Agreement found between self-reported and health insurance data on physician visits comparing different recall lengths

Andrea Icks[a,b,c,d,*], Alexandra Dittrich[a], Manuela Brüne[b,c], Oliver Kuss[c,d,e], Annika Hoyer[c], Burkhard Haastert[a,f], Alexander Begun[b,c], Silke Andrich[a,b,c], Jonas Hoffmann[b,c], Matthias Kaltheuner[g], Nadja Chernyak[a]

[a]Institute of Health Services Research and Health Economics, Centre for Health and Society, Faculty of Medicine, Heinrich-Heine University Düsseldorf, Moorenstraße 5, 40225 Düsseldorf, Germany
[b]Paul Langerhans Group of Health Services Research and Health Economics, German Diabetes Center, Auf'm Hennekamp 65, 40225 Düsseldorf, Germany
[c]German Diabetes Center, Leibniz Institute for Diabetes Research at Heinrich-Heine-University Düsseldorf, Institute of Biometrics and Epidemiology, Auf'm Hennekamp 65, 40225 Düsseldorf, Germany
[d]German Center for Diabetes Research (DZD), Ingolstädter Landstraße 1, 85764 Neuherberg, Germany
[e]Centre for Health and Society, Faculty of Medicine, Heinrich-Heine-University, Moorenstraße 5, 40225 Düsseldorf, Germany
[f]mediStatistica, Lambertusweg 1, 58809 Neuenrade, Germany
[g]Specialised Diabetes Practice Leverkusen, Kalkstraße 117, 51377 Leverkusen, Germany

Accepted 28 October 2016; Published online 5 November 2016

Abstract

Objective: To analyze the impact of different recall lengths on agreement between self-reported physician visits and those documented in health insurance data applying an experimental design.

Study Design and Setting: We randomly assigned 432 patients with diabetes to one of two versions of a written survey, each asking about the number of physician visits over a 3- or 6-month recall period. Health insurance data were linked individually.

Results: In both groups, the mean number of self-reported physician visits per month was lower than in the insurance data, with a larger difference in the 6-month group (−0.9; 95% CI −1.0, −0.7) than in the 3-month group (−0.5; −0.7; −0.2), difference between the two groups: 0.4 (0.1−0.7; $P = 0.009$). The percentage of participants with correct reporting was small and did not differ largely between the two groups (6.5% and 9.3%). However, there was more overreporting in the 3-month group (25.6% vs. 11.1%).

Conclusions: Shorter recall periods may produce more accurate results when estimating the mean number of physician visits. However, this may be driven not by a more accurate reporting, but by a higher proportion of respondents that overreported and a lower proportion of respondents that underreported, when compared to the longer reporting period. © 2016 Elsevier Inc. All rights reserved.

Keywords: Agreement between data sources; Recall length; Recall length; Health care use; Physician visits; Diabetes; Experimental design

1. Introduction

Health services research and health economic studies frequently rely on self-reported health care use. Numerous studies compared self-reported health care use with data from other sources assumed to be more accurate (e.g., provider records or claims data). Although self-report accuracy was sufficient for major and rare events such as hospitalization, it was found to be limited for outpatient visits (e.g., [1,2]). Inaccuracy of self-report for physician visits increased for longer recall periods: Underreporting of physician visits increased from 22% in a 3-month time frame to 40% in a 6-month time frame [3]. Forward or backward telescoping, that is, incorrectly placing an event within or outside of the recall period and memory decay are two major problems related to the recall time frame [3].

Six and three months are frequently chosen as a recall limit to document utilization of outpatient services [3]. However, it is difficult to draw general conclusions

What is new?

Key findings
- Analysis of the impact of different recall lengths on agreement between self-reported physician visits and those documented in health insurance data applying an experimental design.

- As expected, agreement was significantly higher in a 3-month recall period compared to a 6-month recall period.

What this adds to what was known?
- However, the percentage of participants with correct reporting was small and did not differ largely between shorter and longer recall periods.

- The observed lower average reporting error in the shorter recall frame was driven not by a more accurate reporting, but by a higher proportion of respondents that overreported and a lower proportion of respondents that underreported, when compared to the longer reporting period.

What is the implication and what should change now?
- It therefore remains unclear whether a shorter time period produces more accurate results for all research questions.

regarding the impact of recall time frame on recall error because studies investigating accuracy of self-reported utilization also differed in other factors such as questionnaire design and mode of administration, "gold standard" used for comparison, statistical analysis of agreement, and characteristics of study participants.

One way to better understand the relationship between recall error and the length of recall for different types of health care would be to randomly allocate respondents to the same health care use survey that differs only in the length of recall and subsequently compare self-reported utilization over different recall periods with the objective health care use data [4,5]. Kjellsson et al. [5] used a large survey experiment to examine the role of the length of recall periods for the quality of self-reported hospitalization data by comparing registered with self-reported hospitalizations of respondents exposed to recall periods of 1, 3, 6, or 12 months. We are not aware of experimental studies exploring the influence of recall length on recall error for physician visits. Few studies used within-subject design to compare different recall lengths [6−8]. Yet, the two−time frame approach, that is asking same individuals to report utilization over time periods of different length, may produce greater accuracy of self-report [9,10]. Loftus

et al. [9] first asked respondents to recall their behavior during a longer reference period (last 6 months), then in the reference period of interest (last 2 months). They also tested the effect of reversing the time periods, that is, the more recent time period was used before the time period of interest. They concluded, using validated data, that both two−time period procedures produced more accurate results than when a single time period was used. Hence, results of studies using within-subject design may be less generalizable.

Our main research objective was to analyze the impact of two frequently used recall lengths on agreement between self-reported physician visits and those documented in health insurance data by applying an experimental design.

2. Methods

2.1. Study design

The study had an experimental design: participants were randomly assigned to one of two versions of a written survey, each asking about the number of visits to various physicians over different recall periods: 3 months or 6 months. Participants were allocated by block randomization. Therefore, a nonstratified randomization using randomly permuted blocks of length 4, 6, and 8 was performed.

A questionnaire on health-related resource use in diabetes was used to assess self-reported frequency of physician visits. The questionnaire asks about health care use in detail, furthermore about presence of comorbidities, a number of sociodemographic variables, and health-related quality of life. It was developed and tested using established survey development techniques and published in its final version [11−13]. Data obtained from self-report questionnaires were linked individually to health insurance data from the same time frame to examine the differences between the number of physician visits in self-reported and health insurance data and to analyze possible associated factors.

2.2. Population

Study participants were recruited in an outpatient clinical center specializing in diabetes treatment in a West German region. In this study region, the statutory health insurance BKK pronova covers a large number of inhabitants. Members of the BKK pronova of at least 18 years of age with clinically diagnosed diabetes were included in the study The following exclusion criteria were applied: diagnosed dementia; poor command of German language; patients not willing to give informed consent to use their health insurance records. Patients who gave informed consent filled in the questionnaire during their routine physician visit.