

## RESEARCH ARTICLE

# The effect of different sampling and recall periods in the CAHPS Clinician & Group (CG-CAHPS) survey

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## Abstract

**Objective:** To examine the effect of changing the sampling and reference periods for the CAHPS<sup>®</sup> Clinician & Group Survey from 12 to 6 months.

**Data Sources/Study Setting:** Adult patients with a visit in the last 12 months to New England community health centers.

**Study Design:** We randomly assigned patients to receive a survey with either a 12- or 6-month recall period.

**Data Collection/Extraction Methods:** Questionnaires were mailed to patients, with a second questionnaire mailed to nonrespondents, followed by six attempts to complete a telephone interview.

**Principal Findings:** If the sampling criterion was a visit in the last 6 months, 9 percent of those with a visit in the last 12 months would not have been surveyed. A total of 1837 patients completed 6-month surveys (44.9 percent response rate); 588 completed 12-month surveys (46.0 percent response rate). Shortening the reference from 12 to 6 months reduced the proportion of respondents reporting a blood test, X-ray, or other tests. Adjusting for respondent characteristics, the most positive response was selected more often on the 6-month survey for 12 out of 13 questions, and three of these differences were statistically significant ( $P < 0.05$ ).

**Conclusions:** Surveys using a 6-month recall period may yield slightly higher scores than surveys with a 12-month recall period.

## KEYWORDS

CAHPS, patient experience surveys, survey methods

## 1 | INTRODUCTION

Consumer Assessment of Healthcare Providers and Systems (CAHPS<sup>®</sup>) surveys are used to assess consumer experiences with different types of health care, including people's experiences with health insurance plans,<sup>1,2</sup> hospitals,<sup>3,4</sup> dialysis centers,<sup>5</sup> patient-centered medical homes,<sup>6</sup> physician group practices,<sup>7,8</sup> and hospice care.<sup>9,10</sup> Questions asked in these surveys have a specific reference period (eg, In the past twelve months, did....) to help respondents

think about the appropriate experiences and to increase the comparability of responses across respondents. A tension exists between using a shorter period to increase respondent recall and using a longer period to increase the number of health care events that respondents report on. Although the difficulty of remembering events in the previous 12 months is well known, CAHPS survey developers were originally concerned that if a shorter recall period was used, respondents might not have enough experiences to formulate a valid response.<sup>11</sup>

The original CAHPS Clinician & Group Survey (CG-CAHPS) used a 12-month reference period.<sup>8</sup> The CG-CAHPS survey focuses on details of ambulatory care events, which may be difficult to remember accurately. Thus, a 6-month recall period may have advantages, compared with 12 months.

Changing the question reference period from 12 to 6 months raises two questions. The first is how many patients have experienced enough care events in a 6-month period to answer the questions. The second is how a shift in the reference period affects the comparability of results. For example, does changing the reference period change the likelihood of patients reporting positive or negative experience (eg, with provider communication)?

In this study, we conducted two sets of analyses. First, we explored the effect of changing the sampling period from 12 to 6 months on the number of patients who are eligible for surveying. This analysis used all patients who had a visit at four community health centers during a 12-month selection period. Second, since we did not have objective data to assess the validity of reports about specific events (eg, number of tests), we conducted a randomized split-ballot test of surveys using 12- or 6-month recall periods to assess the effect of question referent on reporting of ambulatory care events and whether adjustments are necessary when comparing results from surveys using different approaches. We expected that reducing the survey period by 6 months would reduce the number of visits and events associated with visits reported (eg, tests or referrals to specialists) and mildly affect respondents' reports about certain experiences, such as how often providers explained things or spent enough time with patients.

## 2 | METHODS

As part of an evaluation of a care coordination intervention in multiple community health centers, we surveyed patients who had complex health care needs and had a visit in the last 12 months. The coordination of care study only required survey results from the population of patients with prior use of hospital and emergency departments and/or patients diagnosed with chronic health conditions. So that we could make inferences to the entire population using the clinics studied, we also sampled patients who did not have complex health care needs. Using a combined sample representing all patients, we conducted a randomized experiment to test the effect of using a 12-month or 6-month reference period.

