

ORIGINAL RESEARCH

Hours Lost to Planned and Unplanned Dental Visits Among US Adults

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Abstract

Introduction

Poor oral health is associated with lost hours at work or school, which may affect a person's productivity. The objective of our study was to estimate work or school hours lost to dental visits among adults aged 18 and older by the types of visits (emergency or unplanned; routine, planned, or orthodontic; or cosmetic) and to determine the factors associated with hours lost.

Methods

We used the most recent Oral Health Supplement data, from the 2008 National Health Interview Survey (NHIS), to estimate the total hours lost at work or school for dental visits among adults in the United States. The associations of the hours lost in unplanned and planned dental visits with socioeconomic characteristics, oral health status, and affordability were calculated. We used χ^2 tests and logistic regression to determine associations at $P < .05$.

Results

An average of 320.8 million work or school hours were lost annually for dental care in the United States, of which 92.4 million hours were for emergency (unplanned) care (0.99 h/adult), 159.8 million for routine (planned) care or orthodontic care (1.71 h/adult), and 68.6 million for cosmetic care (0.73 h/adult). Adults with poor oral health were more likely to lose one or more hours in unplanned dental visits (OR = 5.60; 95% confidence interval [CI], 3.25–9.63) than those who reported very good oral health. Not being able to afford dental care was positively associated with more work hours lost in unplanned care (odds ratio [OR] = 2.56;

95% CI, 1.76–3.73). Compared with Hispanic adults, non-Hispanic white adults (OR = 2.09; 95% CI, 1.40–3.11) and non-Hispanic Asian adults and adults of other races/ethnicities (OR = 1.91; 95% CI, 1.06–3.47) were more likely to lose any hours for planned care. Consistently, those with more than a high school education were more likely to lose any hours in planned care (OR = 1.39; 95% CI, 1.06–1.83) than those with a high school education or less.

Conclusions

Dental problems result in hours lost from work and may adversely affect a person's productivity. There is disparity in lost hours at work by race/ethnicity and dental care affordability.

Introduction

The most common reason for adults to forgo dental care is cost (1). Unmet oral health needs not only incur costs to treat associated diseases but may also affect a person's productivity and income. Productivity losses may be in the form of work hours lost for dental visits, emergency department visits, and potential life years lost to premature death. Among children and adults, the effects of oral disease may include school days lost, challenges in learning, social stigma, or impaired nutrition and health (2).

One study that used data from the 1989 National Health Interview Survey (NHIS) measured time missed from work and school because of dental problems or dental visits among adults (3). That study found that employed people missed 164 million work hours (1.48 h/person) for dental visits. A longitudinal study found that 26.4% of working adults in their sample reported an episode of dental-related work loss with a mean loss of 1.26 hours per person per year (4). The objective of our study was to estimate work or school hours (hereinafter hours) lost for dental visits by type of visits. We categorized visits as unplanned (emergency care), planned (routine and orthodontic care), and cosmetic. We also examined factors associated with time lost.



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Methods

We used secondary data from the 2008 National Health Interview Survey (NHIS) core module and oral health supplement for adults aged 18 or older (5). NHIS, conducted by the Centers for Disease Control and Prevention, is a principal source of data on the health behaviors of the civilian, noninstitutionalized household population of the United States. Since 1957, along with the core survey, NHIS included optional oral health supplements in years 1989, 1999, and 2008. For this study, we merged 2008 NHIS family, person, and sample adult files.

Outcome and explanatory variables

To determine hours lost for unplanned, planned, and cosmetic dental care, the survey asked the following 3 questions: "Please tell me how many hours of work or school were missed in the past 6 months for:

- emergency dental care where you saw the dentist within 24 hours or as soon as was possible,
- planned routine dental or orthodontic care,
- or [planned] tooth whitening or other cosmetic procedures."

These questions were asked only of adults who visited a dentist in the past 6 months. Therefore, of the total 21,781 participants, 8,713 were eligible to answer and made up our study sample.

