Insulin Used to Treat Hypoglycemia in Diabetes Patients

Abstract

Hypoglycemia is a significant barrier to achieving insulin glycemic control in both type 1 and type 2 diabetes. Previously, it was difficult to accurately verify the prevalence of hypoglycemia in the clinical setting. available and requires real, high-quality data for accurate determination. prevalence of hypoglycemia in clinical practice. The Global Hypoglycemia Assessment Tool study was designed to evaluate the overall incidence of hypoglycemia in insulin-treated diabetics, and the results indicated that the overall prevalence of hypoglycaemia was hypoglycaemia. high blood pressure, with wide geographic variation. The International Operations HAT study retrospectively and prospectively evaluated the incidence of hypoglycemia in insulin-treated diabetics in Bangladesh, Colombia, Egypt, Indonesia, Philippines, Singapore, South Africa, Turkey and the United States. United Arab Emirates. In the prospective period, hypoglycemic events were reported by 97.4% of patients with type 1 diabetes and 95.3% of patients with type 2 diabetes, with an estimated rate of 6.86 events. per patient and per month for patients with type 1 diabetes and 2.37 PPPM events for patients with type 2 diabetes. These results represent the first patient-reported data set of hypoglycemia in the participating countries and confirm that hypoglycemia is underreported and more prevalent than what people believed in the past. Although the incidence of hypoglycemia varies among patients using different regimens, there are significant impacts on productivity and health care utilization following an episode of hypoglycemia.

Keywords: Type 2 Diabetes • Hypoglycemia

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Introduction

Insulin is the most common treatment for type 1 diabetes and is also commonly required for type 2 diabetics. Hypoglycemia, and especially the fear of hypoglycemia, is a significant barrier to achieve glycemic control with insulin. A recent multinational global physician and patient attitude survey demonstrated that about a quarter of patients with type 2 diabetes intentionally skip, change or reduce their basal insulin dose, mainly due to the perceived risk of hypoglycemia. These issues are well known, and recent diabetes guidelines recommend individualized goals that seek to balance good glycemic control with little or no hypoglycemia. Previously, it was difficult to accurately verify the incidence of hypoglycaemic events in a real clinical setting. Randomized controlled trials remain the most common source of evidence and the gold standard for demonstrating the clinical efficacy and safety of antidiabetic drugs. However, the limitations of the clinical trial setting and the exclusion of patients most likely to experience hypoglycemic events may limit their transition to routine clinical practice. A recent comparison of real-world data and data from RCTs in a population of insulin-treated diabetic patients revealed a higher incidence of hypoglycemia in the real-world setting than in the test environment clinical trial. Research indicates that the RWD in prevalence of hypoglycemia is limited, especially in non-Western countries. These results further demonstrate the need for RWD to determine the true incidence of hypoglycemia occurring in real-world clinical practice [1]. Previous observational and survey studies of hypoglycemia in T1D and T2D have mostly been retrospective or cross-sectional studies, performed online, with limited participation to those with access and capacity Internet usage, source selection bias, and most large studies to date limited to North America and Europe. Large-scale, practical studies of hypoglycemia can therefore aid clinical practice by helping to determine the true extent and impact of hypoglycemia, particularly outside of Europe and Europe. North America. The Global Hypoglycemia Assessment Tool study was designed to evaluate the overall incidence of hypoglycemia in patients with T1D or T2DM

who were treated with a mixture of insulin, a short-acting, long-acting therapy. stretching and sensor-enhanced insulin pump. The 6-month, 4-week, non-interventional, multicenter, retrospective HAT study used self-report questionnaires and patient diaries and included 27,585 adult patients with T1D who were treated with insulin for 2 weeks. over 12 months, at 2004 sites in 24 countries worldwide, including a country for which no data on the prevalence of hypoglycaemia were previously available. The results indicate that the prevalence of hypoglycemia is generally high, with wide geographic variation. The rate of possible events per patient per month of any severe, nocturnal, and random hypoglycemia was 6.11 [2-5]. The highest rates of any hypoglycemia were observed in Latin America for T1D and in Russia for T2D. The International Operations HAT Study builds on information gathered through the Global HAT Study and can be seen as the next wave of HAT Studies. It was designed to evaluate the incidence of hypoglycemia in patients with type 1 or T2 diabetes treated with premixed, short-acting, long-acting or pumped insulin in Bangladesh, Colombia, Egypt, Indonesia, Philippines, Singapore, South Africa, Turkey and United Arab Emirates [6].

Assessments

The study included two SAQs. The SAQs used for the IO HAT study were similar to the SAQs used in the global HAT, with modifications to collect additional data on variables such as comorbidities, type of diabetes treatment used. utilization, productivity and quality of life. The Part 1 SAQ was a cross-sectional review used to document baseline demographic and treatment information, as well as a history of severe hypoglycemia within the past 6 months and symptomatic hypoglycemia within the past 4 months [7]. Weeks prior to participating in the baseline study. In addition, Part 1 of the SAQ assesses the patient's knowledge of hypoglycemia, hypoglycemia awareness, and hypoglycemia awareness. Part 2 of the SAQ, completed 4 weeks later, assessed the occurrence of severe and symptomatic hypoglycemia 4 weeks after entering the reference study as well as the effect of hypoglycemia on performance. Productivity and use of health care services during this period. To facilitate recall, patients received a diary at baseline visit, which was also used to record hypoglycemic events.

