

## Cognitive Testing Results of Oral Health Questions

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<b>Testing Agency: NCHS</b>	<b>Survey Title: NHANES</b>
<b>Test Date: May, 2006</b>	<b>Survey Year: 2007</b>
<b>Principal Investigator: Kristen Miller</b>	<b>Universe: Population</b>
<b>Evaluation Type: Cognitive Interview</b>	<b>Field Mode: Interviewer Administered paper</b>
<b>Pre-Testing Mode: Interviewer administered paper questionnaire</b>	<b>Documentation: Video-tape, final report</b>
<b>Sponsor: Division of Oral Health/NCCDPH/CDC</b>	

### Overview

This report describes research designed to evaluate oral health questions proposed by the Division of Oral Health at the National Center for Chronic Disease Prevention and Health Promotion, to be used on the National Health and Nutrition Examination Survey. The evaluation is based on 40 in-depth, semi-structured cognitive interviews that were conducted in the Questionnaire Design Research Laboratory (QDRL) at the National Center for Health Statistics (NCHS). Three rounds of interviews were conducted. The first round, consisting of 21 interviews, was conducted testing the initial set of proposed questions in English. Questions were then modified based on findings of Round 1 and then retested in 9 additional English-language interviews and in 10 Spanish-language interviews.

The primary objective of the cognitive testing was to identify any potential underlying problems or difficulties in the question-response process that could lead to measurement error. Examples of problems include unclear terms, inadequate response options, overly-complex question structures and respondents' inability to accurately recall information. A secondary objective was to examine the ways in which respondents interpreted questions and the ensuing types of experiences they considered as they formed their response. Examining interpretive processes uncovers potential sources of response error and assesses how well each question measures the intended analytic concept.

The majority of this report is dedicated to presenting a question-by-question analysis of interview findings. Discussion of questions includes descriptions of how respondents interpreted question intent, explanations of why and how the question failed and the recommended revision for question improvement. The next section describes the methodology of cognitive interviewing, outlines interviewing procedures, and discusses how respondents were chosen to participate. The third section of the report reviews findings. Appendix A contains the initial set of tested questions. Appendices B and C contain the recommended set of questions in English and Spanish, respectively.

## **Methods**

Sample. The NCHS Cognitive Methods Staff and Research Support Services together conducted and analyzed data from 40 in-depth, semi-structured cognitive interviews. Thirty interviews were conducted in English and 10 interviews were conducted in Spanish. English-speaking respondents were recruited from among individuals responding to an advertisement in the Washington Post. Spanish-speaking respondents were recruited in a community center. Potential respondents were men and women with a broad range of oral health conditions and gum disease, including some respondents with no known problems. Respondents were given 40 dollars upon completion of the interview. The final sample consisted of 19 men and 21 women between the ages of 21 and 59. Twenty-two of the respondents identified themselves as African American, 7 identified as white, 10 as Hispanic and 1 as multiracial. Among the Hispanic respondents, 8 were Mexican, 1 was Peruvian and the other was Guatemalan. Twelve of the forty respondents reported an annual household income of \$30,000 or above. Twenty-two respondents held at least a high school diploma; five held at least a bachelor's degree.

Interviewing procedures. Interviews in English were conducted face-to-face in the NCHS Questionnaire Design Research Laboratory. Interviews in Spanish were conducted in a community center. The length of the interview ranged from 45 minutes to an hour. For the interview, respondents were asked each item and were then asked to explain their answer. Typical follow-up questions included, "How so?" and "Why do you say that?" If a respondent's answer seemed vague or unclear, the interviewer asked: "Can you give an example to describe what you are talking about?" The culminating text from the interview related how respondents understood or interpreted each question and also outlined the types of experiences and behaviors respondents considered in providing an answer.

For Spanish interviews, questions were also asked specifically to make sure that translation choices worked well, that is, that terms the translation team chose as the best options were actually being understood by respondents as intended.

Analysis. Analysis was conducted from detailed notes and review of video recordings of the interviews. Spanish-language interviews were not video recorded. The text was collated by question so that comparisons could be made systematically across all respondents.

Two levels of analysis were performed. First, distinct occurrences in which respondents misunderstood terms or expressed difficulty or confusion while answering were noted. Second, the following interpretive patterns were examined: 1) respondents' interpretations of key words, 2) the types of behaviors that participants counted as positive responses to particular questions, and 3) the degree of variation among respondents' interpretations.

To analyze the interpretive aspects of question response, the constant comparative method, a standard method for analyzing qualitative data (Lincoln and Guba, 1985; Strauss and Corbin, 1990; Creswell, 1998), was employed. By comparing across all cases, individual responses were categorized according to a respondent's particular interpretation of a question. From these categories, interpretive aspects (e.g. the consistency and degree of variation) of each question were examined. Additionally, by comparing and generating categories, analytic themes emerged within particular questions, and these themes could then be compared across questions.

## Question by Question Review

**Another common problem with the mouth is gum disease. By gum disease we mean any kind of problem with the gums around your teeth that lasts for at least two weeks – except for problems caused by injury or problems caused by partials or dentures.**

### 1. Do you think you have gum disease?

Yes       No       Don't know

Because of the question's subjective quality, no outright errors were identified in respondents' answers. Nine respondents answered *no*, ten respondents answered *yes*, and one respondent (even when pushed) answered *don't know*. Differences in the ways in which respondents came up with their answers were, however, identified, and some respondents experienced difficulty answering the question because the introductory clause was somewhat limited in describing the specific symptoms that respondents should associate with gum disease.