### 2.1 | Sites

The survey was conducted among patients who received care at the four largest community health centers in a New England state. These health centers provide comprehensive primary care services in medicine, dentistry, and behavioral health among a network of community health centers. Throughout the state, these health centers provide ongoing care to over 130 000 patients.

### 2.2 | Sample frame

We selected 4215 patients with complex health care needs using data from all participating health centers' administrative records. These patients represent almost one-third of the patients with a visit during the last 12 months. We identified 8287 patients who did not have chronic health conditions or complex health needs. To assess the loss in sample when switching from 12- to 6-month sampling frame, we use a combined sample representing all patients from these community health centers ( $n = 12\ 502$ ).

### 2.3 | Sample for split-ballot experiment

From the list of patients identified as having complex health care needs, we randomly selected 165 patients from each of the four health centers to receive a questionnaire with a 12-month recall period. All remaining patients received questionnaires with a 6-month recall period. From the list of 8287 patients without complex needs, we randomly selected 1320 patients. In each health center, we selected 165 to receive a 6-month recall questionnaire and 165 to get a 12-month recall questionnaire.

The final sample to test the effects of recall period consisted of 5535 adults.

### 2.4 | Survey

We randomly assigned patients to receive one of two versions of the 2.0 CG-CAHPS adult survey<sup>12</sup> one with a 6-month recall and the other with a 12-month recall. The only difference between the two surveys was in questions that had a time frame asking either, "In the last 6 months, how often..." or "In the last 12 months, how often..."

A three-contact mail administration protocol was used: initial mailing of questionnaire packet; a postcard reminder and thank you 7-10 days later; and a second questionnaire mailing to mail nonresponders 2-3 weeks after initial mail contact. All questionnaire packets were sent via USPS First Class Mail. We mailed questionnaires and respondent contact materials in both English and Spanish.

We used a mixed-mode data collection protocol: Those who did not respond after two mailings were followed by up to six attempts to conduct a telephone interview. Spanish-speaking interviewers were available to interview patients who were identified by the health centers as preferring to be contacted in Spanish or who requested to be interviewed in Spanish.

All survey procedures were approved by Institutional Review Boards at the University of Massachusetts and Yale University.

### 2.5 | Analyses

#### 2.5.1 | Effect of changing sample frame

We first examined the effect of changing the sampling criterion from 12 to 6 months on the number of patients available for the

survey sample. This simulates the size of the sample we would have achieved with 6-month sample frame.

### 2.5.2 | Recall period: 12 or 6 months

Next, we examined the effect of asking respondents to report on experiences “in the last 12 months” or “in the last 6 months.” We compared any differences between characteristics of participants randomized to either 12- or 6-month recall period using chi-squared tests of independence for categorical variables and Mann-Whitney *U* test for ordered categorical variables. We similarly compared patterns of utilization between respondents to 6- and 12-month surveys using chi-squared statistics or Mann-Whitney *U* test where appropriate. We assessed differences between the 6- and 12-month surveys in the frequency of provider visits, blood tests, X-rays, needing appointments, and taking prescription medications, as reported by respondents.

We compared responses to the 6- and 12-month surveys for all CG-CAHPS questions used for reporting in the composite measures Getting Timely Appointments, Care, and Information; How Well Providers Communicate with Patients; Helpful Courteous and Respectful Office Staff; Providers’ Use of Information to Coordinate Patient Care; and the 0-10 Patients’ Rating of the Provider. Composites were calculated including only respondents who answered at least half of the questions in each composite.

All CG-CAHPS core questions were scored from 1 to 4, where 1 = *Never* and 4 = *Always*. We compare “linear mean” scores as well as “top box” scores, each commonly used in reporting CAHPS survey results.<sup>13</sup> Top box scores are the percentage of respondents who selected the most positive response, that is, *Always*. Table S1 shows the survey questions.

To account for possible differences between the groups after randomization, we adjusted the responses to questions about patient experiences and CAHPS composite measures using patient characteristics that are included in most CAHPS case mix adjustment (CMA) analyses (ie, age, education, and health status),<sup>14-16</sup> which were included as categorical variables in linear regression models (seven age categories, six education categories, and five health categories). Table S2 shows the questions and responses for these adjustment variables. To assess the extent to which there are differences between 6- and 12-month recall periods, after controlling for respondent characteristics, we used linear regression models that included a dummy variable representing the 6-month questionnaire. In our analyses, we excluded respondents who said they had not received care in the preceding 12 or 6 months from the provider named in the questionnaire. We present results from these analyses as model-adjusted means.

