# Comparing Predictors of Willingness to Treat HIV+ Patients for New York City Male and Female General Practice Dentists 50 Years of Age or Younger

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## Abstract

**Objectives:** This article develops and compares gender-specific predictive models for willingness to treat HIV-infected patients (PHIV+) for male and female private general practice dentists (GPDs). **Methods:** Based on mail survey data collected in Manhattan and Queens, New York City (73.3% response rate), hierarchical multiple regression analyses were conducted for male and female dentists 50 years of age or younger (n=763) and for those in solo practice. **Results:** The gender-specific predictive models ( $R^2s=0.72$ ) do not differ, except for the influence of practice viability, a moderately strong, statistically significant predictor for men, while the least powerful, statistically nonsignificant predictor for women. This distinction remains for solo male and female practitioners. Informal/formal collegial norms are more influential predictors within the solo female model than within the solo male model. **Conclusions:** Findings are encouraging for further work in developing predictive models for clinician subpopulations, with an eye toward developing intervention strategies that reflect key predictive factors for each group. [J Public Health Dent 1997;57(3):159-62]

Key Words: dentists; HIV infection; gender roles; knowledge, attitudes, practice; dentist-patient relations; health care access.

The number of women in dentistry has increased sharply in the last 15 to 20 years. Women now comprise approximately 35 percent of dental students (1). It is projected that 15 to 20 percent of practicing dentists will be women by the year 2000 (2-4). The implications of such gender-based demographic changes for the practice of dentistry remain relatively unexplored (1).

One area in which there has been some effort to identify gender-related attitudes and orientations as they relate to patient management issues involves clinician willingness to treat HIV-infected patients (PHIV+) (5-8). Both published (9) and unpublished secondary analyses of this data set show gender-based differences in orientation toward treating PHIV+ among private general practice dentists (GPDs) in New York City (NYC). Female GPDs in private practice are less willing to treat PHIV+, and are more concerned about perceived safety and occupational risk issues having to do with treating PHIV+ than their NYC male counterparts. These gender-based differences are present when analyses of this data set are conducted for the whole group (9) and for dentists 50 years of age or younger<sup>1</sup>.

Gender also has been included in multivariable analyses, using multiple linear or logistic regression, to identify variables that influence health professionals' attitudes or intentions to treat, to care for, or to perform a clinical examination on HIV-positive patients (5,10-12). However, its influence is not consistent across the studies. Gender is one of the major predictors of dental students' belief in the right to refuse treatment to HIV-infected patients (5); when entered as an interaction term with age, it is a significant predictor of physicians' decision to perform a clinical examination on HIV+ patients (10); it is a nonsignificant predictor of HIV/AIDS-related anxiety, albeit potentially confounded with occupation due to the composition of the comparison groups (11); and it is a nonsignificant predictor of willingness to treat HIV-infected patients (12). The role of gender in influencing levels of willingness to treat HIV-infected patients is not yet clear (9).

Faced with the prospect of gender differences in dentists' levels of willingness to treat PHIV+, and with the unclear role of gender as a predictor in multivariable predictive models, it is of interest to investigate whether the magnitude or direction of the multiple associations included in regression analyses vary according to gender, after controlling for baseline differences. Such an analytic strategy can assist in exploring the question of whether the development of interventions that reflect each group's concerns is warranted.

NYC was chosen as the site for the study upon which this secondary analysis is based because it can be regarded as one of the epicenters of the HIV epidemic in the United States (13). General practitioner dentists in active practice were chosen because approximately 80 percent of American dentists are general practitioners and because they provide the range of oral health care services needed by PHIV+. They also have considerable control over the provision of professional services, since most of these dentists still practice in a classic private practice mode. Private practitioners were chosen because they represent the pre-

<sup>1</sup>Supporting data are available from the authors upon request.

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ponderance of practice arrangements.