The differences in the ways respondents came up with an answer depended primarily on whether or not they had seen a dentist in the recent past. Those respondents who had not been to the dentist in many years experienced the most burden responding. To answer, those respondents were required to use the provided description of gum disease while considering their own symptoms and then speculate on whether or not they actually had the condition. A few of these respondents provided particularly tentative answers (saying "possibly" or answering *don't know*) because, despite the introductory clause, they were not entirely sure what symptoms should count as gum disease. One man who had difficulty answering, for example, had not seen a dentist in at least five years and because he was "not a professional," said he needed a dentist's opinion to answer with confidence. In the end, he answered explaining that, because the question specifically asked *do you think you have gum disease?* as opposed to *do you have gum disease?*, he was able "to make a guess;" he answered *yes* based on the fact that his gums bleed when he brushes his teeth. Another respondent stated that she was not sure what to answer because she recently had experienced some swelling around a particular tooth, but that the condition seemed to have improved. It was not clear to her whether or not she should count this flare up as gum disease.

On the other hand, those respondents who were easily able to answer the question were those respondents who had been to the dentist and who had been told directly by a dental professional that they had no problems. For example, as one woman who had seen a dentist within the past month explained: "I really don't know what that [gum disease] is. All I know is I don't have it because my dentist would have told me if I did." For these respondents, it did not matter if they understood the introductory definition because a dental professional had indirectly weighed in on this assessment.

Those respondents who had been diagnosed with some kind of condition did not necessarily have an easy time answering the question. Some respondents had been treated, for example with scaling or by having teeth pulled, but were unsure if their condition was cured with the treatment. Additionally, unless a respondent was told specifically by their dentist that they had gum disease (as opposed to having another condition such as gingivitis or in need of a deep cleaning), they needed to decide what should or should not count as *gum disease*. For example, one respondent who had 16 teeth pulled due to decay—as recently as two months ago, stated that her dentist never told her that she had gum disease (only that her teeth needed to be pulled) and she ultimately answered *no* to the question.

**Revision:**

To provide respondents with a clearer definition of what symptoms to include, the introductory statement was changed from the general phrase “any kind of problem” to include tangible descriptions. The wording came directly from phrases that various respondents used when describing their own symptoms.

**Gum disease is a common problem with the mouth. People with gum disease might have bleeding in the gums around the teeth, swollen gums, receding gums, or sore or infected gums. The condition lasts for at least two weeks and is not caused by injury or problems with partials or dentures.**

Most respondents answered the question with little difficulty and referred to the list of descriptions along with a diagnosis from their dentist to support their answer. However, despite the additional information, for a few respondents, the question continued to elicit some apprehension in providing an answer. One respondent, for example, answered “I might” and explained that he recently had a tooth extracted and that he has also noticed some receding gum lines; however, his dentist has never told him explicitly that he has gum disease. Unlike the previous version, respondents considered and were able to cite specific problems with their gums. For example, one respondent explained, “I do have receding gums and from time-to-time I do having bleeding...though none recently.” For this version of the question, much of respondents’ indecision centered around the amount or the degree of bleeding or swelling required for them to count their condition as *gum disease*. To this extent, the question remains subjective and is dependent on how respondents interpreted the seriousness of their symptoms and what they believed the question was asking.

Additionally, when probed, most Hispanic respondents did not know the meaning of *receding gums*. In hindsight, it is possible that they may know the concept but not the specific terminology. No Hispanic respondent, however, described receding gums in the course of the entire interview, and this did not appear to impact the validity of their answer. This terminology problem did not appear in the English interviews, though it is likely that English-speaking interviewers did not specifically probe respondents on the meaning of this term.

**2. Has a dental professional ever told you that you have lost bone around your teeth?**

- Yes       No       Don't know

No problems were identified with this question. Compared to the previous question, this question was straight forward and much easier for respondents to answer. Three respondents answered yes and, upon probing, described the circumstances surrounding the diagnosis of bone loss. One woman, for example, stated that her dentist told her in 1999 that she was losing bone and that this was the reason for the teeth loss that she was experiencing. She explained that she was having bone density problems and that she now must take calcium supplements and eat a lot of dairy products. Except for a couple respondents who paused at first upon hearing the question, all other respondents quickly answered no with certainty.

None of the Spanish speaking respondents answered Yes. The question was easy to answer and presented no problems for them.

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**3. Have you ever had scaling, root planing, surgery or other treatment for gum disease?**

- Yes       No       Don't know

Primary difficulty with the question centered around problems with terminology. Specifically, respondents did not know what types of procedures should count and not count as surgery. Consequently, the types of procedures that were included varied across respondents. For example, several respondents included their root canals as having surgery, many others included teeth being pulled, and a few others considered the removal of wisdom teeth. On the other hand, some respondents considered the term surgery to mean a relatively serious procedure that would include the actual cutting and sewing up of the gum. Very few respondents were familiar with the terms *scaling* and *root planning*, and so inclusion of these terms in the question did little to clarify what should be counted as surgery.

While a few respondents could easily answer because they remembered that they had scaling, others were unfamiliar with the term, adding another layer of confusion for some respondents. For example, one respondent wondered if this included the procedure done at her regular checkup when the dentist scrapes around her teeth and prods up underneath her gums. A few other respondents stated that they believed that they did have the procedure done, but were not entirely sure what the procedure was called. One respondent, for example, initially answered *no*, but then changed to *yes*. She had scaling just last month, though it took her a moment to recall the name of the procedure. Upon probing she described the dentist going into the gum, scraping out dead tissue, rinsing it out with

peroxide. Additionally, one respondent stated that he believed that he had the procedure done about four years ago, but that he thought of it as “deep cleaning.” He was unsure of the reason it was performed, but that his dentist said it was necessary and that it was very painful.

