Abstract

Objectives: Although the primary goal among patients with type 2 diabetes (T2D) is glycemic control, lack of patient education and healthcare access may represent a major obstacle to proper disease management, particularly in emerging markets such as Brazil. The aim of the current study was to document the level of patient knowledge of HbA1c levels and its effect on health outcomes.

Methods: Data were analyzed from the Brazil 2011 National Health and Wellness Survey, a cross-sectional health survey of adults in Brazil (N=12,000). Demographics (age, gender, education, socioeconomic status, insurance type), health history (HbA1c level, FPG level, frequency of testing), and health outcomes (health status using the SF-12v2, work productivity loss using the WPAI, and healthcare resource use) were assessed for all respondents.

Results: A total of 480 respondents (4.0%) reported a diagnosis of T2D of which 39.6% did not know their level of HbA1c. Among respondents aware of their HbA1c level, 60.34% reported being uncontrolled (i.e., a level greater than 7%). Patients who were uncontrolled reported significantly worse physical health status (39.43 vs. 46.68) compared with those who were controlled (all p < 0.05). Access to care also was associated with better outcomes as those with private insurance were more likely to have an HbA1c level <7% (85.83% vs. 70.60% for those with just public insurance (all p < 0.05). [Abstract modified]

Conclusions: The lack of awareness of HbA1c levels suggests a significant gap in patient education. Given the high probability of being uncontrolled, this lack of patient education may have significant humanitarian and economic consequences for Brazil from a societal perspective. Improvement in access and education may help improve overall T2D management.

Introduction

Type 2 diabetes (T2D) is a chronic, progressive condition that can lead to a variety of complications if not managed properly.

The prevalence of T2D is rising worldwide and considered a major public health issue.

Although a variety of treatments are available, the lack of patient education and healthcare access can provide an obstacle to patients receiving proper disease management, particularly in countries such as Brazil.

Objectives

The aim of the current study was to document the level of patient knowledge of HbA1c levels and its effect on health outcomes.

Methods

Data Source

The 2011 Brazil National Health and Wellness Survey (NHWS) was used as the data source for this study.

The Brazil NHWS is an annual cross-sectional, self-administered survey assessing demographics, health status, health related attitudes, disease status, and health outcomes of the adult population (18 years and older).

Potential respondents are recruited from various Internet panels but also supplemented by offline recruitment.

To ensure representativeness of the country, a stratified random sampling framework was applied to ensure the NHWS sample is identical to the Brazilian adult population with respect to age and sex.

The total sample size is 12,000.

Sample

Only respondents who reported a diagnosis of T2D were included in the analyses (N=480).

Measures

Sociodemographics. Each respondent provided information with respect to their age, sex, education, socioeconomic status, and insurance type.

Health History. Respondents also provided information as to their HbA1c level (categorized as <7%, 7%, 7% to <10%, 10% to <12%, ≥ 12%) and for those who did not know their HbA1c level.

Health Status. The Short Form-12 (SF-12) version 2 was used as a measure of health status.

The items of the SF-12 are used to create two summary scores (physical component summary and mental component summary) normed to the population (mean ± standard deviation [SD] = 50 ± 10).

The items of the SF-12 are also used to calculate a health utility index which varies from 0 to 1.

Statistical Analyses

Among patients with T2D in Brazil, those with private versus public insurance were compared with respect to demographics, HbA1c testing frequency, and health outcomes.

Similarly, those with different levels of HbA1c (<7%, 7%, 7% to <10%, 10% to <12%, ≥ 12%) were also compared with respect to demographics, time since last HbA1c test, and health outcomes.

All analyses applied weights to project the Brazil population. A priori statistical significance was set at p < 0.05.

Results

Of the 480 respondents who reported a diagnosis of T2D, 251 (38.63%) reported private insurance while 173 (61.37%) reported public insurance. A total of 23 respondents (2.67%) reported an HbA1c level of <7%, 35 respondents (7.3%) reported an HbA1c level of ≥7%, 412 respondents (85.51%) did not know their HbA1c level, and the remaining 10 respondents (4.29%) refused to answer.

Respondents with public insurance were older and more likely to be unemployed, have lower socioeconomic status (SES), and have less education (see Table 1). Similarly, respondents with HbA1c level ≤7% were generally the most educated and had the highest SES. Not knowing one’s HbA1c was associated with the lowest level of education and SES.

Conclusions

The majority of respondents with T2D were unaware of their HbA1c level, which suggests a significant gap in patient education.

Given the high probability of being uncontrolled, this lack of patient education may have significant humanitarian and economic consequences for Brazil from a societal perspective.

Along with the significant differences observed between those with and without private insurance, these results suggest that improvement in health access and education may help improve overall T2D management.

Limitations

All data were provided through self-report so diagnoses were verified through hospital records.

Although the total NHWS sample is broadly representative, patients with T2D patients may not generalize to the T2D population.

References