysis for testing the relationship between oral hygiene, as reflected via the PIGI score, and age produced a significant p-value of 0.00201 (Table 16).

Table 15 Chi Square Analysis For Testing Relationship Between Cumulative Perceived Risk and PIGI (N=105)

Cumulative Perceived Risk**	PIGI* Excellent N	%	Good N	%	Fair/Poor N	%	P-value+
Tertile 1	1	16.7	19	29.2	5	14.7	0.00804
Tertile 2	2	33.3	33	50.8	10	29.4	
Tertile 3	3	50.0	13	20.0	19	55.9	

*PIGI categorization based on following standards:
Excellent=<0.1; Good=≥0.1 & <1.0; Fair/poor=≥1.0.

**Cumulative perceived risk is presented in tertiles based upon following categorization:
Tertile 1=<3.000; Tertile 2=≥3.000 & <5.596;
Tertile 3=>5.596.

+Significance based on p≤0.05.

Table 16 Chi Square Analysis For Testing Relationship Between PIGI and Age (N=105)

PIGI*	Age ≤49 yrs N	%	>49 yrs N	%	P-value**
Excellent	6	10.7	0	0.0	0.00201
Good	39	69.6	26	53.1	
Fair/Poor	11	19.6	23	46.9	

*PIGI categorization based on following standards:
Excellent=<0.1; Good=≥0.1 & <1.0; Fair/Poor=≥1.0.

**Significance based on p≤0.05.

Over 80% of those subjects younger than fifty had a PIGI score of excellent or good; only 19.6% rated in the lowest category of fair/poor. The older population did not have

any subjects with an excellent rating, 53.1% scored good, and 46.9% earned a fair/poor rating.

There was not a significant relationship between PIGI scores and gender (p=0.55883) (Table 17), education (p=0.74200) (Table 18), or income (p=0.12677) (Table 19). PIGI and cumulative knowledge did produce a significant relationship (p=0.00127) (Table 20). Sixty-four percent of those in the lowest quartile of knowledge had a PIGI score of fair/poor; only 4% in this low category had an excellent PIGI. Over eighty-three percent of those in the highest quartile of knowledge had an excellent or good PIGI.

The one-way analysis of variance tested for significant differences in mean cumulative perceived risk score by age, gender, education, income, cumulative knowledge, and PIGI (Table 21). There were no significant findings for age (p=0.1192) or gender (p=0.5326). There were significant differences in the following categories: education (p=0.0013), where the group with less education had a mean cumulative perceived risk score of 4.9608 and the group with more education had a score of 3.4074; income (p=0.0236), where the group with the lowest category of yearly income had a score of 4.9333 and the group with the middle income category had a score of 3.5185; PIGI (p=0.0003), where the group with a good PIGI had a score of 3.4308 and the group with a fair/poor PIGI had a score of 5.5294; and cumulative knowledge (p=0.0000), where the subset in the lowest

Table 17 Chi Square Analysis For Testing Relationship Between PIGI and Gender (N=105)

	Gender				
	Female		Male		
PIGI*	N	%	N	%	P-value**
Excellent	3	4.8	3	7.0	0.55883
Good	41	66.1	24	55.8	
Fair/Poor	18	29.0	16	37.2	

*PIGI categorization based on following standards:
Excellent=<0.1; Good=≥0.1 & <1.0; Fair/Poor=≥1.0.

**Significance based on p≤0.05.

Table 18 Chi Square Analysis For Testing Relationship Between PIGI and Education (N=105)

	Education				
	≤High School		>High School		
PIGI*	N	%	N	%	P-value**
Excellent	2	3.9	4	7.4	0.74200
Good	32	62.7	33	61.1	
Fair/Poor	17	33.3	17	31.5	

*PIGI categories based on following standards:
Excellent=<0.1; Good=≥0.1 & <1.0; Fair/Poor=≥1.0.

**Significance based on p≤0.05.

quartile of knowledge had a mean score of 6.2400 and the subset in the highest quartile of knowledge had a score of 2.9730.

The multivariable analysis of variance examined the relationship between perceived risk (dependent variable) and PIGI (independent variable) while controlling for all the

Table 19 Chi Square Analysis For Testing Relationship Between PIGI and Income (N=105)

	Income						
	<$30K		$30K-$60K		>$60K		
PIGI*	N	%	N	%	N	%	P-value**
Excellent	2	6.7	2	3.7	2	9.5	0.12677
Good	15	50.0	40	74.1	10	47.6	
Fair/Poor	13	43.3	12	22.2	9	42.9	

*PIGI categories based on following standards:
Excellent=<0.1; Good=≥0.1 & <1.0; Fair/Poor=≥1.0.