### 2.6 | Sensitivity analyses

Finally, we conducted sensitivity analyses by including weeks since last visit and number of visits in the linear adjustment models. The number of visits was obtained from the survey responses (1, 2, 3, 4,

5-9, 10, or more), while weeks since last visit was derived from the sample frame, which included the date of most recent visit. These variables assess the extent to which results may differ by recency and number of events.

To make the results of the survey represent all patients in each of the four health centers in our main analyses, we calculated weights for the nonchronic condition sample in each of the health centers as the inverse of their chance of being selected. Patients from the chronic condition sample represented a census of patients seen in the last 12 months, and no weights were necessary. Weights were also created for differential survey response at each health center. Since random sampling was conducted in each of the four health centers, we calculated survey weights by health center. Thus, the weighted results should be representative of all patients at the four health centers in this study. To assess the extent to which survey weights may have affected statistical testing, we conducted additional analyses without survey weights.

## 3 | RESULTS

After two mailings and multiple attempts to complete interviews by telephone, we received 2428 responses, for an overall response rate of 45.2 percent. Patients identified using the chronic health condition algorithm responded at almost the same rate as those who did not fit the high-risk profile (45.1 percent vs 45.5 percent). Those receiving a 6-month recall responded at a slightly lower rate than those randomly assigned to a 12-month recall survey (44.9 percent vs 46.0 percent).

### 3.1 | Visit in the last 6 months

When we limited the eligible sample of patients with a visit in the last 12 months to patients with a visit to a participating health center in the last 6 months, 90.7 percent of patients were eligible for sampling. Among patients with complex health conditions, 93.3 percent had at least one visit in the last 6 months, compared with 89.5 percent of the patients without complex conditions. In other words, about 9 percent of the sample with a visit in the last 12 months would not be surveyed if the sampling criterion was a visit in the last 6 months.

### 3.2 | Respondent Characteristics and Utilization

Table 1 presents comparisons of the 6- and 12-month survey respondents. The two groups were similar, except that respondents who answered the 6-month recall period questionnaire reported poorer physical and mental health than those answering the survey with a 12-month recall period ( $P < 0.01$ ). Almost 35 percent of those responding to the 6-month survey reported “poor” or “fair” mental health, compared with almost 29 percent of the 12-month survey respondents. Those receiving the 12-month recall surveys had slightly more education ( $P = 0.05$ ) and were somewhat younger ( $P = 0.03$ ).

**TABLE 1** Demographic characteristics and ratings of health status for 6- and 12-mo recall period CG-CAHPS survey respondents

Characteristics	6 mo	12 mo	P*
	Unweighted n = 1837 Weighted %	Unweighted n = 588 Weighted %	
<b>Age</b>			
18-24	2.9	3.9	0.03
25-34	9.8	12.3	
35-44	18.0	15.3	
45-54	26.2	28.8	
55-64	27.1	23.4	
65-74	12.6	10.2	
75 or older	3.5	6.1	
<b>Gender</b>			
Male	37.3	41.7	0.15
Female	62.7	58.3	
<b>Education</b>			
8th grade or less	12.1	13.7	0.05
Some high school	16.8	15.9	
High school graduate	36.1	32.4	
Some college or 2-y degree	24.2	26.6	
4-year college graduate	6.2	6.1	
More than 4-y college degree	4.5	5.2	
<b>Hispanic</b>			
Yes	40.8	45.6	0.13
No	59.2	54.4	
<b>Race**</b>			
White	61.3	55.7	0.75
Black	17.1	15.4	0.47
Asian	2.4	5.4	0.01
Native Hawaiian/Pacific Islander	1.4	1.4	0.10
American Indian/Alaskan Native	4.8	4.8	0.10
Other	—	—	—
<b>Self-reported general health</b>			
Excellent	8.4	11.1	0.003
Very Good	15.4	17.1	
Good	32.8	35.2	
Fair	32.6	28.5	
Poor	10.8	8.0	
<b>Self-reported mental, emotional health</b>			
Excellent	17.0	18.4	<0.001
Very Good	17.9	26.3	
Good	30.1	26.5	
Fair	24.2	22.2	
Poor	10.7	6.6	

\*Chi-squared test comparing 6- and 12-month distributions for categorical variables; Mann-Whitney *U* test for ordinal variables.