**Revision:**

The question was split into two parts to provide additional clarification to the concept of surgery as well as to associate the phrase deep cleaning with scaling and root planning. It was hoped that by placing the surgery question first, respondents would be cued in to the fact that scaling and root planning were not components of a regular check up.

**Have you ever...**

**...had surgery to clean underneath your gums?**

Although improved from the original version, two types of problems remain with this version of the question. First, a couple respondents were not certain if this procedure was part of the regular dental check-up. Indeed, one respondent answered yes to this question, describing the procedure by which the dentist prodded around her gums during a regular check up. Although most respondents ultimately answered no, this evidence suggests the possibility of false positive reports especially among poorer, less educated respondents who have also had little dental care. Second, a couple of respondents were unsure whether or not to include root canals. One Hispanic respondent, in fact, answered yes citing her root canal.

**Recommendation:** The parenthetical statement, (do not include root canals or cleanings done at a regular check-up), could be added for clarification.

**Have you ever...**

**...had scaling or root planning, sometimes called deep cleaning?**

Even more than the previous question, respondents found this question difficult to answer. *Deep cleaning* was sometimes confused with cleaning a tooth in preparation for a filling or even part of a routine check up. A few others indicated that they thought this question was asking about the same procedure as in the previous item, while another respondent believed this referred to root canal.

For Spanish-speaking interviews, the interviewer kept a copy of the English terminology for *scaling* and *root planning* in case a respondent had been told the English term for the procedure by the dentist. However, this was never raised by a respondent.

**Recommendation:** As in the item above, the parenthetical statement, (do not include root canals or procedures done at a regular check-up), could be added for clarification.

**4. Have you ever had any teeth that have become loose by themselves without some injury (not baby teeth)?**

- Yes       No       Don't know

A few respondents reported erroneous answers when they included incidents where a tooth became loose because of an injury. They either misunderstood the question or did not hear the word *injury*. For example, one woman included the time that her teeth came out when her jaw was broken and another respondent counted the time that he lost a tooth while playing basketball—he apparently bit a piece of hard candy while making a shot. Similarly, another respondent included the time when his three front teeth became loose after being punched in the mouth. He said that he heard the question as asking whether they became loose *because* of some injury.

Another problem also arose because of the parenthetical statement “not baby teeth” which, in at least one case, caused a respondent to consider only teeth that had become *as loose as* baby teeth, that is, to the point of falling out. In this case, the respondent did indeed have loose teeth, but she believed that the question was asking about only those extreme circumstances and responded *no*. The question was also tested a few times without reading the parenthetical clause and, in these interviews, no respondents thought to include baby teeth.

**Revision:**

In the revised question, wording was changed to make the “without injury” more prominent. Additionally, to simplify the question, the parenthetical phrase was removed by integrating the word *permanent* into the question.

**Have you ever...**

**...had any permanent teeth that became loose on their own, without an injury?**

Despite the word *permanent*, two respondents answered yes thinking of loosing their baby teeth. Additionally, one Spanish speaking respondent answered yes, referring to a tooth that became loose as a result of domestic violence. Her husband hit her and the tooth became loose, and the dentist decided to remove it. After this explanation, the interviewer reread the question to the respondent who, then, stated that she should have answered No. Additionally, one Spanish-speaking respondent who answered yes to this question was actually referring to a tooth that broke in two without injury, not an entire tooth becoming loose. She was once having a drink of water, felt something strange in her mouth, and spit out a piece of a tooth. It is not clear whether this response should be deemed an error.

**Recommendation:** The parenthetical clause, (not baby teeth), should be included for clarification.

**5. How often during the last seven days did you use mouthwash or any dental rinse product?** \_\_\_\_\_ [numeric response, lower limit=0, no upper limit]

The primary problem with this question is that the stem of the question (i.e. how often) was not consistent with the open response category. That is, respondents did not understand that the question was asking for a specific number, but rather a rate. Consequently, respondents answers were “everyday,” “every once in a while,” or “not that often.”

No problems with terms were identified, and most respondents referred to commercial products such as Listerine and Scope. Those respondents who used mouthwash regularly were easily able to recall the number of times with confidence. Those who use it intermittently were more inclined to estimate; few respondents actually attempted to recall with accuracy and counted the exact number of times throughout the past week.

**Revision:**

The question was re-written so that the stem was consistent with the response category, specifically, so that respondents were cued to provide the exact number of times that they used mouthwash.

**In the last seven days, how many times did you...  
... use mouthwash or other dental rinse product?**

Although most respondents did provide a number as opposed to a rate with the revision, a few respondents did respond by saying “everyday.” However, with the revision, it was much easier for the interviewer to repeat the question placing an emphasis on *how many times* or to ask the respondent to clarify what everyday meant, for example, by asking if that meant 7 times in the past seven days. The question worked equally well in the Spanish interviews as in the English.

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**6. How often during the last seven days did you use dental floss, tape or interdental brush to clean between your teeth, other than just to remove food particles stuck between your teeth?** \_\_\_\_\_ [numeric response, lower limit=0, no upper limit]

Like the previous question, the stem of the question is not consistent with the response category, and respondents were not aware that they were being asked to supply a number as opposed to a rate. Consequently, respondents were inclined to respond by saying “everyday” or “not very often.” Additionally, most respondents were unfamiliar with interdental brushes and in several circumstances this lack of familiarity caused respondents to misunderstand the question. One man, for example, answered *everyday*, but upon probing it became clear that he never flosses. Because he heard the word brush in the question, he had understood the question as asking how often he brushes his teeth.