**Significance based on p≤0.05.

Table 20 Chi Square Analysis For Testing Relationship Between PIGI and Cumulative Knowledge (N=105)

	Cumulative Knowledge*								
	Quartile 1		Quartile 2		Quartile 3		Quartile 4		
PIGI**	N	%	N	%	N	%	N	%	P-value+
Excellent	1	4.0	2	7.7	2	11.8	1	2.7	0.00127
Good	8	32.0	14	53.8	13	76.5	30	81.1	
Fair/Poor	16	64.0	10	38.5	2	11.3	6	16.2	

*Cumulative knowledge is presented in quartiles based upon following categories of scores:
Quartile 1=100; Quartile 2=93-99; Quartile 3=71-92; Quartile 4=<71.

**PIGI categories based on following standards:
Excellent=<0.1; Good=≥0.1 & <1.0; Fair/Poor=≥1.0.

+Significance based on p≤0.05.

extraneous factors found to be significant in the one-way analysis of variance: education, income, and cumulative knowledge. Results showed a significant relationship with

Table 21 One-way Analysis Of Variance To Test For Significant Differences In Mean Cumulative Perceived Risk Score By Age, Gender, Education, Income, PIGI, and Cumulative Knowledge (N=105)

Factor	N	Mean	StDev	P-value*
Age (yrs)				
≤49	56	3.8036	2.1944	0.1192
>49	49	4.5714	2.8062	
Gender				
Female	62	4.2903	2.6697	0.5326
Male	43	3.9767	2.2938	
Education				
≤High school	51	4.9608	2.6227	0.0013
>High school	54	3.4074	2.1764	
Income (annual)				
<$30K	30	4.9333	3.2370	0.0236
$30K-$60K	54	3.5185	2.1079	
>$60K	21	4.7143	1.9011	
PIGI**				
Excellent	6	4.3333	2.3381	0.0003
Good	65	3.4308	2.3182	
Fair/Poor	34	5.5294	2.3898	
Cumulative Knowledge+				
Quartile 1	25	6.2400	2.3324	<0.0001
Quartile 2	26	4.1923	2.2453	
Quartile 3	17	3.6471	2.2897	
Quartile 4	37	2.9730	2.0614	

*Significance based on p≤0.05.

**PIGI categories based on following standards:
Excellent=<0.1; Good=≥0.1 & <1.0; Fair/Poor=≥1.0.

+Cumulative knowledge is presented in quartiles based upon the following categorization of scores:
Quartile 1=100; Quartile 2=93-99; Quartile 3=71-92; Quartile 4=0-71.

three of the four variables. Income was not found to be significant in this model (p=0.193). Education (p=0.002) and cumulative knowledge (p=0.007) proved to be significant. PIGI had a borderline level of significance (p=0.054).

Discussion

The vast majority of participants in the study knew about AIDS and how to protect themselves against the HIV virus, with one out of every seven knowing someone with AIDS. Three-fourths of the sample had not discussed the topic of AIDS with their dentist, but the majority were willing to do so, indicating an opportunity for health education in the dental environment.

Patients preferred gloves the most with regard to protective equipment worn by the dentist, followed by masks and glasses, supporting the findings in the literature review. Perhaps patients view gloves as more beneficial to themselves, whereas masks and glasses are more beneficial to the provider. The subject of mandatory testing evoked more of an unsure response than the other items in the survey. Almost two-thirds of the sample believed that dental health care workers should be tested for the AIDS virus, while only one-third believed that dental patients should be tested.

The economic impact of patient attitudes would certainly have a profound effect on a dental practice. Three out of every four respondents indicated they would not patronize a

dentist who had the AIDS virus. Ninety-eight out of the total sample responded that they would want to be informed if the dentist had HIV. One out of nine participants believed that their dentist saw HIV-infected patients; however, the majority was unsure about this. Less than half of the patients indicated they would no longer patronize a practice if it included HIV patients.