\*\*Respondents could choose one or more; percentages may total more than 100%. Statistical tests for race were conducted for each group.

Except for the number of visits and time with their providers, differences in utilization of services were minimal between respondents to the 6- and 12-month recall surveys. Table 2 shows that those with a shorter recall period reported fewer provider visits and providers ordering blood tests, X-rays, or other tests ( $P < 0.001$ ). Those receiving the 6-month recall period survey had been seeing their providers slightly longer than those receiving the 12-month survey ( $P = 0.03$ ).

### 3.3 | CAHPS reporting composites

Results of analyses using standard CMA for patient's age, education, general health, and mental health in Table 3 show that two of the four CAHPS composite measures had significantly higher top box scores for the 6-month recall period questionnaire ( $P = 0.05$  and  $0.01$ , respectively). Providers' Use of Information to Coordinate Care had a top box score of 61.1 in the 6-month survey, compared with 54.7 using the 12-month survey, a large difference ( $P = 0.01$ ).<sup>17</sup> This significant difference was also observed in the comparison of linear mean scores. The composite labeled How Well Providers Communicate with Patients had a significantly higher top box score for the 6-month survey, compared with the 12-month survey (78.0 for 6 months, 73.5 for 12 months,  $P = 0.05$ ). This difference was not statistically significant in the comparison of linear mean composite scores. Table 3 shows that two of twelve items that are used to create CAHPS composites, one asking whether providers explained things in a way easy to understand ( $P = 0.04$ ) and the other asking if providers talked about all prescription medications ( $P = 0.006$ ), had significant differences between 6- and 12-month surveys, both for top box and linear mean scores. There were no differences between the 6- and 12-month surveys for either top box or linear mean scores for the composites Getting Timely Appointments, Care, and Information and Helpful, Courteous, and Respectful Office Staff (Table 3). Finally, the 0-10 rating was higher in the 6-month survey, both for top box and mean scores ( $P = 0.04$  and  $0.02$ , respectively).

For 12 of the 13 questions, including questions used to create composites as well as the 0-10 rating, the responses to the 6-month questionnaire had more positive responses both for the top box and the mean comparisons.

### 3.4 | Sensitivity analyses

We estimated linear regression models predicting what the scores in each group would be if we adjusted statistically for the number of visits during the recall period and the number of weeks since the last visit. The results were comparable to those shown in Table 3 with respect to the differences between those with a 12- or 6-month recall period. The provider coordination composite still had significantly higher scores using top box or linear mean scoring in the 6-month survey ( $P = 0.02$  and  $P = 0.01$ , respectively). However, the difference for the provider communication composite was not statistically significant ( $P = 0.08$ ). The number of visits could be interpreted as an exposure measure. However, a number of visits may be confounded

with measures of access; for example, more access problems may limit the number of visits. Hence, the results represent a conservative estimate of the effects of respondent characteristics on reporting about their experiences with care. Finally, compared to those using the 12-month survey, respondents to the 6-month survey reported more positive responses to the 0-10 rating scale ( $P = 0.04$  for top box;  $P = 0.02$  for mean score). The general tendency for those using the 6-month survey was to report more positive responses than those using the 12-month survey. Analyses conducted without survey weights were comparable with one exception. The difference for provider ratings was not statistically significant in unweighted models. However, the direction of the difference, with 6-month results being more positive, persisted. In almost every comparison, the 6-month survey had more respondents selecting the top score and all mean scores for composite measures and items used to calculate these composites were higher than means for the 12-month survey.

## 4 | DISCUSSION

Reducing the survey sample period from 12 to 6 months, among our sample of patients cared for in the community health centers, resulted in only a 9 percent loss of sample. Participants who completed the survey with a 6-month reference period reported fewer provider visits and fewer blood tests, X-rays, and other tests. The proportion of respondents reporting no such tests was almost double of that for respondents in the 12-month sample (6.6 percent vs 13.3 percent). In our randomized experiment, those receiving the survey that included a 6-month reference period were more likely to select the top box response for almost all of the CG-CAHPS items and significantly more likely to choose the top box response for three items.