For a couple of respondents, the clause (other than just to remove food particles stuck

between your teeth) was confusing because they believed that their regular flossing routine was, specifically, to remove food particles; it did not occur to them that some people floss immediately after a meal to remove food particles such as a piece of corn. Consequently, because of the clause, these respondents were more inclined to erroneously answer *no*.

**Revision:**

For the revised question, inter-dental brush was omitted because of the confusion. Additionally, the clause regarding food particles was omitted because of the confusion. Finally, because the question was placed within the context of other routine dental practices like brushing and using mouthwash, it was surmised that respondents would also see this question as asking about regular hygiene (as opposed to removing food particles after a meal).

**In the last seven days, how many times did you...  
... use dental floss or dental tape?**

The revised question worked well in both English and Spanish. That is, no cases of error were identified, and respondents could provide an answer with relative ease. Although most respondents had never heard of dental tape, everyone was able to surmise that it was a form of dental floss, and this unknown term did not impact their response.

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**7. How would you rate the health of your gums?**

Excellent    Very good    Good    Fair    Poor    Don't know

Like the first question, the question is subjective and, therefore, no outright errors were identified. Additionally, like the first question, a few respondents did not want to provide an answer because they did not deem themselves knowledgeable of gum health. For example, one respondent who initially refused to answer on the basis that he was “not an expert,” ultimately answered *fair* when pushed, and he explained that he would answer in the middle because that was a *safe* answer.

Though the question specifically asked about the health of gums, respondents typically considered their teeth and gums, and answers were based on a number of different themes. For example, many respondents appeared to base their answer on an existing condition, including needing to have teeth pulled, having gingivitis, inflamed gums or that their teeth bleed when brushed. Two respondents based their answer on the fact that, in the past, they had teeth pulled that were now missing—other than the missing teeth, their gums were in good shape. Other respondents based their answer on their perception of the quality of upkeep that they give to their teeth and gums. For example, one respondent answered very good as opposed to excellent because he does not floss every day. Another respondent answered good only because she had not been to a dentist in a year and a half—other than

that, her teeth and gums were in good shape.

**Revision:**

Because no major problems were identified with the question, little modification is recommended. However, because all of the respondents seemed unable to consider only their gums, the question was modified to also include teeth.

**Overall, how would you rate the health of your teeth and gums? Excellent, Very Good, Good, Fair or Poor?**

No differences in the English-speaking interviews were identified in the revised version. Most Spanish-speaking respondents appeared to focus on their teeth without referring to their gums, for example, by explaining their answer by stating that they are missing some teeth or that they have cavities that need to be filled.

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**8. "During the past three months, have you noticed that you have a tooth that doesn't look right?"**

Yes       No       Don't know

Six of the 21 first-round respondents answered *yes* to this question. All but one of the respondents indicated that this was a tooth that they felt needed to be pulled. One woman stated that she had a couple teeth that were collapsed, another stated that her tooth was "blackened and clearly unhealthy," and another stated that it was cracked and felt unusual. Another respondent explained that she had a broken molar, but did not indicate that it necessarily needed to be pulled.

Some of the other respondents, although they eventually answered no, wondered if they should report yes. For example one woman had a tooth that had grown in crookedly; another wondered if a chipped tooth would count. Additionally, a few respondents stated that they simply do not look at their teeth so have no way of knowing.

Spanish-speaking respondents understood the question in much the same way, although, they seemed to interpret the question as asking more strictly about appearance and cited discoloring as the main potential problem. For example, one Spanish-speaking respondent who answered yes, explained that he has one tooth that has begun to look spotted. The dentist told him that the enamel may be worn out or that some strong medication he took may be the cause. Another Hispanic respondent who answered yes explained that she has the impression her teeth are getting narrower, as though they were wearing out and losing width. She says she does not know if it relates to her gums but it seems as though the teeth are looking to be further apart from each other.

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**9. Overall, would you rate the health of your mouth, teeth, and gum, as excellent, good, fair or poor?**

- Excellent     Good     Fair     Poor

Almost all of the respondents saw this question as being repetitive of the previous question. Specifically, they thought of both questions as asking about teeth and gums. Consequently, respondents based their answers on the same criteria as the previous questions (i.e. their condition and the quality of their dental hygiene).

The primary difference noted by respondents was that there was no middle response category. This was especially noticed by those few respondents who did not feel comfortable providing an answer, and who specifically looked for a middle category in order to provide the “safe” response.

**Revision:**

See discussion of the previous question.

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**10. Have you had painful gums?**

- Very often     Fairly often     Sometimes     Hardly ever     Never

There are two major problems with this question. First, the stem of the question is not consistent with the response categories. Specifically, the question itself is a yes/no question, but the categories are rates. Consequently, respondents—after they answered either yes or no—needed to be directed into one of the categories.

Second, because there is no reference period, respondents are not sure of the time frame to consider. Lack of a reference period makes it essentially impossible for them to calculate a rate or establish some kind of an estimate. For example, a couple of respondents asked “When? In my whole life?” Another respondent wondered if she should include the time that her wisdom teeth were removed because, at that time, her gums were in pain. Consequently, to a certain degree, the final answer that respondents gave appeared to be somewhat inconsistent. Of all the interviews, only one person responded with an answer of *fairly often*; all others answered either *sometimes*, *hardly ever* or *never*. Even the respondents who clearly had serious dental problems and were currently in need of teeth to be pulled answered *sometimes*. Additionally, several other respondents who answered *hardly ever* indicated that they answered this way because they do not actually remember

ever having gum pain but figured that at some point they must have experienced it.