#### Methods

Sample. An initial random sample of 2,018 general private dentists currently practicing in two boroughs of New York City, Manhattan and Queens, where practicing dentists make up 71 percent of dentists in NYC, was drawn from the July 1992 master list of the American Dental Association. This master list includes both members and nonmembers. Subjects were sent a two-page questionnaire with an initial letter and a \$10 honorarium check. To encourage participation in the study, those who failed to respond to the first mailing received, if necessary, three follow-up mailings (14). Criteria for eligibility were being a private general practitioner and having direct patient contact at least 16 hours per week. Of the 1,671 eligible subjects, 1,226 returned questionnaires, representing a 73.3 percent response rate.

Data Analysis. Analyses in this report are restricted to GPDs 50 years of age or younger due to the relative paucity of women dentists over age 50 within the profession in general and within the sample (males over 50 years of age, n=427; females over 50 years of age, n=21), and the potentially confounding impact that this genderbased age distribution might have upon the analysis. For each of the gender groups, hierarchical multiple regression was performed using SPSS/PC+ (15). Independent variables were simultaneously entered in Step I, followed by simultaneous entry of potential confounding variables in Step II (see Tables 1 and 2). Step II variables had to meet two criteria: (1) when included in the main model (Step I), they were not statistically significant predictors of willingness to treat PHIV+; (2) when tested for differences in means or proportions, they demonstrated statistically significant differences between gender groups.

Dependent Variable. The dependent variable used was willingness to treat HIV+ or AIDS patients as measured by extent of agreement with the item, "In my private practice I am willing to treat ... " repeated for each of the following four patient types: asymptomatic HIV+ patients of record, patients of record who have AIDS, new

TABLE 1 Hierarchical Regression of Willingness to Treat HIV-infected Patients on Selected Variables (Entire Sample)

|                                 | Male DDS ≤50 Years*<br>( <i>n</i> =482) |          | Female DDS ≤50<br>Years* ( <i>n</i> =121) |          |
|---------------------------------|---|----------|---|----------|
| Predictors <sup>+</sup>         | Beta                                    | (Sig T)  | Beta                                      | (Sig T)  |
| Step I:                         |   |          |   |          |
| Safety/self-efficacy            | -0.31                                   | (<0.001) | -0.31                                     | (<0.001) |
| Colleague willingness           | -0.32                                   | (<0.001) | -0.37                                     | (<0.001) |
| Practice viability              | 0.18                                    | (<0.001) | -0.01                                     | (0.916)  |
| PHIV+ exposure                  | 0.15                                    | (<0.001) | 0.20                                      | (0.004)  |
| Treat homosexuals               | 0.15                                    | (<0.001) | 0.10                                      | (0.147)  |
| Ethical obligations             | -0.07                                   | (0.016)  | -0.11                                     | (0.111)  |
| Step II:                        |   |          |   |          |
| Åge                             | -0.02                                   | (0.463)  | 0.01                                      | (0.906)  |
| Occupational risk               | -0.04                                   | (0.167)  | -0.06                                     | (0.375)  |
| Number patients/week            | 0.02                                    | (0.432)  | 0.07                                      | (0.183)  |
| Ethnicity (nonwhite=0, white=1) | 0.03                                    | (0.252)  | 0.03                                      | (0.624)  |
|                                 | $R^2 = 0.72$                            |          | $R^2 = 0.72$                              |          |
|                                 | $F_{10,471}$ =118.86, P<.0001           |          | $F_{10,110}$ =27.91, P<.0001              |          |

\*Zero-order correlations between response variable and each predictor and between predictors are available from the authors upon request.

<sup>†</sup>Variable definitions and units of measurement are as follows:

Safety/self-efficacy: (1) I feel that I can safely treat a person with HIV infection in my office; (2) By using barrier techniques, I feel safe when treating HIV+ patients; (3) I feel competent to provide dental treatment for HIV+ patients.

*Colleague willingness:* In their private practice, my colleagues are willing to treat: (1) patients of record who have AIDS; (2) new asymptomatic HIV+ patients; (3) new patients who have AIDS; (4) asymptomatic HIV+ patients of record.

*Practice viability:* (1) patients would leave my practice if they knew I treat HIV+ patients; (2) my staff does not want to treat HIV+ patients.

