AN ASSESSMENT OF THE PROVISION OF HIV EDUCATION AMONG DENTAL HYGIENISTS:

Application of the PRECEDE Model

by

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(ABSTRACT)

Health professionals have important roles to play in educating their clients about HIV prevention. However, research suggests that health professionals, including dental professionals, more often than not fail to provide any HIV education to their clients. This study employed Green and Kreuter's PRECEDE model to assess those factors that influence the provision of HIV education by dental hygienists in Virginia.

A 22 item closed-ended questionnaire which addressed predisposing, enabling, and reinforcing factors was mailed to 649 randomly selected Virginia licensed dental hygienists. Fifty-five percent (360) of those contacted completed and returned the questionnaire.

Key factors found to impact the provision of HIV education by dental hygienists were having received HIV education during formal training or continuing education courses, perceived self efficacy to deliver HIV education, and characteristics of the practice setting. Chi square analysis

showed that dental hygienists with formal HIV education were more likely to educate their clients about HIV risk reduction than dental hygienists who had not received such education (p=.04). Dental hygienists who had received HIV education through continuing education were also more likely to provide HIV education to their clients than dental hygienists who had not (p=.05).

Moreover, dental hygienists with higher levels of perceived self efficacy in discussing 1) the oral manifestations of HIV infection, 2) modifying IV drug use, 3) modifying unsafe sexual practices, and 4) going for HIV testing were more likely to educate their clients about HIV than dental hygienists with lower levels of self efficacy (p=.00). Finally, dental hygienists who practiced in a setting conducive to performing an intra/extra oral examination, dietary counseling, and smoking behavior education were also more likely to provide HIV education to their clients than dental hygienists who were not in such a practice (p=.01, p=.00, p=.04, respectively).

However, despite these significant differences, only a small percentage of hygienists (27%) reported providing any HIV education at all. Educational efforts have been hampered because dental hygienists and dentists in Virginia have not been required to take continuing education courses to maintain their licensure (continuing education will be required after January 1, 1994) and most hygienists in Virginia do not belong

to their professional association and so do not receive their professional journal. The identification of predisposing, enabling, and reinforcing factors in this study will enable dental educators who provide both formal and continuing dental hygiene education to plan more effective HIV education training and continuing education programs and to employ other strategies to increase the delivery of HIV education in practice settings.

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CHAPTER ONE

Introduction

The acquired immunodeficiency syndrome (AIDS) is viewed by the majority of Americans as the most serious health threat confronting the United States today (Fineberg, 1988). There are over 1 million individuals known to be infected with the human immunodeficiency virus (HIV), the causative agent of AIDS. Of the 218,301 AIDS cases in the United States, more than half have died and no one with AIDS has been cured. By 1993 it is estimated that 250,000 - 340,000 deaths will have occurred due to AIDS (HSI, 1991). Without an effective medical treatment, these figures will continue to sustain epidemic levels.

Given the severity of the clinical manifestations of HIV infection, the minimal effectiveness of available treatments, and their prohibitive cost, primary emphasis must be placed on education and counseling efforts directed toward at risk behavior and early detection to prevent the spread of HIV infection. Health care professionals can play an important role in AIDS-related interventions. According to Calabrese, Kelley, Dennis, Cullen and Locker (1991) "the health care professional-client relationship provides many opportunities to promote AIDS-related health education" (Calabrese, et.al., 1991). Health care providers can play the important role of

coordinating health education interventions as well as providing social support and reinforcement that is frequently needed for sustained behavior change (Mamon & Paccagnella, 1991). Social learning theory of Bandura is employed as the theoretical framework in a number of studies in an effort to find intervention strategies which utilize educational opportunities inherent in primary care settings (Li, et.al., 1984; Hollis, et.al., 1991).

Dental health professionals (dentists and dental hygienists) possess the skill and knowledge to educate their clients regarding health issues, particularly those having oral implications (Tolle-Watts & Shuman, 1991; Little & Stevens, 1991; Secker-Walker, et.al., 1988). Because opportunistic infections common to the HIV seropositive client frequently present intra-orally and/or extra-orally in the head and neck region, dental professionals are often the first health care professionals to detect clinical signs of HIV infection (Murrah & Scholtes, 1988; Melnick, et.al., 1989; Bolski & Hunt, 1988). Client medical history findings may also alert the hygienist to high risk behavior associated with HIV.

Currently, however, most Americans receive little, if any, education in AIDS prevention and/or early detection from health care providers, including dental health professionals, despite the fact that health care providers are perceived as

credible and influential sources of health information (VDH, 1988; Mamon & Paccagnella, 1991). Major barriers to the provision of HIV education do exist among dental health professionals. Lack of knowledge, lack of perceived self efficacy, and practice setting characteristics are examples of such barriers (Weschsler, et.al., 1983; Mamon & Paccagnella, 1991; Orleans, et.al., 1985; Neighbor, et.al., 1991).

Little attention has been given to the better understanding and facilitation of health care professionals direct participation as educators of HIV prevention and early detection (Warshaw & Barr, 1990; Calabrese, et.al., 1991). This study hypothesizes that dental hygienists who have received HIV education will be more likely to provide HIV education to their clients than those who did not receive such education. It is further hypothesized that dental hygienists who have received HIV education as part of their formal education will be more likely to provide HIV education to their clients than those who received HIV education through continuing education. Dental hygienists with higher levels of perceived self efficacy regarding the provision of HIV education will be more likely to provide HIV education to their clients than dental hygienists with lower levels of self efficacy. It is also hypothesized that dental hygienists who practice in a setting conducive to providing client education will be more likely to educate their clients about HIV than

dental hygienists who are not in such a practice.

Literature review, methods, results, and discussion of the research will follow.

CHAPTER TWO

Literature Review

Epidemiology of HIV Infection and AIDS

The human immunodeficiency virus (HIV) is a retrovirus that attacks the T-lymphocytes, a vital part of the immune system. As T-lymphocytes are destroyed by the virus, the body becomes vulnerable to (opportunistic) infection (Health Studies Institute (HSI), 1991; American Dental Association (ADA), 1991). Persons with the acquired immunodeficiency syndrome (AIDS) present with certain opportunistic infections and malignancies without cause other than HIV. The time between infection with HIV and diagnosis of AIDS varies. However, studies estimate a median incubation period of about 10 years (ADA, 1991).

Growth of the AIDS epidemic has been dramatic. In 1981 there were 189 diagnosed AIDS cases in the United States. A decade later, that number exceeds 200,000. The U.S. Centers for Disease Control (CDC) estimates that between 330,000 - 405,000 AIDS cases will be diagnosed by 1993. The Public Health Service estimates that well over 1,000,000 Americans, or 1 in every 250 people is now infected with HIV (HSI, 1991).

By 1993 it is estimated that 250,000 - 340,000 deaths will have occurred due to AIDS (HSI, 1991). The estimated mortality rate is 90% within 3 years of diagnosis of AIDS (ADA, 1991).

The impact of HIV infection and AIDS has been greatest among young men. In 1989, it was the second leading cause of death for men 25-44 years of age (HSI, 1991). HIV infection/AIDS is currently the leading cause of death for women in this age group (Rogers, 1992). Indeed, "the AIDS epidemic is the most visible and severe manifestation of a much larger epidemic of HIV infection" (HSI, 1991, p.22).

Geography

"Changes in the epidemic's demographics have paralleled its growth" (HSI,1991, p.11). In 1981, 76% of diagnosed AIDS cases were from two states, New York and California (HSI, 1991). In contrast, the cases diagnosed in 1990 came from every state, the District of Columbia, and all U.S. Territories. The highest AIDS incidence rates remain centered in large urban areas; however, the number of cases in smaller cities and rural areas is increasing rapidly (HSI, 1991, p.13).

High Risk Populations

Homosexual and bisexual men and intravenous drug users have accounted for the largest number of AIDS cases throughout the epidemic. "Ninety-seven percent of diagnosed AIDS cases in 1981 were men, 79% of whom reported having had sex with other men" (HSI, 1991, p.11). While the majority of AIDS cases (89%) have been men, the number and proportion of AIDS cases in women have steadily increased. In 1990, women

accounted for 11.1% of adult and adolescent cases, compared to 6.6% in 1985. "The 4,890 cases reported in women in 1990 represented an increase of 34% over the previous year, compared to an increase of 22% in cases in men during the same period" (HSI, 1991, p.13).

Eighty-five percent of women with AIDS are of reproductive age (15-44 years) (HSI, 1991). In 1981, there were no diagnosed children's cases. Today it is estimated that forty to fifty percent of children born to HIV seropositive mothers will be seropositive for HIV (HSI, 1991). Two percent (2,786) of total diagnosed cases in 1990 occurred in children (HSI, 1991). Eighty-four percent of children with AIDS acquire infection perinatally (HSI, 1991). In 14% of all children with AIDS, the source of HIV infection was either blood transfusion or treatment for hemophilia.

Prior to the screening of blood products for HIV, approximately 85% of the hemophiliac population became infected with the virus. The number of AIDS cases associated with transfusions of blood products has stabilized since screening of these products for HIV contamination was instituted in 1985 (HSI, 1991). Hemophiliacs and recipients of blood transfusions or blood products are currently among a small and decreasing group of AIDS victims.

A disproportionate number of AIDS cases occur among racial/ethnic minorities. In 1990, there were 42 AIDS

cases/100,000 population in blacks and 32 AIDS cases/100,000 in Hispanics, compared to 12 AIDS cases/100,000 for whites (HSI, 1991). This racial/ethnic disparity in AIDS incidence is even more striking for women and perinatally infected children. "Black and Hispanic women constitute only 19% of U.S. women, but comprise nearly 75% of women diagnosed with AIDS" (HSI, 1991, p.14). Eighty-three percent of children with perinatally acquired AIDS are black or Hispanic (HSI, 1991).

Role of Health Professionals in Health Promotion/Disease Prevention

Given the severity of the clinical manifestations of HIV infection, the minimal effectiveness of available treatments, and their prohibitive cost, primary emphasis must be placed on education and counseling efforts directed toward high risk behavior and early detection to prevent the spread of HIV infection. Because primary care physicians and dentists have frequent contact with the community they should play a key role in developing strategies for identifying, counseling, and managing health risk behaviors (Schwartz, et.al., 1991; Giloth, 1990).

It is widely recognized that the primary health care setting should be the focal point for improving the health of community populations (Mamon & Paccagnella, 1991).