The findings of this research seem to indicate that there are certain subgroups of dental patients who perceive a high risk of acquiring the AIDS virus in the dental office. Patients who possess no more than a high school education are one such subset. Also, patients who possess a lower level of knowledge about HIV transmission perceive a higher risk of HIV infection from a dental visit. Patients who don't take proper care of their mouths perceive a higher risk; patients with a higher level of oral hygiene appear to be more informed about the virus, resulting in less fear about acquiring the virus in the dental environment.

This information can be very useful to dental professionals as they plan their strategy for educating their patients about HIV in an effort to alleviate patient fear and perceived risk of acquiring the AIDS virus. The demographic variable of education cannot be altered or affected by health education; however, the variables of cumulative knowledge and level of oral hygiene (PIGI) can be altered by an effective patient education program. If the

level of knowledge about HIV transmission is increased for the patient, the perceived risk of acquiring HIV in the dental office will probably decrease. If the patient can be educated and motivated enough to improve oral hygiene, perhaps the perceived risk of acquiring HIV in the dental office will diminish.

Additional research is recommended in order to strengthen the findings of this study. Also, another possible area to investigate regarding perceived risk of HIV infection is sources and perceived reliability of knowledge.

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Appendix A

Questionnaire

Questionnaire

PLEASE CIRCLE ONE RESPONSE FOR EACH QUESTION, UNLESS OTHERWISE DIRECTED.

1. Age.....18-29=0 30-49=1 50-65=2 over 65=3

2. Gender.....Female=0 Male=1

3. Race.....White=0 Black=1 Other=2

4. Educational level.....Less than 12 years=0
   High school graduate=1
   More than 12 years=2

5. Household income.....Less than $30,000=0
   $30,000 to $60,000=1
   Greater than $60,000=2

	(0)	(1)	(2)
6. Do you know what AIDS is?.....	No	Unsure	Yes
7. Do you know anyone who has AIDS?.....	No	Unsure	Yes
8. Do you know how to protect yourself against the AIDS virus?.....	No	Unsure	Yes

9. Do you believe a person can get HIV by: (PLEASE CIRCLE YES OR NO FOR EACH OF THE FOLLOWING QUESTIONS [a-n])

a. Heterosexual activity?.....	No	Yes
b. Homosexual activity?.....	No	Yes
c. Blood transfusions?.....	No	Yes
d. IV drug use (sharing needles)?.....	No	Yes
e. Casual contact with HIV-infected person (shaking hands, etc.)?.....	No	Yes
f. Kissing a person with HIV.?.....	No	Yes
g. Drinking from a glass used by a person who has HIV?.....	No	Yes
h. Transmission from mother to child at birth?.....	No	Yes
i. Using public toilets?.....	No	Yes

j. Being coughed or sneezed on by a person who has HIV?.....No Yes

k. Mosquito or insect bites?.....No Yes

l. Attending school with a child who has HIV?.....No Yes

m. Eating in a restaurant where the cook has HIV?.....No Yes

n. Working with someone who has HIV?....No Yes

10. Which of the following do you depend upon for information about AIDS? (CIRCLE YES FOR EACH SOURCE THAT YOU DEPEND UPON AND NO FOR EACH SOURCE THAT YOU DO NOT DEPEND UPON):

(0) (1)

a. Friends.....No Yes

b. Family.....No Yes

c. Newspaper.....No Yes

d. Television.....No Yes

e. Radio.....No Yes

f. Magazines.....No Yes

g. Physician.....No Yes

h. Dentist.....No Yes

i. Nurse.....No Yes

j. Dental hygienist.....No Yes

k. Other health professionals.....No Yes

l. Public Health Department.....No Yes

m. Church.....No Yes

n. Other.....No Yes

11. Which ONE of the choices in question #10 do you believe to be the MOST reliable source about AIDS information? (CIRCLE ONLY ONE RESPONSE).

a. Friends=0
b. Family=1
c. Newspaper=2
d. Television=3
e. Radio=4
f. Magazines=5
g. Physician=6
h. Dentist=7
i. Nurse=8
j. Dental hygienist=9
k. Other health professionals=10
l. Public Health Department=11
m. Church=12
n. Other=13

12. Have you ever talked to your dentist or hygienist about AIDS?.....(0) No (1) Yes

13. Would you want to talk to your dentist or hygienist about AIDS?.....No Yes

14. While being treated in the dental office, do you prefer for the dentist or hygienist (CIRCLE ONE RESPONSE FOR EACH QUESTION):

	(0)	(1)	(2)
a. To wear gloves?.....	No	Does not matter	Yes
b. To wear a face mask?.....	No	Does not matter	Yes
c. To wear protective glasses or goggles?.....	No	Does not matter	Yes