All above items coded 1=agree strongly, 2=agree somewhat, 3=disagree somewhat, 4=disagree strongly.

*PHIV*+ exposure: (1) Using your best guess, approximately what proportion of your patients do you think are HIV+? 0=none, 1=less than 1%, 2=1-2%, 3=3-5%, 4=more than 5%. (2) To the best of your knowledge, have you ever treated patients who are HIV+? 1=no, 2=probably no, 3=probably yes, 4=yes.

*Treat homosexuals*: I will not treat homosexuals because I am concerned about getting AIDS: 1=agree strongly, 2=agree somewhat, 3=disagree somewhat, 4=disagree strongly.

 $\label{eq:Ethical obligation: Dentists are ethically obligated to treat HIV+ patients: 1= agree strongly, 2= agree somewhat, 3= disagree somewhat, 4= disagree strongly.$ 

*Occupational risk:* The average of two items: (1) Would you estimate the risk associated with being stuck with a needle used on HIV+ patients as ... (2) Would you estimate the risk associated with providing dental treatment to HIV+ patients as ... Both items coded 1=low, 3=medium, 5=high.

asymptomatic HIV+ patients, new patients who have AIDS. The extent of the respondent's agreement with each of the items was measured by a Likert scale coded 1=disagree strongly, 2=disagree somewhat, 3=agree somewhat, and 4=agree strongly for each patient type. Subjects' responses to each of the four items were averaged to create a summary measure of their willingness to treat HIV-infected patients (alpha = 0.94). A rationale for the development and use of this summary measure of willingness to treat PHIV+ can be found in previous work by the authors (16).

Independent Variables. Independent variables were included in the models based on a review of the literature and previous data analysis (12). Principal axis factor analysis with varimax rotation was performed<sup>2</sup>. Four summary indices were created: safety/self-efficacy, colleague willingness, practice viability, and PHIV+ exposure. For each of the first three, summary indi-

<sup>2</sup>A listing of factor components and their factor loadings is available from the authors upon request.

| Selected Variables (Solo Practitioners) |                                |                                    |  |                            |  |  |
|---|--------------------------------|------------------------------------|--|----------------------------|--|--|
| Predictors                              | Male DDS ≤50 Years*<br>(n=291) |                                    | Female DDS ≤50<br>Years* ( <i>n</i> =69) |                            |  |  |
|   | Beta                           | (Sig T)                            | Beta                                     | (Sig T)                    |  |  |
| Step I:                                 |                                |                                    |  |                            |  |  |
| Safety/self-efficacy                    | -0.32                          | (<0.001)                           | -0.26                                    | (0.005)                    |  |  |
| Colleague willingness                   | -0.34                          | (<0.001)                           | 0.42                                     | (<0.001)                   |  |  |
| Practice viability                      | 0.15                           | (<0.001)                           | -0.09                                    | (0.330)                    |  |  |
| PHIV+ exposure                          | 0.19                           | (<0.001)                           | 0.18                                     | (0.058)                    |  |  |
| Treat homosexuals                       | 0.13                           | (<0.001)                           | 0.13                                     | (0.145)                    |  |  |
| Ethical obligation                      | -0.06                          | (0.136)                            | -0.17                                    | (0.072                     |  |  |
| Step II:                                |                                |                                    |  |                            |  |  |
| Number patients/week                    | 0.02                           | (0.615)                            | 0.07                                     | (0.358)                    |  |  |
| Occupational risk                       | -0.01                          | (0.917)                            | -0.05                                    | (0.539)                    |  |  |
|   | R <sup>2</sup> =               | $R^2 = 0.72$                       |  | $R^2 = 0.74$               |  |  |
|   | F <sub>8,282</sub> =91.        | F <sub>8,282</sub> =91.55, P<.0001 |  | $F_{8,60}$ =21.07, P<.0001 |  |  |

TABLE 2 Hierarchical Regression of Willingness to Treat HIV-infected Patients on Selected Variables (Solo Practitioners)

\*Zero-order correlations between response variable and each predictor and between predictors are available from the authors upon request.

ces were formed by calculating the mean value for their component items. For PHIV+ exposure, a unit-weighted index was formed: each of the component items was standardized to a mean of 0 and a standard deviation of 1, and the standardized component items were summed to yield a total score for each index. Also included among the independent variables were measures of willingness to treat homosexuals and ethical obligation to treat PHIV+.