**Revision:**

The question was re-written so that respondents were given a reference period from which to consider their answer and to also make the stem of the question consistent with the response.

**In the past week, have you...  
... experienced pain in your gums?**

In both English and Spanish interviews, no issues or problems emerged in the revised question. The question was understood and easily answered by all respondents. Although many respondents had experienced painful gums in the past, only one respondent was experiencing gum pain within the past week. That respondent explained that she currently has redness around a tooth as well as a dull throbbing ache.

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**11. Have you noticed your gums being red or swollen during the past week?**

- Yes       No

Essentially no problems were identified with this question. Because the question contains a specific description and includes a short reference period, all respondents were easily able to answer the question. One possible case of error is the respondent who answered yes, referring to the time (within the past week) that she ate a piece of corn which got stuck between her teeth. The other respondents who answered yes to the question described their condition occurring around a specific tooth and causing some pain. The question worked the same in Spanish as it did in English.

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**12. How likely is it that you will get gum disease? Is it very likely, somewhat likely, or a fifty-fifty chance, somewhat unlikely, or very unlikely?**

- Very likely  
 Somewhat likely  
 Fifty-fifty chance  
 Somewhat unlikely  
 Very unlikely

The major problem with the question is that it assumes that the respondent does not have or does not suspect that they already have gum disease. Those respondents with the condition

simply did not know how to answer other than by stating, “I already have it” or “it’s not likely or unlikely because I do have it.” Interestingly, a couple respondents with gum disease interpreted the question generically, as *how likely is it that one will get gum disease?* This is a reasonable interpretation given that, to them, the intended interpretation makes little sense.

Additionally problematic, for those without gum disease, it was extremely difficult for respondents to calculate an answer because they did not believe that they knew all of the factors that contribute to gum disease. As one person stated, “how am I to know? I’m not a dentist!” Other respondents were left to conjecture and considered their past dental records and hygiene habits. A couple others thought of their family histories. No respondent felt entirely confident in their answer and did not perceive their answers to be meaningful.

Because of the numerous problems, the question was dropped after the first round of testing.

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**13. How long has it been since you last visited a dentist or dental clinic? (Includes visit to a dental specialist, such as orthodontist)**

- within the past year (1 to 12 months ago)
- within the past 2 years (1 to 2 years)
- within 5 years (2 to 5 years)
- five or more years
- Don't know/never/refuse.

Almost all respondents who had last been to the dentist over a year ago had difficulty figuring out which response category to use. The concept of within the past year was not intuitive, and most respondents had to talk their answer out with the interviewer by first stating in their own words when they had been to the dentist and then finding the appropriate response category. For those who had never been to a dentist, the question posed the most difficulty because the response options are geared toward those who have seen a dentist. In particular, because it is written to those who have been to the dentist most recently, it was somewhat awkward for those who rarely go or who have never had a dental exam.

No respondent had difficulty remembering when they had been to the dentist nor did anyone have definitional problems regarding what to include and what not to include. While the parenthetical clause did not contribute to response error, it was not always clear to interviewers when they should read the clause. Additionally, there was no evidence to suggest that the clause was necessary.

**Revision:**

To attend to the confusion over the response categories as well as to make the question less awkward for those who have not recently seen a dentist, the question was divided into two questions. The first question screens out all respondents who have been to the dentist in the past year while the second question more accurately determines the year of the last visit for those who have not recently seen a dentist.

**In the past 12 months, that is, since [month, year], have you visited a dentist or a dental clinic? Yes/No**

Almost all respondents could easily answer the question. A couple of respondents, however, miscalculated the number of months and reported erroneous answers—one respondent over counted and another undercounted by a couple of months since their last visit. The question appeared to function similarly in both English and Spanish.

**[For those who answer No]**

**In what year did you last visit a dentist? \_\_\_\_\_**

Eleven of the 19 (second round) respondents were screened out of this question because they had seen a dentist within the past year. Of the eight respondents that were asked the question, only half were able to give a precise account of the year. Two of the 3 Spanish speakers who answered this question answered in error. For example, one respondent answered 2005, stating that it was a year and a half ago. Then, with probing, he realized that it was not last year but really two years ago; he, consequently, changed his answer to 2004.

**Recommendation:** Because of the lack of preciseness, it is recommended that the response category be changed to those in Question 15: Within the past 12 months, between 1 and 2 years ago, Between 2 and 5 years ago, More than 5 years ago

\_\_\_\_\_

**14. How many of your permanent teeth have been removed because of tooth decay or gum disease? Do not include teeth lost for other reasons, such as injury or orthodontics (Note: If wisdom teeth are removed because of tooth decay or gum disease, they should be included in the count. Include teeth lost due to "Infection")**

- 1 to 5
- 6 or more but not all
- All
- Don't know/not sure
- None
- Refuse

The primary problem with the question is that it is unnecessarily wordy, and respondents were rarely able to keep track of all the components in the question. Despite the instructions, several respondents were not clear when and when not to include wisdom teeth. In one case, a respondent erroneously answered three teeth but then after probing and repeating the question, it was clear that only one tooth should count (the other two were wisdom teeth that were not extracted because of decay). Additionally, it was difficult for interviewers to administer because it was not clear when the note should be read to respondents.

The response categories appeared to be appropriate; many respondents with multiple teeth pulled were not able to accurately count the number of teeth that had actually been pulled.

**Revision:**

The question was revised so that it was less wordy. It was expected that, with a simplified question, greater emphasis could be placed on the removal because of decay.