Approximately 70% of the population sees a physician annually and over 50% of the population sees a dentist annually (Cohen, et.al., 1987). Medical and dental visits are "teachable moments" where clients have heightened sensitivity to health concerns and vulnerability to illness and providers are viewed as credible sources of health information (Hollis, Lichtenstein, Mount, Vogt & Stevens, 1991). Health care providers can play the important role of coordinating health education interventions as well as providing social support and reinforcement that is frequently needed for sustained behavior change (Mamon & Paccagnella, 1991). Because of their frequent contact with millions of clients, physicians and dentists are in an ideal position to influence smoking and other habits of their patients (Cohen, et.al., 1987). Seventy-four percent of 433 primary care practitioners surveyed in 1981 indicated that it was "definitely" a physician's responsibility to educate clients about smoking, alcohol, drugs, stress, exercise, and diet (Wechsler, Levine, Idelson & Taylor, 1983). Other surveys have shown that the majority of primary care physicians view smoking as a serious health hazard and see themselves as having a responsibility to advise and assist their clients to quit smoking (Holcomb, et.al., 1985; Orleans, George, Houpt & Brodie, 1985). "Evidence from randomized trials suggest that physician smoking cessation advice achieves a modest but measurable effect that could have

considerable public health impact if widely practiced" (Hollis, et.al., 1991, p.497). Because the elderly "visit their physician more often than their dentist, the physician's medical examination provides an excellent opportunity to screen for oral cancers", incidence rates for which are highest in older men (Fedele, Jones & Niessen, 1991, p.920).

One study was undertaken to determine the likelihood that clients attending family medical centers would be assessed and counseled for coronary heart disease risk factors (Neighbor, et.al., 1991). The medical records of 1528 adult clients, between the ages of 20 and 65 years, were randomly selected for review. The patient population consisted of clients of university-hospital-based programs, a military program, a health maintenance organization, and community-hospital-based programs in small and large urban communities. The study reported that blood pressure was assessed in 96% of clients, smoking in 40%, cholesterol in 26%, and family history in 52%. (Neighbor, Scott, Schaad, Macdonald & Van Critters, 1991). Ninety-six percent of hypertensive clients, 45% of smokers, and 20% of clients with hypercholesterolemia were counseled for those risk factors (Neighbor, et.al., 1991).

A review of the literature revealed that the majority of health promotion/disease prevention studies dealt with medical doctors and more specifically their participation in smoking interventions. For example, a survey of U.S. family

practitioners revealed that 88% of doctors said they regularly advise twenty-five percent or more of their smoking clients about the health risks of smoking, 84% regularly advise their obese or overweight clients about the health risks of obesity, and 73% regularly advise their inactive clients of the benefits of exercise (Orleans, et.al., 1985). These same practitioners, however, seldom referred their clients to behavior change treatments (Orleans, et.al., 1985,). Individuals generally need guidance in replacing unhealthful habits with healthful alternatives (Orleans, et.al., 1985). Medical risk education and behavior change advice alone are relatively ineffective in modifying behavioral risks (Orleans, et.al., 1985). Health care providers must thus take their education efforts one step further. Clients must be provided with the necessary resources to perform the indicated behavior.

Prevention Practice Patterns

While physicians are in a position to educate and promote favorable health practices in their clients, a number of studies have reported that preventive services provided by primary care physicians are suboptimal (Neighbor, et.al., 1991). Preventive services include immunizations, screenings, and education regarding behavioral risk factors. Health education interventions only occur in approximately 8.8 per 100 general practitioner contacts (Mamon & Paccagnella, 1991).

Studies indicate that preventive services are provided at fewer than one third of patient visits (Schwartz, et.al., 1991). Fifty percent of the visits at which preventive services are provided are initiated by the client (Schwartz, et.al., 1991). According to a study assessing the patient counseling practices of general practitioners, few general practitioners have adopted the health promotion and disease prevention model of primary care. The majority of general practitioners utilize the disease model of treatment (Mamon & Paccagnella, 1991).

Barriers To Health Promotion And Disease Prevention

The PRECEDE model defines three categories of variables (predisposing, enabling, and reinforcing) that influence the provision of preventive services by health care providers (Green, Kreuter, Deeds, & Partridge, 1980). Predisposing variables include relevant knowledge, beliefs, attitudes, values, and skills. Enabling variables include the availability, accessibility, and acceptability of resources required to perform the behavior. Reinforcing variables include relevant attitudes and behaviors of significant others such as physicians, dentists, family members, and friends.

Predisposing Factors

In addition to their knowledge and attitudes, health care providers' perceived self efficacy predisposes their provision of preventive health care (Wechsler, et.al., 1983; Mamon &

Paccgnella, 1991; Orleans, et.al., 1985; Neighbor, et.al., 1991). Health care providers' preventive counseling efforts are directly influenced by their knowledge (Calabrese, et.al., 1991). However, their attitudes are incongruent with the provision of preventive health care (Calabrese, et.al., 1991). Health care providers must perceive their interventions as efficacious. Such self-efficacy is tied directly to the use of educational interventions that have proven to be successful.

In a survey of family physicians, respondents reported that perception of a lack of motivation on the part of their clients to change behavior and clients' expectation of receiving curative rather than preventive care were two barriers to physicians practicing health promotion (Li, et.al., 1984).

Enabling Factors

In one study certified nurse midwives, registered physician assistants, registered dental hygienists, and dietitians were surveyed to assess their beliefs about health promotion and disease prevention practices. There was very strong agreement among the professions regarding the role of allied health professionals in health promotion and community involvement. The professions varied significantly, however, regarding the role of health promotion in primary care. Certified nurse midwives reported the most positive belief of

health promotion in primary care followed by physician assistants, registered dieticians, and dental hygienists. Each group cited several barriers to their participation in health promotion and disease prevention in their practices. Cost of time spent on health promotion, patients' lack of receptivity to health promotion, disruption in usual office procedures, and the belief that health promotion would have small or no benefit for their practice were cited as barriers to the initiation of health promotion and disease prevention in their practices (Holcomb, et.al., 1985; Orleans, et.al., 1985). Lack of support staff and educational training has been shown to reduce the potential for health education interventions occurring during an office visit (Mamon and Paccagnella, 1991; Orleans, et.al., 1985). A clear official policy, time, reimbursement, staff availability, practice setting, and client visit frequency and demand are enabling factors that positively influence preventive practice (Schwartz, et.al., 1991; Hollis, Lichtenstein, Mount, Vogt & Stevens, 1991).

Reinforcing Factors

Health care professionals need feedback from their colleagues and clients to reinforce their preventive efforts (Neighbor, et.al., 1991). The cooperative efforts of health care professionals to provide primary health care reinforces its' significance.

Research Promoting Health Professional Involvement

Specific interventions have been identified to encourage preventive practices of physicians. These interventions include dissemination of educational materials, lectures, performance feedback, provision of cues, and provision of reminders for ordering tests (Schwartz, et.al., 1991; Cohen, et.al., 1987). Another promising suggestion to enhance preventive practices is the utilization of nurses and the physician's staff in health promotion and disease prevention (Hollis, et.al., 1991).

The social learning theory is a theory of human behavior, based upon the interrelationships among internal factors such as attitudes, values, and beliefs and external determinants of behavior (Sallis & Nader, 1988). The social learning theory of Bandura, therefore, serves as the theoretical framework for many health promotion studies.

A study by Li, et.al., (1984) compared the effects of a warning not to smoke with brief behavioral counseling on smoking behavior. Other published studies of physician anti-smoking influence report that intensive counseling has been given primarily to smokers with heart or pulmonary disease, while primary care patients are warned and given educational materials (Li, et.al., 1984). Behavioral counseling in this study consisted of: (1) identifying subjects who were willing to quit smoking, (2) choosing a quit date, (3) identifying a

family or friend to tell about the quit date, and (4) discussing strategies for coping with the desire to smoke after the quit date. Results of Li's study showed that the continued abstinence rate at 11 months in the behavioral counseling group was 8.4% compared to a 3.6% continued abstinence rate in the group receiving a warning (Li, et.al., 1984).

In an effort to find intervention strategies which utilize the resources and opportunities inherent in primary care settings while minimizing demands on busy physicians, Hollis, et.al., (1991) compared nurse-assisted approaches to physician approaches to smoking intervention. Physicians delivered a brief stop smoking prompt to adult smokers. These smokers were then referred to a counselor who provided advice only (a pamphlet) or one of three brief nurse-assisted interventions: (1) self-quit training, (2) recruitment to a group program, or (3) a combination intervention. The quit rates of subjects in the nurse-assisted group were more likely to report a serious quit attempt than subjects in the physician-advice group (Hollis, et.al., 1991). This study employed the social learning theory of Bandura as its theoretical framework. Referral to other clinical staff may have enhanced the clients' perceived importance and salience of smoking cessation, as well as their perceptions of how committed the clinic staff were toward helping them quit

(Hollis, et.al., 1991,).

Social learning theory of Bandura formed the basis of a study implemented to evaluate the impact of a media program and a physician-delivered message encouraging smoking cessation among young black women in public family planning clinics (Li, et.al., 1984). Four conditions were compared: (1) baseline questions about smoking habits, (2) questions and a media program, (3) questions and a physician message, and (4) questions, a media program, and a physician message. The media program and physician message were based on the social learning theory principles of behavior change. Posters with age- and race- appropriate models encouraging females to stop smoking were displayed throughout the clinic. A movie emphasizing the risks of smoking was played continuously in the clinic waiting room. The physician's message provided information about the health hazards of smoking and elicited a commitment from the client to take as many of the following steps toward quitting as possible: think about quitting, set a target quit date, enlist help of family and friends, throw away all smoking materials, and quit "cold turkey". Among women receiving the physician message (Condition 3 and 4), 9.9% reported not smoking at 12 months. The lowest self-reported cessation rate was 3.1% in Condition 1.

Role of Health Professionals in Preventing/Controlling the Spread of HIV

Health care professionals can play an important role in AIDS-related interventions. The relationship between physician and client provides many opportunities to promote AIDS-related health education (Calabrese, et.al., 1991). A study by Calabrese, et.al., (1991), designed to assess those variables that may influence current and potential roles of health care professionals in HIV education, reported some interesting findings. Three hundred one physicians attending a series of AIDS-related continuing medical education courses were randomly selected to complete a questionnaire prior to the program. The questionnaire assessed physician's involvement in HIV promotion activities, correlates of health care-promoting activities, and support for HIV health promotion activities. Seventy-three percent of physicians reported routinely taking smoking and alcohol histories and 74% obtained a "drug use" history, while only 24.1% of respondents routinely obtained information regarding the risk of transmitting or acquiring HIV infection (Calabrese, et.al., 1991). Physicians who had diagnosed HIV-related problems in their practice were more likely to take routine histories of AIDS-related risk factors (Calabrese, et.al., 1991). The researchers found that sources for referral of high-risk clients, literature for dissemination to clients, and

continuing education related to HIV prevention were important support factors in the promotion of AIDS education in clinical practice (Calabrese, et.al., 1991).