The tendency of those with a 6-month reference period to report more experiences that are positive may be the result of having fewer experiences. With a shorter time reference, respondents are reporting on a smaller number of interactions. If respondents' internal denominator for reporting is smaller, then the likelihood of "always" being the selected response may increase. In other words, if respondents are summarizing experiences in communicating with their provider and they have met fewer times, then the chance of the provider always explaining and giving instructions is greater. Conversely, respondents to the 12-month questionnaire have more experiences to summarize and may be less likely to select "always" simply because they feel that it's harder for events to occur always over a 12-month time period. It may also be that those with a 12-month reference period have fewer recent experiences and/or have more difficulty recalling those experiences, and are thus reluctant to give the most positive response. However, our analyses that included an adjustment for time since last visit did not change the results. For example, the 0-10 ratings were higher for 6-month surveys after controlling for a number of visits and weeks since the last visit.

Many surveys ask about specific events, for example, getting a flu shot or cancer screening test, that can be externally validated.

**TABLE 2** Reports about utilization for 6- and 12-mo recall period CG-CAHPS surveys

Characteristics	6 mo	12 mo	P*
	Unweighted n = 1837 Weighted %	Unweighted n = 588 Weighted %	
Provider usually seen for checkup			
Yes	95.9	95.6	0.80
No	4.1	4.4	
Time with provider			
<6 mo	6.0	7.2	0.03
At least 6 mo but <1 y	17.6	20.1	
At least 1 y but <3	31.8	30.9	
At least 3 y but <5	18.0	17.9	
5 y or more	26.6	23.9	
Number of visits to provider			
None	3.1	1.4	<0.001
1 time	14.5	5.4	
2 times	20.1	18.7	
3 times	17.7	20.7	
4 times	13.4	16.8	
5-9 times	20.8	21.5	
10 or more times	10.5	15.5	
Phoned office to get appointment for care needed right away			
Yes	63.9	66.2	0.47
No	36.1	33.8	
Made appointments for a checkup or routine care with provider			
Yes	83.8	87.6	0.10
No	16.2	12.4	
Phoned office with a medical question, during office hours			
Yes	51.0	55.9	0.14
No	49.0	44.1	
Talked about any health questions or concerns			
Yes	85.8	88.3	0.25
No	14.2	11.7	
Provider ordered a blood test, X-ray, or other test			
Yes	86.7	93.4	<0.001
No	13.3	6.6	
Saw a specialist for health problem			
Yes	75.8	74.1	0.65
No	24.2	25.9	
Took any prescription medicines			
Yes	94.0	93.3	0.66
No	6.0	6.7	

\*Chi-squared test comparing 6- and 12-month distributions for categorical variables; Mann-Whitney *U* test for ordinal variables.

CAHPS questions ask respondents to think about one or more events that occurred during a specific time period. These questions ask about obtaining timely care, coordinating information

among providers, and the qualities of interactions with providers and office staff. The respondent's recall of events over a 12- or 6-month time period is likely a synthesis of these events,<sup>18</sup> which for