**How many of your permanent teeth have been removed because of cavities, tooth decay or some kind of infection?**

The revised question was a dramatic improvement in that it was much easier for interviewers to administer. Additionally, for the most part, respondents easily understood the question. Several respondents, for example, who had their wisdom teeth removed unhesitatingly answered no because their teeth were removed due to lack of space, not because of infection. A couple other respondents included their wisdom teeth because abscesses had formed. On the other hand, regardless of the changes, a couple of respondents felt compelled to include teeth that were removed for reasons other than decay or infection, for example, because of an injury. For these respondents, the reason why their teeth were pulled appeared somewhat inconsequential; the fact that their teeth were missing, to them, was important and, therefore, they were included. The same patterns appeared in both English and Spanish-speaking interviews.

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**15. How long has it been since you had your teeth cleaned by a dentist or dental hygienist?**

- Within the past year (anytime less than 12 months ago)
- Within the past 2 years (1 year but less than 2 years ago)
- Within the past 5 years (2 years but less than 5 years)
- 5 or more years
- Don't know/not sure
- Never
- Refused

The same kinds of problems that appeared in the previous dental visit question also occurred in this question. Specifically, the response categories were confusing and respondents typically needed to talk out their answer with the interviewer. Additionally, the question was somewhat awkward for those respondents who rarely or who had never had a cleaning.

There were no problems associated with people understanding the intent of this question and all were able to differentiate this question about cleaning from the dental visit question. Specifically, respondents described having either the dentist or a dental technician using an instrument and paste to clean the teeth as well as scraping and picking out tartar.

**Revision:**

Response categories were changed so that they are more intuitive and easier for respondents to use.

**How long has it been since your teeth were cleaned by a dentist or dental hygienist?  
Within the past 12 months, between 1 and 2 years ago, Between 2 and 5 years ago,  
More than 5 years ago, or Never?**

For the English-speaking interviews, the revised question functioned well for all respondents except one respondent who initially answered between 1 and 2 years, but who then followed up by saying that his last cleaning was in 2001. It was not clear to the interviewer why this error occurred. This type of response problem did not occur in any of the Spanish speaking interviewers. However, Hispanic respondents were mostly unfamiliar with the concept of hygienist. Several have last been to the dentist in Latin America, not in the US, and their cleanings were done by dentists themselves. For these generally lower income respondents, cleanings seemed to be quite salient events and they had no trouble remembering them. Consequently, it is recommended that the Spanish word *higienista* is replaced with *técnico dental* (dental technician), which will be understood by all.

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**16. Do you have any kind of insurance coverage that pays for some or all of your routine dental care, including dental insurance, prepaid plans such as HMO's or government plans such as Medicaid?**

- Yes       No       Don't know/not sure       Refused

All respondents clearly understood the question and could answer with relative ease. Ten respondents reported having insurance and were able to describe their plan and benefits. One error was identified when a respondent answered *yes* and explained that he—as a state employee—has a job that offers dental insurance, although he has not “signed up for it,” he does not have the payments deducted from his paycheck, and cannot receive the benefits.

**Revision:**

For the revision, unnecessary wording and all words that might lead to ambiguity were eliminated.

**Do you now have insurance that pays for some or all of your routine dental care, including dental insurance, prepaid plans such as HMOs or government plans such as Medicaid? Yes/No**

For both English and Spanish-speaking respondents, this was an easy question to answer. Most of the respondents had no insurance, but had no difficulty understanding the question's intent. Most respondents with insurance were able to report the details of coverage for their insurance, however, the two Hispanic respondents with coverage were not entirely certain. Additionally, one Hispanic respondent answered Don't Know because she had just received her HMO card for coverage through her employer and does not yet know what is covered (if anything dental).

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**17. What is the main reason you have not visited the dentist in the last year?**

- Fear, apprehension, nervousness, pain, dislike going  
 Cost  
 Do not have/know a dentist  
 Cannot get to the office/clinic (too far away, no transportation, no appointment available)  
 No reasons to go (no problem, no teeth)  
 Other priorities  
 Have not thought of it  
 Other  
 Don't know/not sure  
 Refused

The primary difficulty respondents experienced with the question was that, unless they really needed to go to the dentist and could not go because of financial reasons, respondents were not particularly certain as to why they have not gone to the dentist. As one respondent stated, “I just haven’t gotten around to it.” Similarly, another respondent said that there is “no reason.” Few of the response categories other than *cost* resonated with respondents. While one respondent answered *other priorities*, everyone else answered *cost*.

**Revision:**

Because respondents were not entirely clear as to why they have not been to the dentist, the question was rewritten in a more speculative manner. Additionally, response categories were reworked in the hopes that they would resonate more with respondents.

**Which of the following reasons may have kept you from seeing a dentist within the past year? (Read all and mark all that apply) Fear or anxiety, Cost, Not having any problems with teeth or gums, Unable to find a dentist, Too difficult to get to the office or clinic, Other**

This question was administered to only those respondents who had not been to a dentist within the past year. Consequently, it was only tested on eight of the 19 second round respondents. For the 5 English-speaking respondents, no problems appeared with the question; those respondents primarily answered that fear and cost kept them from seeing a dentist. Among the 3 Spanish speaking respondents, however, a problem occurred with the response option, *not having any problems with teeth or gums*, because it is framed as a negative. Thus, when someone answered No, for example, to Not having any problems, it was not immediately clear if that was an endorsement of the reason or not. Additionally, an important answer that Hispanics give as a barrier for accessing healthcare is ‘desidia’ (neglect or procrastination), and indeed two respondents volunteered that as Other.