If a patient records more hypoglycaemic events in the patient diary than in SAQ Part 2, the patient log value is used to calculate the rate of hypoglycaemia 4 weeks after baseline, to compensate compensate for potential underestimations due to recall errors. Patients' knowledge of hypoglycemia was assessed by assessing whether their definition matched the American Diabetes Association's definition of hypoglycemia and whether they knew what hypoglycemia was. Before reading the introduction provided in the informed consent form. Hypoglycemia awareness was assessed by combining the previously validated question, "Do you have symptoms of low blood sugar?" [8], to which the answers "always", "" often", "sometimes" and "never" represent a perceived degree of hypoglycemia. The diabetes-specific Quality of Life Scale is used to measure the impact of diabetes on quality of life, with lower scores indicating a poorer quality of life. DSQOLS is sensitive to differences between different insulin regimens and includes 13 items specific to hypoglycemia. The DSQOLS is included in Part 2 of the SAQ and includes 57 diabetes-specific load categories that assess social aspects, dietary problems, physical complaints, daily troubles, and worries about the future. . Patients responded to these questions using a 6-point Likert scale, with responses corresponding to agreement with each statement and ranging from "strongly agree" to "strongly disagree" [9].

Hypoglycemia

The category of hypoglycemia recorded on questionnaires and patient diaries includes, as defined by the American Diabetes Association, hypoglycemia requiring another person's assistance to administer carbohydrates, glucagon, or other means of resuscitation. Events defined as severe hypoglycemia were included. Events treated with non-severe hypoglycemia alone and severe hypoglycemia, events occurring between midnight and her BG-confirmed hypoglycemia should be 3 percentage points across the cohort [10]. 0.05. There was no adjustment for multiple comparisons, but p-values were interpreted conservatively. H. A p-value of 0.01 to 0.05 was taken to indicate evidence of a moderate difference. 0.01 was used to indicate a moderate hint. Baseline refers to data collected using SAQ Part 1. Follow-up refers to the data collected in SAQ Part 2 and patient diaries, if applicable. Assuming a binomial distribution, we calculated

the percentage of patients who experienced at least one hypoglycemic event for her, along with her 95% CI for that percentage.

Conclusion

The first patient-reported dataset of hypoglycemia in Egypt, Bangladesh, Colombia, Indonesia, the Philippines, Singapore, South Africa, Turkey, and the United Arab Emirates, where hypoglycemia is more underreported and more prevalent than previously thought. Indicates that Patients reported a higher incidence of hypoglycemia (particularly severe) during future periods. This may be due to recall bias during the retrospective study period, or the impact of patient education, which is important for diabetic patients. The results of this study suggest that hypoglycemia affects health care utilization in the form of reduced patient productivity at work, increased consultation with doctors and nurses, increased calorie intake, and increased frequency of home blood glucose testing. Adds evidence that leads to an increase in The results also indicate that educating patients about hypoglycemia and proper use of insulin remains essential. These observations, along with previously reported physicians, are hypothesized to help better tailor insulin treatment in diabetic patients, particularly in regions where such data were not previously available.

References

1. Emdin CA, Rahimi K, Callender T *et al.* Blood pressure lowering in type 2 diabetes: a systematic review and meta-analysis. *JAMA.* 313, 603-615 (2015).

2. Webster MW (2011) Clinical practice and implications of recent diabetes trials. *Curr Opin Cardiol.* 26, 288-93 (2011).

3. Wild S, Roglic G, Green A *et al.* Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. *Diabetes Care.* 27, 1047-53 (2004).

4. Carulli L, Rondinella S, Lombardini S *et al.* Review article: diabetes, genetics and ethnicity. *Aliment Pharmacol Ther.* 22, 16-9 (2005).

5. Giorgino F, Laviola L, Cavallo PD *et al.* Factors associated with progression to macro albuminuria in microalbuminuric type 1 diabetic patients. *Prospective Compli Stu Diabetologia.* 47, 1020-1023(2004).

6. Currie Craig J, Peters John R, Tynan Aodán *et al.* Survival as a function of HbA1c in people with type 2 diabetes: a retrospective cohort study. *The Lancet.* 375, 481-489 (2010).

7. Ritz E, Zeng XX, Rych I *et al.* Clinical manifestation and natural history of diabetic nephropathy. *Cont rib Nephrol.* 170, 132-155 (2011).

8. Doshi SM, Friedman AN. Diagnosis and management of type 2diabetic kidney disease. *Clin J A Soc Nephrol.*12, 136-156 (2017).

9. Coman V, Vodnar DC. Gut microbiota and old age: Modulating factors and interventions for healthy longevity. *Experimental Gerontology.* 141, 111095 (2020).

10. DeJong EN, Surette MG, Bowdish DM *et al.* The Gut Microbiota and Unhealthy Aging: Disentangling Cause from Consequence. *Cell Host & Microbe.* 28, 180-189 (2020).