As with other areas of client education, discrepancy exists between physician self reports and client self reports regarding the provision of education to prevent AIDS. In a parallel study, Calabrese, et.al., (1991), surveyed gay men to assess their knowledge of HIV, their sexual practices, and their relationship with their physicians. Only 41.6% of respondents reported discussing their sexual practices with their physician while 74% indicated they were never asked about their sexual practices by their physicians (Calabrese, et.al., 1991). Of those who discussed their sexual practices, 69% volunteered the information (Calabrese, et.al., 1991).

Dental Health Professionals Involvement in Health Promotion/ Disease Prevention

Dental health professionals (dentists and dental hygienists) can play a valuable role in identifying high risk clients and providing health counseling services. Dental professionals routinely play a role in promoting primary preventive behaviors. Nutrition and oral hygiene habits are well known etiological factors for dental caries and periodontal disease and are therefore the primary focus of preventive education provided by dental professionals. While

dental hygienists routinely provide oral health care education (Little & Stevens, 1991; Holcomb, et.al., 1986), studies report their participation and effectiveness in other aspects of health promotion and disease prevention, specifically smoking and smokeless tobacco interventions, is minimal (Little & Stevens, 1991; McDermott, Clark & McCormack, 1987; Secker-Walker, et.al., 1988).

Review of the literature of health interventions provided by dental hygienists revealed studies to be limited to smoking and smokeless tobacco cessation. Those studies of primary and secondary prevention of smoking suggest that dental hygienists do have the potential to play a much wider role in disease prevention and health promotion (Little & Stevens, 1991). For example, dental hygienists have skills and knowledge in patient education and prevention and can effectively deliver health education interventions (Little & Stevens, 1991). Dental hygienists routinely perform an intra- and extra-oral head and neck examination on their clients. Dental hygiene students are taught to assess clients for suspicious lesions, color changes, and gland and lymphnode enlargement.

A study was developed by Holcomb, et.al., (1986) to assess the role dental hygienists take in health promotion and disease prevention not related to oral and dental health. Ninety randomly selected dental hygienists who were licensed by the Texas State Board of Dental Examiners as of May 1984

participated in the study. Dental hygienists were surveyed regarding the extent to which they gather information from patients about selected risk factors and the degree to which they conduct patient education activities (Holcomb, et.al., 1986,). Survey findings revealed that dental hygienists only occasionally inquire about their clients' blood pressure, smoking behavior, pre/post-natal care, stress levels, diet profile, and exposure to sexually transmitted diseases, despite the fact these health concerns are integral components of dental hygiene education programs (Holcomb, et.al., 1986). Dental hygienists' perceived self efficacy again, prevented health promotion in this study. Respondents cited lack of confidence in their abilities to assist clients in modifying risk factors and their negative expectations of client compliance as reasons for not inquiring about these behaviors.

In another survey Secker-Walker, Hill, Solomon and Flynn (1987) assessed the efforts of dentists and dental hygienists to help patients quit smoking. Twenty-seven dental hygienists and 37 dentists responded to a mailed questionnaire for a 61% combined response rate. Fifty-six percent of dental hygienists and 84% of dentists surveyed, routinely took smoking histories (Secker-Walker, et.al., 1987). Ninety-three percent of dental hygienists and 78% of dentists considered it appropriate to give advice about smoking during routine dental care. Eighty-nine percent and 68% of dental hygienists and

dentists respectively were willing to learn a brief method for advising their patients about smoking cessation (Secker-Walker, et.al., 1987; Secker-Walker, et.al., 1988).

One pilot study tested a practical approach for dental hygienists to provide smoking cessation advice to their clients during routine care. First, smoking clients in a periodontal practice were given a questionnaire to assess their smoking history. Next, they were counseled on the oral health risks of smoking and the benefits of quitting, given a quit-smoking message, and provided with printed tip sheets. At subsequent recall visits clients completed a short questionnaire about their current smoking behavior, changes since their last visit, and their motivation, intention, and confidence in stopping smoking, or abstaining if they had quit (Secker-Walker, et.al., 1988). Results showed that "the best predictors of quitting smoking included high intention of quitting soon, fewer pack-years of smoking, and two or more visits with the dental hygienist" (Secker-Walker, et.al., 1988, p.186). Counseling provided by the dental hygienist yielded a quit rate of 14.6% six months after the counseling, a rate comparable to other intervention studies, which suggests that dental hygienists are at least as effective as physicians or nurses in delivering smoking interventions (Secker-Walker, et.al., 1988).

The Christen study was designed to test the effect of

providing smoking patients with Nicorette chewing gum on subsequent quitting (Secker-Walker, et.al., 1988). Subjects who desired to quit smoking and who met specific oral hygiene and oral health criteria were selected to participate in this study (Little & Stevens, 1991). At 15 weeks the intervention group yielded a 12.4% quit rate compared to a 4.8% quit rate in the control group (Secker-Walker, et.al., 1988).

A study of dental office-based smokeless tobacco cessation intervention is currently being conducted in the Kaiser Permanente Dental Care Plan (Little & Stevens, 1991). During routine dental care dental hygienists and dentists advise their clients to stop chewing tobacco and dipping snuff. Dental hygienists were selected because they have the skill and experience in providing health education (Little & Stevens, 1991,). Eighty-seven percent to 90% of clients who received advice to quit from their dental hygienist or dentist thought it was helpful and encouraging (Little & Stevens, 1991). Clients expect their dental health professional to inform them about any health risks associated with tobacco use (Little & Stevens, 1991,).

As with findings of other health care professionals, surveys have shown that dental hygienists do not routinely deliver health behavior interventions because of lack of time in their practice to counsel and lack of training in counseling to be confident of a positive effect. Hygienists

also express uncertainty about how to implement a program and doubts about whether their advice would be effective (Little & Stevens, 1991).

Oral Signs And Symptoms Of HIV Infection

Oral lesions have been recognized as prominent features of AIDS and HIV infection since the beginning of the epidemic (Greenspan, Greenspan & Winkler, 1988). Dental professionals are often the first health care professionals to detect clinical signs of HIV infection such as oral candidiasis, oral herpes simplex, oral hairy leukoplakia, and head and neck lymphadenopathies (Chen, 1991; Haring, 1990; Cataldo, Santis & Kabani, 1987). Opportunistic infections common to the HIV seropositive person frequently present intra-orally and/or extra-orally in the head and neck region. For example, diagnosis of hairy leukoplakia in high-risk patients, is considered to be an early symptom of HIV infection and a strong indicator that AIDS will develop in the client (Kabani, Greenspan, deSouza, Greenspan & Cataldo, 1989,). Hairy leukoplakia is included as a relevant symptom in the CDC classification of HIV seropositivity, occurs in all risk groups, and may be the first manifestation of HIV infection (Kabani, et.al., 1989; Alessi, et.al., 1990; Sciubba, Brandsma, Schwartz & Barrezueta, 1989).

A study conducted at the University of Minnesota School of Dentistry between July 1985 and July 1987 asked all new

dental clients to have HIV antibody testing before undergoing initial oral diagnostic examination when their medical history revealed a high risk for HIV infection (Murrah & Scholtes, 1988). Serologic screening results of high-risk dental clients were correlated with soft tissue and osseous findings recorded during head and neck and radiographic examinations (Murrah & Scholtes, 1988). All seropositive persons presented with some type of head and neck abnormality (Murrah & Scholtes, 1988). The most commonly detected abnormality of seropositive clients in this study was lymphadenopathy of the spinal accessory chains and submandibular regions (Murrah & Scholtes, 1988). Advanced periodontal disease and atypical gingivitis were the next most frequently encountered oral lesions identified in HIV seropositive clients (Murrah & Scholtes, 1988).

This study recognizes that both symptomatic and asymptomatic HIV infected persons are seeking routine dental treatment and that those persons have a high degree of acceptance of the dental professional's role in providing antibody testing referral, education, counseling, and appropriate treatment of opportunistic infections" (Murrah & Scholtes, 1988). Of those high risk clients identified, 100% complied with testing. The dental hygienist serves as a preventive agent by discussing HIV prevention mechanisms and routes of transmission. The study suggests that the hygienist

can serve as an information source for the client regarding the services of social workers, gay rights groups, legal services, economic assistance, and the public health departments for help with contact tracing (Murrah & Scholtes, 1988).

Between April 1987 and August 1988 an oral screening examination was conducted on 803 homosexual males who were participants in a cohort study at the Seattle-King County Department of Public Health AIDS Prevention Project (Melnick, et.al., 1989). Certified nurse-practitioners or health advisors who were trained and experienced in physical diagnosis conducted the screening. Participants' HIV serologic status was unknown prior to screening. Nineteen percent of the subjects were HIV seropositive (Melnick, et.al., 1989). Thirty percent of seropositive subjects had one or more oral lesion(s), as compared with 7% of seronegative subjects (Melnick, et.al., 1989). Oral lesions that were significantly associated with seropositivity included candidiasis, hairy leukoplakia, periodontal disease, and Kaposi's sarcoma (Melnick, et.al., 1989).

In another study forty hemophiliacs received oral examinations during their routine visits to the Comprehensive Hemophilia Diagnostic and Treatment Center at North Carolina Memorial Hospital in Chapel Hill between March and August of 1986 (Bolski & Hunt, 1988). Eighty percent of these clients

were HIV seropositive (Bolski & Hunt, 1988). Cervical lymphadenopathy was detected during the extra-oral exam in more than 50% of HIV seropositive clients, but was absent in those who were HIV seronegative (Bolski & Hunt, 1988).

In southwestern England, the oral manifestations of 44 clients with serologic evidence of HIV infection were studied (Porter, Scully, Glover and Griffiths, 1989). The clients were of all known risk groups (Porter, et.al., 1989). Thirteen clients were asymptomatic, 27 had mild symptoms of HIV infection, and 4 had AIDS and are now dead (Porter, et.al., 1989). Candidiasis was the most common mucosal manifestation, occurring in 36% of clients (Porter, et.al., 1989). Periodontal disease presented in 32% of clients (Porter, et.al., 1989).