**TABLE 3** Model-adjusted<sup>a</sup> comparison of CG-CAHPS items for 6- and 12-mo recall periods

Items, composites, and global rating	Top box %			Mean (SE)		
	6 mo	12 mo	P	6 mo	12 mo	P
Getting timely appointments, care, and information						
Composite score	48.3	46.5	0.54	3.15 (0.06)	3.12 (0.06)	0.56
Got appointment when needed care right away	50.7	46.0	0.21	3.19 (0.07)	3.10 (0.08)	0.18
Got appointment for checkup or routine care	46.1	47.5	0.68	3.19 (0.05)	3.18 (0.07)	0.98
Got answer to medical question same day	48.5	45.3	0.45	3.08 (0.09)	3.06 (0.10)	0.81
How well providers communicate with patients						
Composite score	78.0	73.5	0.05	3.64 (0.03)	3.58 (0.04)	0.15
Did provider explain things in a way easy to understand	78.5	71.0	0.01	3.66 (0.04)	3.56 (0.05)	0.04
Did provider listen carefully	80.0	75.6	0.12	3.66 (0.04)	3.60 (0.05)	0.26
Did provider show respect	83.0	81.5	0.54	3.73 (0.03)	3.73 (0.04)	0.10
Did provider spend enough time	70.7	66.1	0.13	3.53 (0.04)	3.44 (0.06)	0.08
Providers' use of information to coordinate patient care						
Composite score	61.1	54.7	0.01	3.25 (0.05)	3.09 (0.06)	0.002
Did provider know important medical history	68.2	66.0	0.45	3.53 (0.04)	3.46 (0.05)	0.15
Provider's office followed up to give you test results	53.5	50.5	0.38	2.99 (0.08)	2.88 (0.09)	0.20
Provider talked about all Rx medicines being taken	55.4	45.3	0.01	3.11 (0.07)	2.90 (0.09)	0.006
Helpful, courteous, and respectful office staff						
Composite score	63.8	59.0	0.08	3.42 (0.04)	3.35 (0.05)	0.15
Clerks and receptionists helpful	56.5	52.3	0.18	3.29 (0.05)	3.21 (0.07)	0.19
Clerks and receptionists treat with courtesy and respect	71.2	65.5	0.06	3.56 (0.04)	3.49 (0.05)	0.17
Patients' rating of the provider						
Overall 0-10 provider rating	71.2	64.8	0.04	8.75 (0.12)	8.43 (0.15)	0.02

<sup>a</sup>Linear models adjusted for age, education, general health, and emotional/mental health.

questions asking about how often things occur during a stream of events it is possible that the passage of time may affect recall. In fact, Bradburn, Rips, and Shevell posited that respondents may remember a few facts related to a survey question and use inductive

inference to produce an answer.<sup>18</sup> A longer time period introduces more events to consider. However, it is unlikely that simply having more events to assess leads to systematic biases in respondents' perception of events. It is probable, however, that respondents'



thinking about some events is colored by recency. In surveys asking respondents to report about events occurring over a longer time period, respondents' inferences about what happened may be influenced by their theories about provider's behavior.<sup>19</sup> Stull et al<sup>20</sup> describe factors that affect recall, including characteristics of the phenomena (eg, recency or complexity) along with the meaning of the phenomena (eg, salience or experience). In surveys conducted in clinics that mostly provide primary care, there may be fewer highly salient events that respondents can use to make sense of what occurred.

A 6-month reference period will include a higher proportion of recent visits than a 12-month reference period. This greater focus on recent visits may result in slightly more positive evaluations. For example, Savage and Armstrong observed that patient assessments of physician's understanding and explanations were significantly lower one week after an encounter.<sup>21</sup> Relatedly, surveys conducted immediately after a visit via on-site assessments tend to be more positive, compared with later surveys at home.<sup>22-24</sup> Stevens et al<sup>25</sup> concluded that a greater time lag between receiving care and responding to a patient assessment of hospital care survey reduces ratings.

It is difficult to assess the effects of recall period on the validity of patient reports about some experiences such as communication with providers or being treated with respect, but one can compare reports of specific events, such as the number of blood tests, visits to physicians, or other medical care events in a specified period. The length of the recall period affects the likelihood of an event occurring as well as respondent's recall of that event. For example, in a randomized trial of 12- or 6-month recall, when asking about physician visits, a longer recall period led to underreporting.<sup>26</sup> Bhandari and Wagner's review of studies of the accuracy of reporting on health care utilization<sup>27</sup> found that people are more likely to underreport events such as a physician visit when asked to recall over a 12-month period, compared with 6 months. For reporting of events, for example, hospitalization, emergency room visits, or physician visits, they recommended a recall period no longer than 12 months. The choice of a recall period may depend in part on the type of utilization and its salience—shorter periods for frequent events and longer periods for visits that are very salient, for example, an overnight stay in a hospital.<sup>27</sup>