Possible responses for hours lost in each type of dental care were none to less than 1 hour, 1 hour to less than 3 hours, 3 hours to less than 5 hours, 5 hours to less than 7 hours, and more than 7 hours; "did not work or go to or school"; and "did not have this type of dental care." Responses of "did not know," "refused to answer," or "could not be ascertained" were set to missing because of our small sample size. The outcome variables were the proportions of people who lost hours. To obtain the average number of hours lost, we aggregated the midpoint hours from individual responses. For those with a response of 7 or more hours, we assumed 7 hours lost. To be consistent with a previous study that reported annual work hours lost (3), we doubled our estimate of total hours to obtain an annual estimate.

For the bivariate and the multivariate analyses, our primary variables of interest were hours lost because of unplanned or planned dental care. Other variables were age in years (18–24, 25–44, 45–64, and ≥65); sex; education level (high school or less education, more than high school education); race/ethnicity (Hispanic, non-Hispanic white, non-Hispanic black, non-Hispanic Asian, or other); annual family income (<\$35,000, \$35,000–\$74,999,

\$75,000–\$99,000, or ≥\$100,000); oral health condition or status (very good, good, fair, poor); and dental care affordability (yes/no).

Statistical analysis

Data management and analyses were conducted by using STATA, version 13 (STATA Corp) to account for survey weighting and to adjust the variance for the multistage, clustered survey design. Sampling weights provided by the NHIS data set were used to generalize the estimates to the US civilian, noninstitutionalized adult population.

χ^2 tests and multivariate regressions were conducted to determine the factors associated with loss of hours for both outcomes, hours lost for unplanned and planned dental care. We wanted to know whether the factors that affect losing any hours versus losing none and factors that affect losing less than one hour versus more than one hour were different. Hence, for each of the outcome variables, we created 2 sets of logistic regression models. We used 4 logistic regression models to estimate the factors associated with hours missed for unplanned and planned dental care. Models 1 and 3 compared those who lost any hours with those who did not lose any hours for unplanned and planned care, respectively. Models 2 and 4 compared those who lost less than 1 work hour to those who lost 1 hour or more for unplanned and planned dental care, respectively. All models excluded adults who did not work or go to school. Estimates with more than 30% relative standard error were considered statistically unstable. $P < .05$ was considered significant.

Results

Among the 8,713 adults who visited a dentist in the past 6 months and were asked about the number of hours lost for dental care, 55% were women, 83% were aged 18 to 64 years, and 9% were of Hispanic origin. Almost 80% had more than a high school education, and 49% had annual incomes below \$75,000. Most (92%) could afford dental care, and 83% reported their oral health status as very good or good.

Among adults who visited a dentist in the past 6 months, 320.8 million hours were lost because of dental visits that were unplanned, planned, or cosmetic. A total of 92.4 million hours (0.99 h/adult) were lost for unplanned visits (29% of total time lost); 159.8 million work hours (1.71 h/adult) were lost for planned visits (50% of total time lost); and 68.6 million work hours (0.73 h/adult) were lost for cosmetic dental visits (21% of total time lost). For every 1,000 adults, 986 hours were lost for unplanned care, 1,706 hours for planned care, and 732 hours for cosmetic care. In

this article, we focused our bivariate and multivariate analyses on unplanned and planned dental care visit data.

Emergency or unplanned dental care. A total 8,635 adults had a nonmissing response to the question about unplanned dental care in the past 6 months. Among these, 63.1% reported losing less than 1 hour, 4.4% reported losing 1 or more hours, 20.8% did not need this type of care (Table 1), and those remaining did not work or go to school. Overall, 67.5% of the population lost any hours in seeking unplanned dental care.

Adults aged 25 to 44 years (6.5%) and Hispanic adults (6.3%) lost 1 hour or more for unplanned care. A larger proportion of those with more than a high school education (68.7%) and those with annual incomes above \$100,000 (73.4%) lost any hours seeking unplanned dental care compared with those with less than a high school education (63.2%) or those with annual incomes below \$35,000 (59.9%). Approximately 13% of adults with poor oral health and 14% of adults who could not afford dental care lost an hour or more for unplanned dental care compared with those with very good oral health (2.2%) or those who could afford dental care (3.6%) (Table 1).