**Recommendation:**

**To clarify Spanish-language responses, the question can be rephrased as a series of True/False questions.**

## Appendix A

### Initial Questions

Another common problem with the mouth is gum disease. By gum disease we mean any kind of problem with the gums around your teeth that lasts for at least two weeks – except for problems caused by injury or problems caused by partials or dentures.

1. Do you think you have gum disease?

- Yes       No       Don't know

2. Has a dental professional ever told you that you have lost bone around your teeth?

- Yes       No       Don't know

3. Have you ever had scaling, root planing, surgery or other treatment for gum disease?

- Yes       No       Don't know

4. Have you ever had any teeth that have become loose by themselves without some injury (not baby teeth)?

- Yes       No       Don't know

5. How often during the last seven days did you use mouthwash or any dental rinse product?

\_\_\_\_\_ [numeric response, lower limit=0, no upper limit]

6. How often during the last seven days did you use dental floss, tape or interdental brush to clean between your teeth, other than just to remove food particles stuck between your teeth?

\_\_\_\_\_ [numeric response, lower limit=0, no upper limit]

7. How would you rate the health of your gums?

- Excellent    Very good    Good    Fair    Poor    Don't know

8. "During the past three months, have you noticed that you have a tooth that doesn't look right?"

- Yes    No    Don't know

9. Overall, would you rate the health of your mouth, teeth, and gum, as excellent, good, fair or poor?

- Excellent    Good    Fair    Poor

10. Have you had painful gums?

- Very often    Fairly often    Sometimes    Hardly ever    Never

11. Have you noticed your gums being red or swollen during the past week?

- Yes    No

12. How likely is it that you will get gum disease? Is it very likely, somewhat likely, or a fifty-fifty chance, somewhat unlikely, or very unlikely?

- Very likely  
 Somewhat likely

- Fifty-fifty chance
- Somewhat unlikely
- Very unlikely

13. How long has it been since you last visited a dentist or dental clinic? (Includes visit to a dental specialist, such as orthodontist)

- within the past year (1 to 12 months ago)
- within the past 2 years (1 to 2 years)
- within 5 years (2 to 5 years)
- five or more years
- Don't know/never/refuse.

14. How many of your permanent teeth have been removed because of tooth decay or gum disease? Do not include teeth lost for other reasons, such as injury or orthodontics (Note: If wisdom teeth are removed because of tooth decay or gum disease, they should be included in the count. Include teeth lost due to "Infection")

- 1 to 5
- 6 or more but not all
- All
- Don't know/not sure
- None
- Refuse

15. How long has it been since you had your teeth cleaned by a dentist or dental hygienist?

- Within the past year (anytime less than 12 months ago)
- Within the past 2 years (1 year but less than 2 years ago)
- Within the past 5 years (2 years but less than 5 years)
- 5 or more years
- Don't know/not sure
- Never
- Refused

16. Do you have any kind of insurance coverage that pays for some or all of your routine dental care, including dental insurance, prepaid plans such as HMO's or government plans such as Medicaid?

- Yes       No       Don't know/not sure       Refused

ONLY IF HAS NOT BEEN TO DENTIST IN PAST YEAR:

17. What is the main reason you have not visited the dentist in the last year?

- Fear, apprehension, nervousness, pain, dislike going
- Cost
- Do not have/know a dentist
- Cannot get to the office/clinic (too far away, no transportation, no appointment available)
- No reasons to go (no problem, no teeth)
- Other priorities
- Have not thought of it
- Other
- Don't know/not sure
- Refused

## Appendix B

### Recommended Questions [English]

Gum disease is a common problem with the mouth. People with gum disease might have bleeding in the gums around the teeth, swollen gums, receding gums, sore or infected gums that lasts for at least two weeks and is not caused by injury or problems with partials or dentures.

1. Do you think you might have gum disease?

- Yes       No       Don't/Know       Refused

2. Overall, how would you rate the health of your teeth and gums?

- Excellent  
 Very Good  
 Good  
 Fair  
 Poor  
 Don't Know  
 Refused

3. Have you ever...

...had surgery to clean underneath your gums? (not root canals or cleanings done at regular check-ups)

No, Yes, DK, R

...had scaling or root planning, sometimes called "deep" cleaning? (not root canals or cleanings done at regular check-ups)

No, Yes, DK, R

...had any teeth that became loose on their own, without an injury? (not baby teeth)

No, Yes, DK, R

...been told by a dental professional that you lost bone around your teeth?

No, Yes, DK, R

4. In the past week, have you...

...experienced pain in your gums?

No, Yes, DK, R

...noticed your gums being red or swollen?

No, Yes, DK, R

...had any bleeding when you brushed your teeth?

No, Yes, DK, R

5. During the past three months, have you noticed that you have a tooth that doesn't look right?

- Yes       No       Don't/Know       Refused

6. How many of your permanent teeth have been removed because of cavities, tooth decay or some kind of infection?

- None  
 1 to 5  
 6 or more but not all  
 All  
 Don't know/Not sure  
 Refused

7. In the last seven days, how many times did you...

- |   |       |        |
|---|-------|--------|
| ...brush your teeth with toothpaste?            | _____ | Number |
| ...use dental floss or dental tape?             | _____ | Number |
| ...use mouthwash or other dental rinse product? | _____ | Number |

8. In the past 12 months, that is, since [May, 2005], have you visited a dentist or a dental clinic?

- Yes [Go to Q11]     No       Don't/Know       Refused

9. How long has it been since last visited a dentist or dental clinic?

- Between 1 and 2 years ago  
 Between 2 and 5 years ago  
 More than 5 years ago  
 Never  
 Don't know/Not sure  
 Refused

10. Please answer true or false for each. Which of the following reasons may have kept you from seeing a dentist within the past year?