Using a 6-month recall period makes CG-CAHPS results more comparable to those from other CAHPS surveys. It may not result in substantially smaller denominators for key CAHPS questions about getting appointments or having questions answered. In a sample based on a 6-month reference period, a small reduction in patients reporting on some events, such as blood tests, X-rays, and other tests, may occur. In this study, 93 percent of respondents to the 12-month survey reference period reported having a blood test, compared with almost 87 percent of the 6-month sample. Therefore, if unit samples are sufficient to obtain 300 responses, this might mean obtaining data from 260 responses instead of 280, which should not greatly affect the measurement of patients' experiences. However, users of the 6-month version of the CG-CAHPS survey should be aware of the slightly higher scores that may be

obtained with this survey when comparing their results to the previous surveys using a 12-month recall period. An increase in the percentage of respondents selecting the most positive response may result, particularly for items assessing experiences with providers. In addition, it is likely that a similar increase may be found in the percentage of respondents rating their providers using a 9 or 10, in the 0-10 rating. Users who switch to the 6-month recall period may want to note in reports of CAHPS surveys the date of the change, especially in any figure or graphs showing change in CAHPS scores over time. Similarly, caution should be exercised in comparing scores from groups evaluated using both 6-month and 12-month recall periods, since differences of this magnitude that apply to all patients in a group or hospital may be large relative to group-level or hospital-level standard deviations and thus may substantially misrank groups or entities using different recall periods in the absence of adjustment.<sup>15</sup>

Our study has limitations related to the representativeness of the study population. Patient care in community health centers is more likely to be delivered by a workforce that includes more nurse practitioners and physician assistance than office-based practices.<sup>28</sup> Community health center patients are more likely to be uninsured or covered by Medicaid.<sup>29</sup> Populations with greater proportions of privately insured patients may have different experiences. The loss in sample when changing from 12- to 6-month sampling might vary in populations with patients with different health conditions. However, the experimental design of this study strengthens our ability to make inferences about the effect of time reference period on patients' assessments of their experiences.

This study adds to the research literature<sup>21-25,30</sup> showing that a longer time period between a medical encounter and a patient survey may be associated with systematically more negative reports about patient experiences.

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## DISCLOSURES

None.