Sixty-six Finnish homosexual male volunteers were subject to thorough oral examination (Syrjanen, et.al., 1988). Twenty-one percent of the participants were HIV seropositive (Syrjanen, et.al., 1988). Ninety-three percent of HIV seropositive participants versus 50% of HIV seronegative participants had culture-confirmed oral candidiasis (Syrjanen, et.al., 1988).

Role Of Dental Hygienists In Early Detection Of HIV

A study assessed curricular content regarding AIDS education in 217 accredited dental hygiene programs in the United States and Canada. Data was collected via a 10-item

questionnaire from 85% of accredited programs. Over 70% of programs included material on AIDS etiology, incidence, epidemiology, general clinical symptoms, HIV testing, attitudes and fears of practitioners, and dental hygiene care and treatment (Tolle-Watts & Shuman, 1991). AIDS education counseling was not cited as a component of the dental hygiene curricula studied. Ninety-eight percent included information on the oral manifestations of AIDS in their curricula (Tolle-Watts & Shuman, 1991). These findings are consistent with my personal experiences in dental hygiene education.

Of the schools responding, most have policies which encourage student treatment of HIV-positive clients (Tolle-Watts & Shuman, 1991,). It would be unethical to act otherwise. In July 1988, the American Dental Association approved a code of professional conduct regarding the treatment of HIV-infected or AIDS clients which was later adopted by The American Dental Hygienists' Association. The American Dental Association's 'Principles of Ethics and Code of Professional Conduct' states that, "A dentist has the general obligation to provide care to those in need. A decision not to provide treatment of an individual because the individual has AIDS or is HIV seropositive, based solely on that fact, is unethical" (Chen, 1991).

As dental hygiene educators we teach our students that examination begins when the client walks into the office.

Hygienists assess the physical appearance of the client by observing gait, skin, eyes, hair, and posture. Clients complete a medical history form and all positive responses are then investigated by the dental hygienist. The clients' blood pressure, pulse, and respiration are also taken. Clients are referred to their physician if their medical history reveals a compromising medical condition or if their vital signs exceed established parameters. After careful review of the client's medical history and vital signs we proceed with an extra-oral examination. Review of the medical history may alert the hygienist to high risk behavior associated with sexually transmitted diseases (STDs) and HIV. The extra-oral examination involves palpating the head and neck for enlarged lymphnodes and the salivary glands for swelling or tenderness. The extra-oral examination is followed by an intra-oral examination. In the intra-oral examination the hygienist assesses all soft tissues of the mouth - the tongue, cheeks, floor of the mouth, lips, palate, and tonsils - looking for abnormalities, i.e., oral cancers, lesions, and developmental defects. The dental hygienist acts as a screener. If an abnormality is detected, the dental hygienist reports the finding to the dentist who then makes the appropriate referral.

Barriers To Caring For HIV Infected Clients

Major barriers to caring for HIV infected persons do

exist among dental health professionals. Fear of transmission, perception of problems with staff, fear of losing clients, and self perceived lack of appropriate skills are examples of such barriers (Gerbert, et.al., 1988).

Predisposing Factors

One study was undertaken to determine if dental hygiene students stigmatize persons with AIDS and/or homosexual lifestyles. Eighty-one sophomore, junior, and senior dental hygiene students enrolled in a baccalaureate degree program at Ohio State University participated in this study (Haring & Lind, 1992). Each participant was asked to read one of four case description vignettes and to complete a corresponding questionnaire. Each vignette described a client as homosexual with AIDS, heterosexual with AIDS, homosexual with leukemia, or heterosexual with leukemia. Researchers observed no significant association between students' class year and their attitude toward individuals with AIDS. Researchers did not find significant differences in students' attitude associated with sexual preference, but observed significant differences in attitude toward AIDS. Respondents evaluated homosexual and heterosexual clients with AIDS as significantly more responsible for their illness, deserving of what happened to them, dangerous to others, and deserving to lose their job. It is not known to what extent students in this study received HIV education in their dental hygiene curriculum. A lack of

HIV education could be a contributing factor to the negative attitudes observed in this study. Students' attitudes regarding AIDS and HIV infection may shift after exposure to curriculum or to AIDS clients. These survey results are surprising when I compare them to my personal experiences with students. Dental hygiene students at Virginia Western Community College (VWCC) in Roanoke, Virginia willingly treat known HIV clients. VWCC students adopt universal precautions, which means that all clients are treated as potentially infectious. Students are formally educated regarding HIV epidemiology, transmission, prevention, and signs and symptoms.

In 1988, a study was conducted by Virginia Commonwealth University for the Virginia Department of Health which assessed knowledge, attitudes, and behavior of approximately 500 Virginia dentists (Virginia Department of Health (VDH), 1988). Ninety-five percent of respondents were white males. Fifty-nine percent of dentists surveyed were in a solo practice, 30% were in a group practice, and 4% worked for a public health agency. Twenty-five percent were specialists.

Fifteen percent of dentists surveyed referred their clients when HIV status was known. Reasons given for referral included insufficient expertise, inadequate knowledge of AIDS, staff reluctance to treat, and personal reluctance to treat. Fifty-eight percent of dentists surveyed said they treated

known HIV infected clients. Dentists did not obtain sexual histories or drug histories in 63% and 28% of the cases respectively. Seventeen percent of dentists surveyed said they gave their HIV seropositive clients written material and 34% discussed prevention. Forty-four percent of dentists provided referral for medical help and 17% referred clients to support groups or counseling.

When client HIV status was suspected, dentists reported the same reasons for referral as those given for clients with known HIV infection. Fifty percent of dentists reported referring suspected clients for HIV antibody testing and over 50% discussed AIDS-related dental problems with suspected clients. Sixty-five percent of dentists, however, never obtained a sexual history and 85% never gave their clients written material.

Few dentists discussed AIDS with clients of unknown HIV status, however 54% said they did discuss this sometimes. Ninety-one percent and 78% of respondents respectively, never obtained a sexual history or drug history.

Only 4% of dentists thought that there should be any professional or legal penalties imposed on dentists who refuse to treat HIV infected clients. Ninety-five percent of dentists thought that special dental clinics should be set up for infected individuals. Forty-nine percent of dentists thought that physicians, dentists, nurses, dental hygienists,

and other primary care providers should be required to be tested. Approximately 66% of respondents disagreed or strongly disagreed with the idea that laws should be passed to protect HIV infected persons from discrimination.

In this study researchers assessed several areas of knowledge with respect to AIDS and HIV infection. For example, only 22% of respondents noted oral lesions as symptoms of HIV infection. Dentists responded consistently with current evidence regarding HIV transmission. Few dentists felt personally vulnerable to HIV infection and the majority of respondents knew the risks of contracting HIV from their infected clients. Nonetheless, with respect to specific dental procedures, 40% said they would be reluctant to perform an amalgam restoration, 62% a scaling and root planing, 68% a periodontal or oral surgery, 66% a tooth extraction, 54% perform endodontics, 46% perform orthodontics, 44% perform removable prosthodontics, 38% take intra oral radiographs, or 49% give an injection. It is evident that Virginia dentists are reluctant to perform routine dental procedures of HIV infected clients. Studies suggest, however, that it is possible to change health professionals attitudes and behaviors toward clients with AIDS (Gerbert, et.al., 1988).

Enabling and Reinforcing Factors

Such changes can be encouraged through professional training and continuing education. For example, in San

Francisco 102 dentists participated in an educational program developed to improve their knowledge about HIV infection (its epidemiology, basic science, and clinical implications) and increase their knowledge about the oral manifestations of HIV infection and AIDS so that such manifestations could be detected (Gerbert, et.al., 1988). The program also sought to improve their performance during intra- and extra-oral examinations procedures and to increase their willingness to treat persons with HIV infection (Gerbert, et.al., 1988). The educational intervention compared participants' own knowledge, attitudes, and behaviors with those of control participants. Periodic informational bulletins and telephone conference calls with experts were additional components of the intervention (Gerbert, et.al., 1988). These interventions were selected because they included a feedback component and incorporated respected leadership. Dentists in the experimental group had significantly higher scores regarding willingness to treat HIV seropositive clients; knowledge of AIDS; identification of HIV lesions; and completeness of intra- and extra-oral examination. Results of this study indicate that by providing educational methods that acknowledge dental professional's fears and concerns while addressing knowledge and behavior, dental health professionals can change to respond appropriately to the AIDS epidemic.

Conclusion

Little attention has been given to the better understanding and facilitation of health care professionals direct participation as educators of HIV prevention and early detection (Warshaw & Barr, 1990; Calabrese, et.al., 1991). Because behavior modification is the only method available to control the AIDS epidemic, more effort must be directed toward improving the extent to which practicing dental hygienists provide effective AIDS education to their clients and refer high risk or symptomatic clients for testing or treatment.

Hypotheses To Be Tested

1. Dental hygienists who have received HIV education will be more likely to provide HIV education to their clients than dental hygienists who did not receive such education.
    a. Dental hygienists who have received HIV education as part of their formal professional education will be more likely to provide HIV education to their clients than dental hygienists who did not receive such education.
    b. Dental hygienists who have received HIV education through continuing education will be more likely to provide HIV education to their clients than dental hygienists who did not receive such

education.

2. Dental hygienists with higher levels of perceived self efficacy regarding the provision of HIV education will be more likely to educate their clients about HIV than dental hygienists with lower levels of self efficacy.

3. Dental hygienists who practice in a setting conducive to providing client education will be more likely to educate their clients about HIV than dental hygienists who are not in such a practice.

CHAPTER THREE

Methods

Subject Selection

Mailing labels of 1900 currently licensed Virginia dental hygienists were obtained from the Commonwealth of Virginia Department of Health Professions in Richmond. A stratified random sampling technique employing a formula published by the research division of the National Education Association was used to select a representative study sample of state licensed hygienists (Krejcie & Morgan, 1960). Questionnaires were mailed to 649 dental hygienists. The study sample assumed a fifty percent response rate in order to achieve a 95 percent confidence level. A total of 360 questionnaires were returned for an overall response rate of 55%.

Return postage-paid envelopes were included and coded to identify non-respondents. Three hundred sixty-nine non-respondents were sent a follow-up letter and an additional questionnaire three weeks after the original mailing (Appendix B-2). This letter informed the respondent that the questionnaire had not been received and appealed for its return (Dillman, 1978).

Confidentiality

Respondents were identified by a number stamped in the upper right corner of the first page of the questionnaire. Subjects were informed that all data would be reported in aggregate form only, and individual responses would remain confidential (Appendix B-1). Subjects were also be informed that data would be recorded by the researcher only. Respondents who wanted questionnaire results were be asked to put their name and address on the back of the return envelope, not the questionnaire according to the method advocated by Dillman (1978).