15. Do you believe barrier techniques such as gloves, masks, and glasses are intended to (CIRCLE ONE RESPONSE FOR EACH QUESTION):

	(0)	(1)	(2)
a. Prevent disease transmission from provider to patient?.....	No	Unsure	Yes
b. Prevent disease transmission from patient to provider?.....	No	Unsure	Yes
c. Prevent disease transmission from patient to patient?.....	No	Unsure	Yes

16. Do you believe it should be mandatory for all dental health care workers to be tested for AIDS virus?..... (0) No (1) Unsure (2) Yes

17. Do you believe it should be mandatory for all dental patients to be tested for AIDS virus prior to dental treatment?..... No Unsure Yes

18. If your dentist or hygienist had AIDS or the AIDS virus but was well enough to work, would you continue to see him/her for professional services?..... (0) No (1) Unsure (2) Yes

19. If your dentist or hygienist had AIDS or the AIDS virus, should they inform you about this?.....No Unsure Yes

20. Do you think your dentist or hygienist currently treats anyone who has AIDS or the AIDS virus?.....No Unsure Yes

21. If your dentist or hygienist is treating someone with HIV, should they inform you about this?.....No Unsure Yes

22. If your dentist or hygienist were treating someone with HIV, would you continue to see them for dental treatment?.....No Unsure Yes

FOR THE NEXT QUESTION, THE ANSWER CHOICES RANGE FROM 0=DEFINITELY NOT CONCERNED TO 3=VERY CONCERNED. PLEASE CHOOSE THE RESPONSE THAT IS MOST APPROPRIATE FOR YOU.

23. How concerned are you about the possibility of getting the AIDS virus from visiting your dental office?

    a. Definitely not concerned=0
    b. Not very concerned=1
    c. Somewhat concerned=2
    d. Very concerned=3

FOR THE NEXT TWO QUESTIONS, THE ANSWER CHOICES RANGE FROM 0=VERY UNLIKELY TO 3=VERY LIKELY. PLEASE CHOOSE THE RESPONSE THAT IS MOST APPROPRIATE FOR YOU.

24. In your opinion, how likely is the possibility that a person will get HIV by being treated by a dentist who has HIV?

    a. Very unlikely=0
    b. Somewhat unlikely=1
    c. Somewhat likely=2
    d. Very likely=3

25. In your opinion, how likely is the possibility that a person will get HIV by being treated in a dental office that is known to treat HIV patients?

    a. Very unlikely=0
    b. Somewhat unlikely=1
    c. Somewhat likely=2
    d. Very likely=3

Appendix B

Plaque and Gingival Indices (PIGI) Measurement

Plaque and Gingival Indices

PLAQUE INDEX:

Tooth#	Mesial	Distal	Buccal	Lingual	TOTAL
1)					
2)					
3)					
4)					
5)					
6)					

GINGIVAL INDEX:

Tooth#	Mesial	Distal	Buccal	Lingual	TOTAL
1)					
2)					
3)					
4)					
5)					
6)					

Plaque Index = $\frac{\text{Total score}}{\text{\# of surfaces}}$ = _____ = ____PI Score

Gingival Index = $\frac{\text{Total score}}{\text{\# of surfaces}}$ = ____ = ____GI Score

PIGI Score = $\frac{\text{PI Score} \_\_\_\_ + \text{GI Score} \_\_\_\_}{2}$ = ____

Appendix C

Informed Consent Form

Informed Consent Form

A research project is being conducted in the dental practice of Dr. Meldrim Sykes during the Spring Quarter of 1992. The questionnaire that you are asked to complete is to determine the perceptions of dental patients about dentistry and AIDS.

This research is being conducted under the supervision of the Health Science Department of Georgia Southern University in affiliation with Armstrong State College. Information obtained from this questionnaire will be utilized as part of a graduate thesis. Your identity and responses will be kept confidential at all times, and there will be no health risks to you from participating in the study. Your participation is completely voluntary, and you may drop out of the study at any time.

If you choose to participate, please take ten minutes of your time to complete the following questions. Please respond with your honest opinion.

Thank you for your cooperation!

Sara S. Plaspohl, R.D.H., B.S.

Program Director, 352-4338

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I hereby grant my permission to be included in this research. I know that I can contact the program director if I have any questions.

Signed_____ Date_____.