- |  |                               |                                |
|--|-------------------------------|--------------------------------|
| Fear or anxiety                              | <input type="checkbox"/> True | <input type="checkbox"/> False |
| Cost   | <input type="checkbox"/> True | <input type="checkbox"/> False |
| Not having any problems with teeth or gums   | <input type="checkbox"/> True | <input type="checkbox"/> False |
| Unable to find a dentist                     | <input type="checkbox"/> True | <input type="checkbox"/> False |
| Too difficult to get to the office or clinic | <input type="checkbox"/> True | <input type="checkbox"/> False |
| Other  | <input type="checkbox"/> True | <input type="checkbox"/> False |
| Refused                                      |                               |                                |

11. How long has it been since your teeth were cleaned by a dentist or dental hygienist?

- Within the past 12 months
- Between 1 and 2 years ago
- Between 2 and 5 years ago
- More than 5 years ago
- Never
- Don't know/Not sure
- Refused

12. Do you now have insurance that pays for some or all of your routine dental care, including dental insurance, prepaid plans such as HMOs or government plans such as Medicaid?

- Yes       No       Don't/Know       Refused

## Appendix C

### Recommended Questions [Spanish]

La enfermedad de las encías es un problema común en la boca. Las personas que sufren de la enfermedad de las encías pueden sangrar en las encías alrededor de los dientes, tener inflamación en las encías, retracción de las encías, encías adoloridas o infectadas por lo menos durante dos semanas y sin que haya una lesión, o pueden tener problemas con dentaduras postizas parciales o completas.

1. ¿Piensa usted que tal vez sufra de la enfermedad de las encías?  
 Sí       No       Don't/Know       Refused
  
2. En general, ¿cómo diría que es el estado de salud de sus dientes y encías?  
 Excelente  
 Muy bueno  
 Bueno  
 Regular  
 Malo  
 Don't Know  
 Refused
  
3. ¿Alguna vez...  
...le han hecho cirugía de encías para limpiar por debajo de las mismas? (sin contar tratamiento de conducto de raíces, ni limpiezas que le hayan hecho durante visitas de rutina)      No, Sí, DK, R  
...le han hecho un raspado o un alisado de las raíces de los dientes que a veces se conoce como limpieza "profunda"? (sin contar tratamiento de conducto de raíces, ni limpiezas que le hayan hecho durante visitas de rutina)      No, Sí, DK, R  
...se le ha aflojado algún diente por sí solo sin haber tenido una lesión? (sin contar dientes de leche)      No, Sí, DK, R  
...le ha dicho un profesional de la salud dental que usted ha perdido hueso alrededor de los dientes?      No, Sí, DK, R
  
4. ¿Durante la última semana, ...  
... ha tenido dolor en las encías?      No, Sí, DK, R  
... ha notado que tenía las encías rojas o hinchadas?      No, Sí, DK, R  
... ha sangrado al cepillarse los dientes?      No, Sí, DK, R
  
5. ¿En los últimos tres meses, ha notado que alguno de sus dientes no parece verse bien?  
 Sí       No       Don't/Know       Refused
  
6. ¿Cuántos dientes permanentes le han extraído debido a caries, dientes picados o algún otro tipo de infección?  
 Ninguno  
 Entre 1 y 5

- 6 o más pero no todos
- Todos
- Don't know/Not sure
- Refused

7. Durante los últimos siete días, ¿cuántas veces ...

... se cepilló los dientes con pasta dental?	_____	Número de veces
... usó hilo dental o cinta dental?	_____	Número de veces
... usó enjuague bucal u otro producto de enjuague dental?	_____	Número de veces

8. En los últimos 12 meses, es decir, desde [Junio de 2005], ¿ha ido al dentista o a una clínica dental?

Sí    [Go to Q11]     No     Don't/Know     Refused

9. ¿Cuánto tiempo hace dese que la última vez que fue al dentista o a una clínica dental?

- Hace entre 1 y 2 años
- Hace entre 2 y 5 años
- Hace más de 5 años
- Nunca
- Don't know/Not sure
- Refused

10. **Por favor conteste si cada una de las siguientes razones es cierta o falsa.** ¿Cuáles de las siguientes razones pueden haberle impedido ir al dentista en el último año?

(marque todo lo que corresponda)

- |  |                                 |                                |
|--|---------------------------------|--------------------------------|
| Miedo o ansiedad                                       | <input type="checkbox"/> Cierto | <input type="checkbox"/> Falso |
| Costo  | <input type="checkbox"/> Cierto | <input type="checkbox"/> Falso |
| No tuvo problemas en los dientes o en las encías       | <input type="checkbox"/> Cierto | <input type="checkbox"/> Falso |
| No pudo encontrar dentista                             | <input type="checkbox"/> Cierto | <input type="checkbox"/> Falso |
| Demasiado difícil llegar a la oficina dental o clínica | <input type="checkbox"/> Cierto | <input type="checkbox"/> Falso |
| Otra razón   | <input type="checkbox"/> Cierto | <input type="checkbox"/> Falso |
| Don't know/Not sure                                    |                                 |                                |
| Refused  |                                 |                                |

11. ¿Cuanto hace desde que un dentista o técnico dental le limpió los dientes?

- Fue en los últimos 12 meses
- Hace entre 1 y 2 años
- Hace entre 2 y 5 años
- Hace más de 5 años
- Nunca
- Don't know/Not sure
- Refused

12. ¿Tiene actualmente un seguro que pague parte o toda su atención dental de rutina, incluyendo seguro

dental, planes prepagados como HMO o planes del gobierno como Medicaid?  
 Sí       No       Don't/Know       Refused