Informed Consent

Voluntary informed consent of subjects was understood upon their return of the completed questionnaire. Human subjects approval was received from the Division of Health and Physical Education and from the Research Division of the University (Appendix C).

Study Design

Questionnaire Development

Subjects were mailed a 22 item closed-ended questionnaire (Appendix A). The questionnaire was designed to assess those predisposing, enabling, and reinforcing factors potentially thought to impact the provision of HIV education by dental

hygienists. Those predisposing factors assessed were dental hygienists' type and kind of HIV education received and perceived self efficacy regarding the provision of HIV education. Characteristics of the practice setting, the enabling and reinforcing factors, included attitudes of the dentist toward providing HIV education and practice constraints such as time and pressure to complete routine work. Respondents were asked to comment on the practicality of the following HIV/AIDS education intervention:

> During all intra/extra oral examinations you inform clients of the significance of the oral exam i.e. screening for oral cancers and potential systemic conditions. You then discuss several systemic conditions that may present intra/extra oral - HIV/AIDS being one of those conditions. When appropriate, you give written material to your clients regarding HIV/AIDS oral signs and symptoms, transmission, and local HIV testing sites.

The questionnaire also focused on the extent of HIV education provided to clients and demographic information.

Variables

1. Independent Variables. HIV education was measured by two questions concerning formal vs continuing education as a source of HIV education (Q- 7 & 8). Subjects were also asked to identify specific HIV content areas covered during their education (Tolle-Watts & Shuman, 1991). Self efficacy was measured by respondents' level of confidence (very confident, somewhat confident, not very confident, not confident) in

their ability to discuss: 1) the oral manifestations of HIV infection, 2) modifying IV drug use, 3) modifying unsafe sexual practices, and 4) HIV testing (Q-15) (Holcomb, et.al., 1986). Practice setting characteristics were measured by several questions concerning frequency of specific procedures performed

(Q- 9-11; 16-21) (VDH, 1988).

2. Dependent Variables. The provision of HIV education was used as the dependent variable in this study

(Q- 9-11;21) (VDH, 1988) (See Figure 3.1).

Data Analysis

Data were coded and entered into the Number Cruncher Statistical System (Hintze, 1984). Both descriptive and inferential statistics were used to analyze the data. Means and standard deviations were used when appropriate for descriptive statistics. Inferential statistics included chi square analyses to discern distribution differences and relationships among independent variables. A probability level of alpha = 0.05 was used to determine statistical significance.

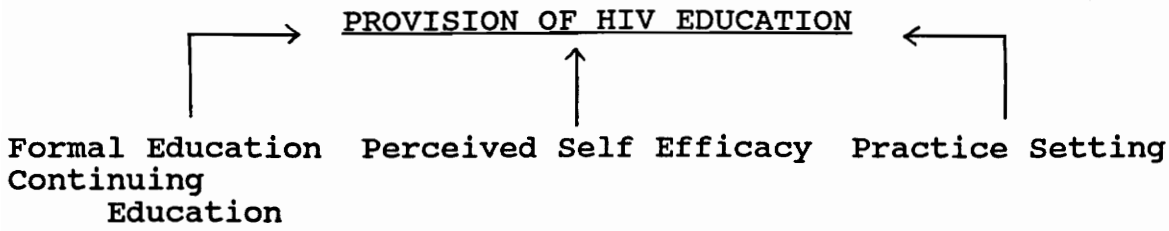

Figure 3.1

Factors Hypothesized to Influence the Delivery of HIV Education by Dental Hygienists to their Clients

CHAPTER FOUR

Findings

Description of the Study Population

Demographics of respondents are described in Table 4.1. The majority of respondents were currently practicing dental hygiene in Virginia (88%), most in a general practice setting (84%). Ninety-nine percent of respondents were female. The mean age of respondents was 37 with a range from 22 to 65.

Only 30% of respondents were members of the ADHA. Of those members, only 25% of members reported routinely attending meetings of their professional organization. Although twenty-one percent of current ADHA members had graduated within the last five years, younger age was not related to ADHA membership [X^2 (1df)=3.2395, p=.07].

The majority of respondents routinely perform a medical history (91%), an intra/extra oral exam (80%), and smoking behavior education (68%) with their clients (Table 4.2).

Most respondents had received HIV education. Eleven percent of respondents received it during their formal dental hygiene education while 62% of respondents received it through continuing education courses or self studies. Fourteen percent of respondents reported receiving HIV education through both formal education and continuing education. Thirteen percent of respondents received no HIV education. A

Table 4.1

Description of the Study Population

Q-1 Are you currently practicing dental hygiene in Virginia?

	Percent	(N)
Yes	88	(317)
No	12	(42)

Q-2 In what type of practice setting are you working?

	Percent	(N)
General	84	(301)
Periodontal	9	(32)
Medical School Hospital or other Hospital	1	(3)
Medical, Dental, or Dental Hygiene School	4	(13)
Public Health Agency	0.5	(2)

Q-3 Your present age.

Mean age
37

Q-4 Your sex.

	Percent	(N)
Male	1	(3)
Female	99	(356)

Table 4.1 (Continued)

Description of the Study Population

Q-5	**Year of graduation from dental hygiene school.**	Mean year	
		1979	
Q-6	**Are you a member of the American Dental Hygienists' Association?**		
		Percent	(N)
	Yes	30	(109)
	No	70	(251)

Table 4.2

Frequency of Clinical Procedures Performed by Dental Hygienists

PROCEDURE	FREQUENCY %(N)			
	Routinely	Sometimes	Rarely	Never
Medical History	91(311)	7 (25)	2 (6)	0.2 (1)
Intra/Extra Oral Exam	80(276)	15 (52)	3 (12)	1.0 (3)
Dietary Counseling	36(124)	46(159)	15 (53)	2.0 (7)
Smoking Cessation	68(233)	27 (93)	4 (14)	0.3 (1)
HIV Education	7 (24)	20 (68)	38(128)	34.0(116)

comparison of content areas covered during HIV formal and continuing education courses is presented in Table 4.3. The "psychosocial needs of clients" and "how to discuss HIV with clients" were the HIV content areas least frequently covered during formal and continuing education. However, respondents who were trained in these HIV content areas were no more likely to provide HIV education to their clients than those who did not receive these HIV content areas.

No differences were observed between respondents who were younger than 37 and those who were older than 37 regarding: 1) the provision of HIV education to clients, 2) self confidence in discussing HIV with clients, or 3) practice procedures (Table 4.4).

The mean year of graduation from dental hygiene school was 1979 with a range from 1949 to 1993. Generally, respondents who graduated prior to 1979 were no more likely to: 1) provide HIV education to clients, 2) have self confidence in discussing HIV with clients, or 3) perform specific practice procedures than those who graduated after 1979 (Table 4.5). More recent graduates were more likely to perform a medical history and dietary counseling, as well as counsel their clients about the oral manifestations of HIV and unsafe sexual practices.

Thirty-five percent of respondents had treated known HIV seropositive clients, while 61% had treated suspected HIV

Table 4.3

HIV Content Areas Covered During Formal Dental Hygiene Education and Continuing Education Courses *

CONTENT AREA	FORMAL EDUCATION Percent	CONTINUING EDUCATION Percent
Etiology	20	56
Epidemiology	18	50
General Clinical Symptoms	22	62
Oral Manifestations	23	60
Treatment of Oral Manifestations	15	35
Dental Hygiene Care/ Management	21	47
Psychosocial Needs of Clients	9	22
Attitudes and Fears of Practitioners	15	45
HIV Testing	15	40
Legal and Ethical Concerns	19	46
How to Discuss HIV with Clients	8	17

* Respondents may select more than one content area so percentages do not add to 100.

Table 4.4

Impact of Age on Provision of HIV Education, Self Confidence, and Practice Procedures

VARIABLE	AGE		
	Younger than 37 %(N)	Age 37 or older %(N)	X^2(3df) (p)
a) provision of HIV education	29 (54)	25 (37)	3.8364 .30
b) self confidence			
oral manifestations of HIV infection	71(133)	66(103)	2.4801 .50
modifying IV drug use	46 (86)	44 (69)	3.8770 .30
modifying unsafe sexual practices	58(108)	62 (95)	4.4439 .22
going for HIV testing	75(140)	75(115)	1.0799 .80
c) practice procedures			
medical history	99(185)	96(151)	5.9866 .20
intra/extra oral exam	97(182)	93(146)	4.9443 .17
dietary counseling	81(151)	84(132)	.5766 .90
smoking behavior	97(181)	94(145)	2.4270 .50

Table 4.5

Impact of Year of Graduation on Provision of HIV Education, Self Confidence, and Practice Procedures

VARIABLE	YEAR OF GRADUATION		
	Before 1979 %(N)	After 1979 %(N)	X^2(3df) (p)
a) provision of HIV education	28 (40)	27 (45)	1.5556 .67
b) self confidence			
oral manifestations of HIV infection	64 (92)	73(122)	8.7139 .03
modifying IV drug use	39 (56)	48 (81)	5.1432 .16
modifying unsafe sexual practices	57 (80)	60(100)	7.1871 .07
going for HIV testing	72(102)	76(127)	3.5435 .31
c) practice procedures			
medical history	99(141)	97(162)	10.7840 .01
intra/extra oral exam	96(137)	95(158)	.3526 .95
dietary counseling	90(129)	77(128)	12.7660 .00
smoking behavior	96(137)	96(158)	2.1781 .54

seropositive clients. Seventy-one percent of respondents gave treatment when HIV infected clients came to their office for treatment, while 9% referred and 20% both treated and referred. Of those respondents who referred HIV infected clients, 8% cited lack of knowledge about AIDS, 36% cited fear of treating HIV infected clients, 100% cited employers' preference, and 24% cited inadequate white blood cell count as reasons for referral.

Most respondents did not: 1) perform HIV/AIDS - related procedures on the majority of their clients (Table 4.6), 2) bring up the subject of HIV/AIDS with their clients (Table 4.7), or 3) target heterosexual women between the ages of 25-44 or clients considered low risk for HIV (Table 4.8).

No differences were observed between respondents who had had HIV education and those who had not regarding:
1) procedures performed on the majority of clients (Table 4.9); 2) clients with whom they were more likely to bring up the subject of HIV/AIDS (Table 4.10); and 3) clients whom they target for HIV/AIDS education (Table 4.11). Of those procedures performed on the majority of clients, respondents most frequently mentioned bringing up the subject of AIDS and asking about sexual practices.