## Results

Entire Sample (Table 1).  $R^2$ s for both gender models predicting willingness to treat PHIV+ are the same ( $R^2$ =0.72). For both models the two strongest predictors are colleague willingness and safety/self-efficacy. For male dentists, practice viability is a statistically significant, moderately strong predictor. In sharp contrast, it is the weakest, and a statistically nonsignificant, predictor for female dentists.

Solo Practice Settings (Table 2). For dentists in solo practice settings, practice viability continues to be less influential in the female model than the male model. For the solo female dentist, colleague willingness is the strongest predictor, nearly one-third stronger than the next strongest predictor, safety/self-efficacy. For solo male dentists, these two variables are of approximately equal—and greatest—strength. Relative to the solo male model, ethical obligation has more influence within the solo female model.

## Discussion

Study results affirm the importance of safety considerations; highlight the influential, and relatively unexplored, role of informal/formal collegial norms; and place practice viability considerations in perspective as predictors of male and female GPDs' willingness to treat PHIV+. The latter factor is a moderately strong predictor of willingness to treat PHIV+ among male GPDs, while it has virtually no predictive power among women GPDs. This variable seemingly measures aspects central to practice survival as a viable, ongoing business entity, i.e., concerns of staff and patients. Perhaps female private practitioners are more often employed in practices than their male counterparts, and under these work arrangements take less interest in the impact of economic/managerial forces on the practice. Although this data set did not obtain information on ownership/employment status, it did measure solo status. We assumed, almost without exception, that solo female private practitioners are owners of the practices in which they work, and that for them practice viability would be a strong predictor of willingness to treat PHIV+. This hypothesis was not supported. Although small sample n's, particularly in the solo female group, limit the ability of predictor variables to achieve statistical significance, when the size of each predictor's standardized beta-weight was considered, practice viability continued to be a weak predictor of willingness to treat for solo women GPDs, while it was moderate in strength for solo male GPDs.

In evaluating these results, the existence of a gender reporting bias is possible, but speculative. Evidence in the literature for such a bias is inconclusive (17,18). The study is limited, however, by the absence of behavioral indicator(s) of willingness to treat. Findings are restricted to a consideration of the dentist's expressed willingness to treat, which it has been argued can be considered a proxy measure for intention to treat (19).

Study results also are limited geographically to NYC. Although we are not aware of any reason to speculate on regional or urban/rural differences in HIV-related attitudes and orientations (20), any generalization should be carried out with caution. Nor are we aware of any reason to speculate on differences based on location in high/low HIV-prevalence areas (21). Nevertheless, no claims are made to the applicability of our results to clinicians in nonurban areas, where, in general, HIV prevalence rates are lower. Previously, we noted (9) that this sample has a high percentage of solo female GPDs relative to national data. In terms of other basic demographic trends, sample characteristics conform to reported national genderbased trends: e.g., women dentists are younger, more racially diverse, and see fewer patients per week than their male counterparts (1-3).

While the above sample restrictions limit our ability to generalize with certainty to other areas of the country, they do not compromise our ability to contrast male and female differences within this sample. In fact, we would argue that the other sample limits in place during this analysis, e.g., age and private general practitioner status, serve to enhance the analysis by controlling for aspects of the potentially confounding factors: career stage, occupational specialty, and practice organization.

Findings support testing predictive models regarding practitioners' willingness to treat PHIV+ in a variety of settings with a variety of subsamples. Although the basic predictive power of the models remains virtually constant under all circumstances presented here, the relative influence of predictors varies. In addition, the findings have implications for the design of interventions aimed at increasing dentists' willingness to treat PHIV+. They suggest that communications with dentists aimed at influencing willingness to treat PHIV+ consider the characteristics of the clinician subgroups to which they are directed.

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