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## REFERENCES

1. Hays RD, Shaul JA, Williams VS, et al. Psychometric properties of the CAHPS 1.0 survey measures. Consumer Assessment of Health Plans Study. *Med Care*. 1999;3(Suppl):MS22-MS31.
2. Hargraves JL, Hays RD, Cleary PD. Psychometric properties of the consumer assessment of health plans study (CAHPS®) 2.0 adult core survey. *Health Serv Res*. 2003;38(6p1):1509-1528.
3. Giordano LA, Elliott MN, Goldstein E, Lehrman WG, Spencer PA. Development, implementation, and public reporting of the HCAHPS survey. *Med Care Res Rev*. 2010;67(1):27-37.
4. Goldstein E, Cleary PD, Langwell KM, Zaslavsky AM, Heller A. Medicare managed care CAHPS®: a tool for performance improvement. *Health Care Financ Res*. 2001;22(3):101-107.
5. Weidmer BA, Cleary PD, Keller S, et al. Development and evaluation of the CAHPS (Consumer Assessment of Healthcare Providers and Systems) survey for in-center hemodialysis patients. *Am J Kidney Dis*. 2014;64(5):753-760.
6. Scholle SH, Vuong O, Ding L, et al. Development of and field test results for the CAHPS PCMH Survey. *Med Care*. 2012;50(Suppl):S2-S10.
7. Solomon LS, Hays RD, Zaslavsky AM, Ding L, Cleary PD. Psychometric properties of a group-level Consumer Assessment of Health Plans Study (CAHPS) instrument. *Med Care*. 2005;43(1):53-60.
8. Dyer N, Sorra JS, Smith SA, Cleary PD, Hays RD. Psychometric properties of the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Clinician and Group Adult Visit Survey. *Med Care*. 2012;50(Suppl):S28-S34.
9. Price RA, Stucky B, Parast L, et al. Development of valid and reliable measures of patient and family experiences of hospice care for public reporting. *J Palliat Med*. 2018;21(7):924-932.
10. Parast L, Elliott MN, Hambarsoomian K, Teno J, Anhang Price R. Effects of survey mode on Consumer Assessment of Healthcare Providers and Systems (CAHPS) hospice survey scores. *J Am Geriatr Soc*. 2018;66(3):546-552.
11. Harris-Kojetin LD, Fowler FJ, Brown JA, Schnaider JA, Sweeny SF. The use of cognitive testing to develop and evaluate CAHPS 1.0 core survey items. Consumer Assessment of Health Plans Study. *Med Care*. 1999;3(Suppl):MS10-MS21.
12. AHRQ. CAHPS Clinician and Group Survey Measures | Agency for Healthcare Research & Quality. <https://www.ahrq.gov/cahps/surveys-guidance/cg/about/survey-measures.html>. 2018. Accessed September 6, 2018.
13. AHRQ. CAHPS® Online Reporting system: aggregated data for CAHPS surveys. 2018. <https://cahpsdatabase.ahrq.gov/cahpsidb/>.
14. O'Malley AJ, Zaslavsky AM, Elliott MN, Zaboriski L, Cleary PD. Case-mix adjustment of the CAHPS Hospital Survey. *Health Serv Res*. 2005;40(6 Pt 2):2162-2181.
15. Elliott MN, Zaslavsky AM, Goldstein E, et al. Effects of survey mode, patient mix, and nonresponse on CAHPS® hospital survey scores. *Health Serv Res*. 2009;44(2p1):501-518.
16. Paddison C, Elliott M, Parker R, et al. Should measures of patient experience in primary care be adjusted for case mix? Evidence from the English General Practice Patient Survey. *BMJ Q Saf*. 2012;21:634-640.
17. Quigley DD, Elliott MN, Setodji CM, Hays RD. Quantifying magnitude of group-level differences in patient experiences with health care. *Health Serv Res*. 2018;53:3027-3051.
18. Bradburn NM, Rips LJ, Shevell SK. Answering autobiographical questions: the impact of memory and inference on surveys downloaded from. *Science*. 1987;236(4798):157-161.
19. Schwarz N, Oyserman D. Asking questions about behavior: cognition, communication, and questionnaire construction. *Am J Eval*. 2001;22(2):127-160.
20. Stull DE, Chassany O. Optimal recall periods for patient-reported outcomes: challenges and potential solutions IGQ-Intestinal Gas Questionnaire Validation View project PRO analyses and strategy for NSCLC/mBC RCTs View project. *Curr Med Res Opin*. 2009;25(4):929-942.
21. Savage R, Armstrong D. PRACTICE OBSERVED Effect of a general practitioner's consulting style on patients' satisfaction: a controlled study. *Br Med J*. 1990;301:968-970.
22. Kinnersley P, Stott N, Peters T, Harvey I, Hackett P. A comparison of methods for measuring patient satisfaction with consultations in primary care. *Fam Pract*. 1996;13(1):41-51.
23. Burroughs TE, Waterman BM, Gilin D, Adams D, McCollegan J, Cira J. Do on-site patient satisfaction surveys bias results? *Jt Comm J Qual Patient Saf*. 2005;31(3):158-166.
24. Anastario MP, Rodriguez HP, Gallagher PM, et al. A randomized trial comparing mail versus in-office distribution of the CAHPS clinician and group survey. *Health Serv Res*. 2010;45(5p1):1345-1359.
25. Stevens M, Reininga IHF, Boss NAD, van Horn JR. Patient satisfaction at and after discharge. Effect of a time lag. *Patient Educ Couns*. 2006;60(2):241-245.
26. Mathiowetz NA, Dipko SM. A comparison of response error by adolescents and adults: findings from a health care study. *Med Care*. 2000;38(4):374-382.
27. Bhandari A, Wagner T. Self-reported utilization of health care services: improving measurement and accuracy. *Med Care Res Rev*. 2006;63(2):217-235.
28. Hing E, Hooker RS, Ashman JJ. Primary health care in community health centers and comparison with office-based practice. *J Community Health*. 2011;36(3):406-413.
29. Hing E, Uddin S. Visits to Primary Care Delivery Sites: United States, 2008. 2010. <https://europepmc.org/abstract/med/21050533>. Accessed September 13, 2018.
30. Jackson JL, Chamberlin J, Kroenke K. Predictors of patient satisfaction. *Soc Sci Med*. 2001;52:609-620.

## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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