Respondents with formal HIV education brought up the subject of AIDS and asked about sexual practices more frequently than those respondents without formal or continuing

Table 4.6

Procedures Performed on the Majority of Clients

PROCEDURE	FREQUENCY %(N)	
	Yes(N)	No(N)
Bring up the subject of AIDS	24 (87)	76(273)
Ask about their sexual practices	12 (44)	88(316)
Discuss oral manifestations of HIV	6 (22)	94(338)
Ask if they are IV drug users	7 (26)	93(334)
Give written materials on AIDS	5 (19)	95(341)
Discuss HIV antibody testing	7 (27)	92(333)
Discuss ways to prevent HIV transmission	24 (86)	76(274)

Table 4.7

Client Types with Whom Dental Hygienists are More Likely to Bring Up the Subject of HIV/AIDS

CLIENT TYPE	FREQUENCY %(N)	
	Yes(N)	No(N)
Homosexual or Bisexual Males	37(132)	63(228)
Suspected/Known IV Drug Users	41(149)	59(211)
Suspected/Known Sexually Active Clients	31(112)	69(248)
Heterosexual Women Between the Ages of 25-44	25 (91)	75(269)
Low Risk For HIV	23 (83)	77(277)
Known HIV Infected	58(208)	42(152)

Table 4.8

Client Types Targeted for HIV/AIDS Education

CLIENT TYPE	FREQUENCY %(N)	
	Yes(N)	No(N)
Homosexual or Bisexual Males	49(177)	51(183)
Suspected/Known IV Drug Users	56(203)	44(157)
Suspected/Known Sexually Active Clients	54(193)	46(167)
Heterosexual Women Between the Ages of 25-44	29(106)	71(254)
Low Risk for HIV	19 (68)	81(292)
Known HIV Infected	61(219)	39(141)

Table 4.9

Procedures Performed on the Majority of Clients by Type of Education

PROCEDURE	FREQUENCY %(N)			
	FORMAL EDUCATION		CONTINUING EDUCATION	
	Yes(N)	No(N)	Yes(N)	No(N)
Bring up the subject of AIDS	21(18)	29(25)	39(34)	11(10)
Ask about their sexual practices	41(18)	57(25)	0 (0)	2 (1)
Discuss oral manifestations of HIV	18 (4)	32 (7)	45(10)	5 (1)
Ask if they are IV drug users	19 (5)	31 (8)	35 (9)	15 (1)
Give written materials on AIDS	26 (5)	21 (4)	26 (5)	26 (5)
Discuss HIV antibody testing	15 (4)	33 (9)	41(11)	11 (3)
Discuss ways to prevent HIV transmission	16(14)	34(29)	39(34)	10 (9)

Table 4.10

Client Types with Whom Dental Hygienists are More Likely to Bring Up the Subject of HIV/AIDS by Type of Education

CLIENT TYPE	FREQUENCY %(N)			
	FORMAL EDUCATION		CONTINUING EDUCATION	
	Yes(N)	No(N)	Yes(N)	No(N)
Homosexual or Bisexual Males	19(25)	30(40)	40(53)	11(14)
Suspected/Known IV Drug Users	18(27)	31(46)	42(62)	9(14)
Suspected/Known Sexually Active Clients	15(17)	34(38)	43(48)	8 (9)
Heterosexual Women Between the Ages of 25-44	14(13)	35(32)	46(42)	4 (4)
Low Risk For HIV	18(15)	31(26)	35(29)	16(13)
Known HIV Infected	18(37)	32(66)	41(86)	9(19)

Table 4.11

Client Types Targeted for HIV/AIDS Education by Type of Education

CLIENT TYPE	FREQUENCY %(N)			
	FORMAL EDUCATION		CONTINUING EDUCATION	
	Yes(N)	No(N)	Yes(N)	No(N)
Homosexual or Bisexual Males	19(33)	30(54)	40(71)	11(19)
Suspected/Known IV Drug Users	17(35)	32(65)	40(81)	11(22)
Suspected/Known Sexually Active Clients	18(35)	31(60)	40(77)	11(21)
Heterosexual Women Between the Ages of 25-44	15(16)	34(36)	43(46)	8 (8)
Low Risk for HIV	20(14)	28(19)	40(27)	12 (8)
Known HIV Infected	23(50)	26(68)	41(89)	10(22)

education. Homosexual or bisexual males, suspected/known IV drug users, and known HIV infected clients were clients with whom respondents were more likely to bring up the subject of HIV/AIDS. Similarly, respondents with formal HIV education brought up the subject of HIV/AIDS with those client types more frequently than respondents without formal or continuing education. Of those clients targeted for HIV/AIDS education, heterosexual women between the ages of 25-44 and clients considered by dental hygienists to be at low risk for HIV were infrequently targeted.

Tests of Study Hypotheses

Hypothesis 1: Dental hygienists who have received HIV education will be more likely to provide HIV education to their clients than dental hygienists who did not receive such education.

Dental hygienists who had received HIV education as part of their formal education were more likely to provide HIV education to their clients than dental hygienists who had not received such education [X^2 (3df)=8.39, p=.04]) (Table 4.12). Seventy-nine percent of respondents with formal HIV education provided HIV education to their clients compared to 62% of respondents without formal HIV education. Seventy percent of dental hygienists who had received HIV education through continuing education provided HIV education to their clients

Table 4.12

Provision of HIV Education and Level of Education by Percent

PROVISION OF HIV EDUCATION	EDUCATION			
	FORMAL EDUCATION		CONTINUING EDUCATION	
	Yes	No	Yes	No
Routinely	8	7	8	5
Sometimes	25	19	22	15
Rarely	46	36	40	32
Never	21	38	30	48
X^2(3df)	8.39		7.69	
(p)	.04		.05	

compared to 52% of dental hygienists who had not received such education

[X^2 (3df)=7.69, p=.05] (Table 4.12).

Hypothesis 2: Dental hygienists with higher levels of perceived self efficacy regarding the provision of HIV education will be more likely to educate their clients about HIV than dental hygienists with lower levels of self efficacy.

Respondents with high levels of confidence provided HIV education significantly more frequently than respondents with lower levels of confidence (Table 4.13). Those who were very confident or somewhat confident in discussing the oral manifestations of HIV infection routinely provided HIV education to their clients (92% vs. 8%) [X^2 (9df)=76.40, p=-.00]. Respondents who were very confident or somewhat confident in discussing modifying IV drug use routinely provided HIV education to their clients as compared to respondents who were not very confident or not confident (75% vs. 25%) [X^2 (9df)=44.42, p=.00]. Those who were very confident or somewhat confident in discussing modifying unsafe sexual practices routinely provided HIV education to their clients as compared to respondents who were somewhat not confident or not confident (75% vs. 25%)

[X^2 (9df)=42.46, p=.00]. The majority of respondents who were very confident or somewhat confident in discussing going for

Table 4.13

Provision of Specific HIV Education and Level of Confidence by Percent

PROVISION OF HIV EDUCATION	LEVEL OF CONFIDENCE			
	VERY CONFIDENT		NOT CONFIDENT	
	1	2	3	4
(a) oral manifestations HIV infection *				
Routinely	50(12)	42(10)	8 (2)	0 (0)
Sometimes	37(25)	51(35)	7(10)	1 (1)
Rarely	22(28)	55(69)	20(25)	4 (3)
Never	12(13)	35(39)	24(27)	29(32)
* X^2 (9df)=76.4066, p=-.00				
(b) modifying IV drug use **				
Routinely	29 (7)	46(11)	17 (4)	8 (2)
Sometimes	22(15)	41(28)	22(15)	15(10)
Rarely	12(15)	35(44)	36(46)	17(22)
Never	8 (9)	19(21)	32(36)	40(45)
** X^2 (9df)=44.4275, p=.00				

Table 4.13 (Continued)

Provision of Specific HIV Education and Level of Confidence by Percent

PROVISION OF HIV EDUCATION	LEVEL OF CONFIDENCE			
	VERY CONFIDENT 1	2	NOT CONFIDENT 3	4
(c) modifying unsafe sexual practices *				
Routinely	50(12)	25 (6)	21 (5)	4 (1)
Sometimes	32(22)	41(28)	19(13)	7 (5)
Rarely	16(20)	44(56)	30(38)	10(13)
Never	16(18)	31(34)	24(26)	29(32)
* X^2 (9df)=42.4644, p=.00				
(d) going for HIV testing **				
Routinely	74(17)	22(5)	0 (0)	4 (1)
Sometimes	48(33)	40(27)	9 (6)	3 (2)
Rarely	35(44)	43(54)	21(26)	2 (2)
Never	24(26)	37(41)	19(21)	20(22)
** X^2 (9df)=54.8502, p=.00				

HIV testing with their clients routinely provided HIV education to their clients as compared to respondents who were somewhat not confident or not confident (96% vs. 4%) [X^2 (9df)=54.85, p=.00].

Hypothesis 3: Dental hygienists who practice in a setting conducive to providing client education will be more likely to educate their clients about HIV than dental hygienists who are not in such a practice.

In general, respondents in practice settings conducive to providing preventive services and education to their clients were significantly more likely to provide HIV education to their clients than those who were not in such a practice (Table 4.14). Of those respondents who routinely performed an intra/extra oral exam (80%), 9% routinely provided HIV education to their clients [X^2 (9df)=22.20, p=.01]. Of those respondents who routinely performed dietary counseling (36%), 13% routinely provided HIV education to their clients [X^2 (9df)=27.48, p=.00]. And of those respondents who routinely provided smoking behavior education (68%), 10% routinely provided HIV education to their clients [X^2 (9df)=17.70, p=.04].

The majority of respondents found the HIV/AIDS education intervention proposed in the questionnaire to be practical (71% vs. 29%). Table 4.15 displays predisposing, enabling,

Table 4.14

Performance of Clinical Procedures and the Provision of HIV Education

CLINICAL PROCEDURE	PROVISION OF HIV EDUCATION Percent (N)
(a) medical history *	
Routinely	7 (22)
Sometimes	22 (65)
Rarely	39(118)
Never	32 (96)
* X^2 (9df)=10.9568, p=.28	
(b) intra/extra oral exam **	
Routinely	9 (24)
Sometimes	23 (63)
Rarely	37 (99)
Never	31 (83)
** X^2 (9df)=22.2057, p=.01	

Table 4.14 (Continued)

Performance of Clinical Procedures and the Provision of HIV Education

CLINICAL PROCEDURE	PROVISION OF HIV EDUCATION Percent (N)
(c) dietary counseling *	
Routinely	13 (16)
Sometimes	27 (33)
Rarely	34 (42)
Never	25 (31)
* X^2 (9df)=27.4875, p=.00	
(d) smoking behavior **	
Routinely	10 (22)
Sometimes	24 (55)
Rarely	36 (82)
Never	30 (69)
** X^2 (9df)=17.7055, p=.04	

and reinforcing factors to the proposed HIV/AIDS intervention as identified by respondents.