Routine, planned, or orthodontic dental care. A total of 8,630 adults had a nonmissing response to the question about planned dental care. Among these, 63.9% reported losing less than 1 hour in the past 6 months, 17.1% reported losing 1 or more hours, 5.8% did not need this type of care (Table 1), and the remainder did not work or go to school. Overall, 81% of the population lost any hours in seeking planned dental care.

Approximately 19% of men and nearly 20% of those aged 25 to 44 and 45 to 64 lost 1 hour or more compared with 15.4% of women and 4.8% of those aged 65 or older. Among adults with annual incomes less than \$35,000, 11.7% lost 1 hour or more, and 12.4% of those with high school education or less lost 1 hour or more compared with 23.3% of adults with annual incomes over \$100,000 and 18.4% of those with more than high school education. Among those who reported very good oral health, 85% lost work hours compared with 68% of those who reported poor oral health. Furthermore, 21.7% of those who could not afford dental care lost an hour or more in seeking planned care compared with 16.8% of those who could afford dental care (Table 1).

Regression results

Unplanned dental care. When comparing those who lost hours with those who did not, women had greater odds of losing any hours in seeking unplanned care (OR = 1.21; 95% CI, 1.07–1.36) compared with men (Table 2, Model 1). Adults aged 45 to 65 (OR

= 0.62; 95% CI, 0.39–0.98) and over 65 (OR = 0.19; 95% CI, 0.09–0.39) had lower odds of losing 1 or more hours for unplanned dental care than those aged 18 to 24 years (Table 2, Model 2).

In both models, affordability was a strong predictor of hours lost in seeking unplanned care. In Model 1, those who could not afford dental care had greater odds of losing hours (OR = 1.64; 95% CI, 1.24–2.15) than those who could afford dental care. In Model 2, those who could not afford dental care (OR = 2.56; 95% CI, 1.76–3.73) or those who reported good (OR = 2.18; 95% CI, 1.51–3.16), fair (OR = 4.15; 95% CI, 2.69–6.39) or poor oral health (OR = 5.60; 95% CI, 3.25–9.63) had greater odds of losing 1 or more hours for unplanned care than those who could afford care or had very good oral health.

Planned dental care. Sex, age, race/ethnicity, education, income, oral health, and dental care affordability were predictors of hours lost for planned care. In Model 3, women were more likely to lose hours than men (OR = 1.51; 95% CI, 1.20–1.90); however, when women sought care, they were less likely to lose more hours than men (OR = 0.79; 95% CI, 0.68–0.92) (Table 2, Model 4).

Compared with Hispanic adults, non-Hispanic white adults (OR = 2.09; 95% CI, 1.40–3.11), non-Hispanic Asian and other race/ethnicities (OR = 1.91; 95% CI, 1.06–3.47) were more likely to lose any hours for planned care (Table 2, Model 3). Consistently, those with more than a high school education were more likely to lose any hours (OR = 1.39; 95% CI, 1.06–1.83) than those with high school or less.

In Model 4, those aged 65 or older were less likely to lose more hours than those aged 18 to 24 (OR = 0.35; 95% CI, 0.24–0.50). In addition, those with incomes more than \$100,000 were more likely to lose more hours in seeking planned care compared to those with incomes less than \$35,000 (OR = 1.63; 95% CI, 1.26–2.10). Furthermore, those in fair health (OR = 1.37; 95% CI, 1.09–1.73) or those who could not afford care were more likely (OR = 1.32; 95% CI, 1.01–1.72) to lose more hours in seeking planned care than those with very good health or those who could afford care.

Discussion

This study provides data on the number of work hours missed in a year for unplanned dental care (92.4 million hours), planned dental care (159.8 million hours), and cosmetic care (68.6 million hours) by using the most recent NHIS data (5). Disparities by socioeconomic factors exist in work hours lost among adults. To the best of our knowledge, ours is the first study since 1992 (3) to estimate hours lost for dental visits. In addition to providing data on