Table 4.15

Predisposing, Enabling, and Reinforcing Factors Suggested by Respondents to the Proposed HIV/AIDS Intervention

Predisposing Factors

Lack self confidence

Believe dental office is not the place for HIV/AIDS intervention

Believe education should be decision of dentist

HIV is difficult to discuss

HIV education may frighten clients

HIV education may be offensive to clients

Could open the door to someone needing referral

Because oral signs and symptoms are frequently the first sign of HIV infection

Easy way to bring up the subject without offending client

Demonstrates concern, knowledge, and thoroughness

Our obligation to educate - clients lack knowledge regarding oral manifestations of systemic conditions

This is the closest some clients get to medical care

Consistent with other preventive education i.e., blood pressure screening, dietary counseling, and other health education measures

Table 4.15 (Continued)

Predisposing, Enabling, and Reinforcing Factors Suggested by Respondents to the Proposed HIV/AIDS Intervention

Enabling Factors

Hygienists need further education and training

Lack of time

Depends on type of practice

Reinforcing Factors

Could hurt practice if other practices are not also providing HIV education

Disapproval of dentist

CHAPTER FIVE

Discussion, Limitations, and Recommendations

I. Summary of Findings

The findings of this research indicate that HIV education and perceived self efficacy regarding the provision of HIV education, significantly enhance the likelihood that dental hygienists will provide HIV education to their clients.

Respondents felt least confident in discussing modifying IV drug use and unsafe sexual practices. This finding is not surprising given that "how to discuss HIV with clients" was the least frequently covered HIV content area provided during formal and continuing education. To enhance perceived self efficacy and thus the provision of HIV education, HIV education must include "how to discuss HIV with clients". These findings provide support for the hypotheses that perceived self efficacy and exposure to HIV education increase the provision of preventive services i.e. HIV education by dental hygienists.

Results of this study also indicate that dental hygienists who practice in a setting conducive to providing client education are more likely to educate their clients about HIV. Dental hygienists who perform an oral exam, dietary counseling, and smoking behavior education are significantly more likely to provide HIV education. "Time",

"not encouraged by dentist", and "not required by dentist" were the most frequently cited reasons for not providing these preventive procedures. This finding suggests the need to target the dentist regarding the significance of supporting these preventive procedures in the clinical setting. Additionally, this finding supports the impact that enabling and reinforcing factors i.e., practice setting and employer influence, have on the provision of preventive services. Dentists employ dental hygienists and therefore determine standards of practice in their office. Regardless of how well hygienists may be educated about a range of preventive practices, we cannot expect that they will be able to be effective educators if they work in a practice setting which implicitly or explicitly discourages client education.

II. Limitations of the Study

A. Generalizability of Findings

While a stratified random sampling technique was employed to enhance statewide representation, the study response rate was only 55%. Results of this study should therefore be applied with caution to all practicing dental hygienists.

B. Measurement

Utilization of a questionnaire as a measurement instrument lends itself to error and bias, including, problems

of self-reporting and recall. Participants may respond as a result of social influence or inaccurately recall their behaviors.

The potential for cognitive dissonance regarding perceived self efficacy and actual practice does exist. Therefore, the finding that dental hygienists with higher levels of perceived self efficacy are more likely to provide HIV education to their clients than dental hygienists with lower levels of perceived self efficacy should be interpreted with caution.

Because of the inability to distinguish between those respondents with formal or continuing education only and those respondents with formal and continuing education regarding the provision of HIV education, findings are inconclusive regarding the impact of formal or continuing education alone on the provision of HIV education.

III. Recommendations

Application of the PRECEDE model assisted in the identification of specific predisposing, enabling, and reinforcing factors (to the provision of HIV education) such that these findings can now be employed in planning more effective HIV education. While the majority of respondents favored the incorporation of the proposed HIV intervention, lack of education, self confidence, and constraints of their

practice setting were cited as obstacles to successfully implementing such an intervention. The fact that heterosexual women between the ages of 25-44, the fastest growing group of HIV infected persons, are least frequently targeted by dental hygienists for HIV/AIDS education implies a lack of knowledge. The most practical and cost effective approach to address these findings would appear to be to incorporate those HIV content areas identified as infrequently covered into continuing education courses (and formal dental hygiene education curricula). Specifically, those HIV content areas to be targeted are: "how to discuss HIV with clients", "psychosocial needs of clients", and "attitudes and fears of practitioners". In addition to the inclusion of these content areas, a role playing component is warranted to potentially enhance self efficacy. The impending mandatory continuing education for dental and dental hygiene licensure will make it possible to reach the 70% of hygienists who do not belong to their professional organization and the larger number who do not take part in continuing education.

Because practice setting was identified as a significant enabling and reinforcing factor to the provision of HIV education, circulation of a newsletter to all Virginia dentists would be appropriate. This newsletter targeting dentists and their staff would: propose an educational intervention similar to the one utilized in this study, cite

the importance of education as an intervention to reduce the spread of HIV/AIDS, cite research findings regarding the effectiveness of using health care professionals as health educators, and provide a list of HIV/AIDS resources. Furthermore, publication of the results of this study in professional dental and dental hygiene journals would reiterate the importance of providing HIV education to clients by dental professionals.

IV. Conclusion

HIV/AIDS is a controversial subject, however, it is one that must be addressed. Dental professionals have a professional and ethical obligation to provide HIV education. Through HIV/AIDS education there is promise of preventing further spread of this fatal disease. HIV education acquired through formal or continuing professional education, a high level of perceived self efficacy regarding the provision of HIV education, and the establishment of practice settings conducive to providing client education, enhance the likelihood that HIV education will be provided by dental hygienists. Dental hygienists are in an ideal position to provide HIV/AIDS education to their clients, however reinforcement from their employer is essential. With impending mandatory continuing education requirements for dental hygiene licensure in Virginia, the potential for

increasing the delivery of HIV education to clients will be increased if the critical predisposing, enabling, and reinforcing factors defined in this research are incorporated into continuing education programs.

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APPENDIX A

QUESTIONNAIRE

Q-1 Are you currently practicing dental hygiene in Virginia?
(Circle number of your answer)

1 YES
2 NO . . Year last practiced _____

Q-2 In what type of practice setting are you working?
(Circle number(s) that apply)

1 GENERAL
2 PERIODONTAL
3 MEDICAL SCHOOL HOSPITAL OR OTHER HOSPITAL
4 MEDICAL, DENTAL, OR DENTAL HYGIENE SCHOOL
5 PUBLIC HEALTH AGENCY
6 SOLO
7 GROUP
8 URBAN
9 RURAL

Q-3 Your present age: _____ YEARS

Q-4 Your sex. (Circle number)

1 MALE
2 FEMALE

Q-5 Year of graduation from dental hygiene school _____

Q-6 Are you a member of the American Dental Hygienists' Association? (Circle number)

1 YES
2 NO

→ (If yes) how often do you attend your professional organization meetings?
(Circle number)

1 ROUTINELY
2 SOMETIMES
3 RARELY
4 NEVER

Q-7 Did you receive HIV (AIDS) education during your formal dental hygiene education? (Circle number)

1 YES
2 NO

→ (If yes) which of the following HIV content areas were covered during your education? (Circle number(s) that apply)

1 ETIOLOGY
2 EPIDEMIOLOGY
3 GENERAL CLINICAL SYMPTOMS
4 ORAL MANIFESTATIONS
5 TREATMENT OF ORAL MANIFESTATIONS
6 DENTAL HYGIENE CARE/MANAGEMENT
7 PSYCHOSOCIAL NEEDS OF CLIENTS
8 ATTITUDES AND FEARS OF PRACTITIONERS
9 HIV TESTING
10 LEGAL AND ETHICAL CONCERNS

Q-8 Have you received HIV education through continuing education? (Circle number)

1 YES
2 NO

→ (If yes) year of your most recent HIV continuing education course _____

Which of the following HIV content areas were covered during your education? (Circle number(s) that apply)

1 ETIOLOGY
2 EPIDEMIOLOGY
3 GENERAL CLINICAL SYMPTOMS
4 ORAL MANIFESTATIONS
5 TREATMENT OF ORAL MANIFESTATIONS
6 DENTAL HYGIENE CARE/MANAGEMENT
7 PSYCHOSOCIAL NEEDS OF CLIENTS
8 ATTITUDES AND FEARS OF PRACTITIONERS
9 HIV TESTING
10 LEGAL AND ETHICAL CONCERNS
11 HOW TO DISCUSS HIV WITH CLIENTS

Q-9 Which of the following procedures do you perform o n the majority of your clients?
(Circle number(s) that apply)

1 BRING UP THE SUBJECT OF AIDS
2 ASK ABOUT THEIR SEXUAL PRACTICES
3 DISCUSS ORAL MANIFESTATIONS OF HIV
4 ASK IF THEY ARE IV DRUG USERS
5 GIVE WRITTEN MATERIALS ON AIDS
6 DISCUSS HIV ANTIBODY TESTING
7 DISCUSS WAYS TO PREVENT HIV TRANSMISSION
8 DO NOT PERFORM ANY OF THE ABOVE PROCEDURES

Q-10 With which of the following clients are you more likely to bring up the subject of HIV/AIDS?
(Circle number(s) that apply)

1 HOMOSEXUAL OR BISEXUAL MALES
2 SUSPECTED/KNOWN IV DRUG USERS
3 SUSPECTED/KNOWN SEXUALLY ACTIVE CLIENTS
4 HETEROSEXUAL WOMEN BETWEEN THE AGES OF 25-44 YEARS
5 LOW RISK FOR HIV
6 KNOWN HIV INFECTED
7 NONE OF THE ABOVE CLIENTS

Q-11 Which of the following clients do you target for HIV/AIDS education?
(Circle number(s) that apply)

1 HOMOSEXUAL OR BISEXUAL MALES
2 SUSPECTED/KNOWN IV DRUG USERS
3 SUSPECTED/KNOWN SEXUALLY ACTIVE CLIENTS
4 HETEROSEXUAL WOMEN BETWEEN THE AGES OF 25-44 YEARS
5 LOW RISK FOR HIV
6 KNOWN HIV INFECTED
7 DISCUSS WAYS TO PREVENT HIV TRANSMISSION

Q-12 Have you treated known HIV seropositive clients?
(Circle number)

1 YES
2 NO

Q-13 Have you treated suspected HIV seropositive clients? (Circle number)

1 YES
2 NO

Q-14 At the present time how comfortable are you (or would you be) discussing with your clients:

	Level of Comfort (Circle your answer)			
1 the oral manifestations of HIV infection	VERY COMFORT-ABLE	SOMEWHAT COMFORT-ABLE	SOMEWHAT UN-COMFORT-ABLE	NOT COMFORT-ABLE
2 modifying IV drug use	VERY COMFORT-ABLE	SOMEWHAT COMFORT-ABLE	SOMEWHAT UN-COMFORT-ABLE	NOT COMFORT-ABLE
3 modifying unsafe sexual practices	VERY COMFORT-ABLE	SOMEWHAT COMFORT-ABLE	SOMEWHAT UN-COMFORT-ABLE	NOT COMFORT-ABLE
4 going for HIV testing	VERY COMFORT-ABLE	SOMEWHAT COMFORT-ABLE	SOMEWHAT UN-COMFORT-ABLE	NOT COMFORT-ABLE

Q-15 At the present time how confident are you (or would you be) in your ability to accurately discuss with your clients:

	Level of Confidence (Circle your answer)			
1 the oral manifestations of HIV infection	VERY CON-FIDENT	SOMEWHAT CON-FIDENT	SOMEWHAT NOT CON-FIDENT	NOT CON-FDIDENT
2 modifying IV drug use	VERY CON-FIDENT	SOMEWHAT CON-FIDENT	SOMEWHAT NOT CON-FIDENT	NOT CON-FIDENT
3 modifying unsafe sexual practices	VERY CON-FIDENT	SOMEWHAT CON-FIDENT	SOMEWHAT NOT CON-FIDENT	NOT CON-FIDENT
4 going for HIV testing	VERY CON-FIDENT	SOMEWHAT CON-FIDENT	SOMEWHAT NOT CON-FIDENT	NOT CON-FIDENT

Q-16 How often do you perform a medical history?
(Circle number)

1 ROUTINELY
2 SOMETIMES
3 RARELY
4 NEVER

(If sometimes, rarely, or never) why not routinely perform a thorough medical history before examining client?
(Circle number(s) that apply)

1 LACK OF TIME
2 COST OF TIME
3 DISRUPTIVE TO MY SCHEDULE
4 LITTLE PAYOFF TO THE PRACTICE
5 NOT REQUIRED BY DENTIST
6 NOT NECESSARY
7 NOT ENCOURAGED BY DENTIST
8 NOT MY RESPONSIBILITY

Q-17 How often do you perform an intra/extra oral exam?
(Circle number)

1 ROUTINELY
2 SOMETIMES
3 RARELY
4 NEVER

(If sometimes, rarely, or never) why not routinely perform an oral exam?
(Circle number(s) that apply)

1 LACK OF TIME
2 COST OF TIME
3 DISRUPTIVE TO MY SCHEDULE
4 LITTLE PAYOFF TO THE PRACTICE
5 NOT REQUIRED BY DENTIST
6 NOT NECESSARY
7 NOT ENCOURAGED BY DENTIST
8 NOT MY RESPONSIBILITY

Q-18 When applicable, how often do you question your client about their diet?
(Circle number)

1 ROUTINELY
2 SOMETIMES
3 RARELY
4 NEVER

(If sometimes, rarely, or never) why not routinely counsel your client about their diet?
(Circle number(s) that apply)

1 LACK OF TIME
2 COST OF TIME
3 DISRUPTIVE TO MY SCHEDULE
4 LITTLE PAYOFF TO THE PRACTICE
5 NOT REQUIRED BY DENTIST
6 NOT NECESSARY
7 NOT ENCOURAGED BY DENTIST
8 MAY BE PERCEIVED AS JUDGMENTAL
9 NOT MY RESPONSIBILITY

Q-19 When applicable, how often do you question your client about their smoking behavior?
(Circle number)

1 ROUTINELY
2 SOMETIMES
3 RARELY
4 NEVER

(If sometimes, rarely, or never) why not routinely counsel your client about their smoking behavior?
(Circle number(s) that apply)

1 LACK OF TIME
2 COST OF TIME
3 DISRUPTIVE TO MY SCHEDULE
4 LITTLE PAYOFF TO THE PRACTICE
5 NOT REQUIRED BY DENTIST
6 NOT NECESSARY
7 NOT ENCOURAGED BY DENTIST
8 MAY BE PERCEIVED AS JUDGMENTAL
9 NOT MY RESPONSIBILITY

Q-20 How often do you provide HIV/AIDS education to your clients, i.e. oral signs and symptoms of HIV infection? (Circle number)

1 ROUTINELY
2 SOMETIMES
3 RARELY
4 NEVER

→ (If sometimes, rarely, or never) why not routinely provide HIV/AIDS education? (Circle number(s) that apply)

1 LACK OF TIME
2 COST OF TIME
3 DISRUPTIVE TO MY SCHEDULE
4 LITTLE PAYOFF TO THE PRACTICE
5 NOT REQUIRED BY DENTIST
6 NOT NECESSARY
7 NOT ENCOURAGED BY DENTIST
8 NOT MY RESPONSIBILITY

Q-21 When HIV infected clients come to your office for treatment do you treat them or refer them? (Circle number)

1 GIVE TREATMENT
2 REFER ELSEWHERE
3 BOTH

→ (If refer) indicate for what reason(s) (Circle number(s) that apply)

1 LACK OF KNOWLEDGE ABOUT AIDS
2 FEAR OF TREATING HIV INFECTED CLIENTS
3 EMPLOYERS PREFERENCE TO REFER
4 INADEQUATE WHITE BLOOD CELL COUNT

Q-22 The following is an example of a potential HIV/AIDS education intervention.

During all intra/extra oral examinations you inform clients of the significance of the oral exam i.e. screening for oral cancers and potential systemic conditions. You then discuss several systemic conditions that may present intra/extra oral - HIV/AIDS being one of those conditions. When appropriate, you give written material to your clients regarding HIV/AIDS oral signs and symptoms, transmission, and local HIV testing sites.

COMMENTS: (Is this intervention practical? Why or why not?)

Thank you.

APPENDIX B-1

LETTER ACCOMPANYING SECOND MAILING OF QUESTIONNAIRE

VIRGINIA WESTERN
Community College
HEALTH TECHNOLOGY DIVISION

March 22, 1993

Dear Virginia Dental Hygienist:

Because you are one of a small number of licensed dental hygienists in the state of Virginia who are being asked to share your experiences on the role of health care professionals in HIV (AIDS) prevention and early detection, it is important that each questionnaire be completed an returned. A stamped return envelope is provided for your convenience. The questionnaire will take approximately 15 minutes to complete.

Again, you may be assured of complete confidentiality. Only group data will be reported.

If you would like to receive a summary of results, write "copy of results requested" on the back of the return envelope, and print your name and address below it. Please do not put this information on the questionnaire itself.

I would be most happy to answer any questions you might have. Please write or call me at (703) 857-7206.

Thank you for your assistance.

Sincerely,

Paula W. Johnston, RDH, BS
Project Director
Assistant Professor in Dental Hygiene

2095 Colonial Avenue SW, P.O. Box 14007, Roanoke, Virginia 24038 • Phone: (703)857-7307 • FAX: (703)857-7204

APPENDIX B-2

LETTER ACCOMPANYING QUESTIONNAIRE

VIRGINIA WESTERN
Community College
HEALTH TECHNOLOGY DIVISION

February 26, 1993

Dear Virginia Dental Hygienist:

Little attention has been given to the role of health care professionals in HIV (AIDS) prevention and early detection. Because education is the only method available to control the AIDS epidemic, more effort must be directed toward providing effective AIDS education to health care clients.

You are one of a small number of licensed dental hygienists in the state of Virginia who are being asked to share your experiences on this matter. In order that the results of this survey represent current practices in Virginia, it is important that each questionnaire be completed and returned by March 5th. A stamped return envelope is provided for your convenience. The questionnaire will take approximately 10 minutes to complete.

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so I may check your name off the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire or identified in any way with your answers. Only group data will be reported.

If you would like to receive a summary of results, write "copy of results requested" on the back of the return envelope, and print your name and address below it. Please do not put this information on the questionnaire itself.

I would be most happy to answer any questions you might have. Please write or call me at (703) 857-7206.

Thank you for your assistance.

Sincerely,

Paula W. Johnston, RDH, BS
Project Director
Assistant Professor in Dental Hygiene

3095 Colonial Avenue SW, P.O. Box 14007, Roanoke, Virginia 24038 • Phone: (703)857-7307 • FAX: (703)857-7204

APPENDIX C

HUMAN SUBJECTS APPROVAL

Virginia Tech
VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY

Research Division

306 Burruss Hall
Blacksburg, Virginia 24061-0244
(703) 231-6077 FAX (703) 231-4384

MEMORANDUM

TO: Paula W. Johnston
Health and Physical Education

FROM: Janet M. Johnson
Acting Associate Provost for Research

DATE: March 2, 1993

SUBJECT: IRB EXPEDITED APPROVAL/"Factors Influencing the Provision of HIV Education by Dental Hygienists to Their Clients"
Ref. 93-038

I have reviewed your request to the IRB for the above referenced project. I concur that the experiments are of minimal risk to the human subjects who will participate and that appropriate safeguards have been taken.

This approval is valid for 12 months. If the involvement with human subjects is not complete within 12 months or there is a significant change in the protocol of the project, the project may be resubmitted for extension or approval.

On behalf of the Institutional Review Board for Research Involving Human Subjects, I have given your request expedited approval.

Best wishes.

JMJ/gsw

cc: Elizabeth Howze

VITA

Paula Wood Johnston was born 29 July 1958 in Charlottesville, Virginia where she spent most of her youth and adolescence.

After graduating high school in 1976, she attended Longwood College and was conferred a bachelors of science degree in Biology in 1980. She then attended the Medical College of Virginia & Virginia Commonwealth University and was conferred a bachelors of science degree in Dental Hygiene in 1983. From August 1985 to present she is Clinical Coordinator and faculty in the Dental Hygiene program at Virginia Western Community College in Roanoke, Virginia. In August 1989 she entered Virginia Polytechnic Institute & State University's Community Health Education masters of science program.

Paula Johnston