A Cross-sectional Study of Clinical Characteristics of Impaired Awareness of Hypoglycemia (IAH) in Thai Adult Patients with Type 1 Diabetes Mellitus

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**Background:** Identification of individuals with impaired awareness of hypoglycemia (IAH) is important to allow modification of glycemic targets and to adjust insulin therapy to minimize hypoglycemia risk. Data on adults with type 1 diabetes mellitus (T1DM) in Thailand is sparse.

**Objective:** This cross-sectional study aimed to evaluate the prevalence and clinical characteristics of adult T1DM with IAH.

**Methods:** All cases of T1DM were recruited at Theptarin Hospital, one of largest diabetes centers in Bangkok. All completed a questionnaire to assess awareness of hypoglycemia using the Gold’s criteria (a 7-point Likert scale with 1 = “always aware” and 7 = “never aware”; a score of ≥ 4 implying IAH). We also explored risk factors for IAH with therapy goals and validated diabetes-specific nutrition knowledge (THEPTARIN DM questionnaire).

**Results:** A total of 75 adults with T1DM (female 53.3%, with mean age 42.7±13.1 years, duration of diabetes 17.8±10.7 years, A1C 7.6±1.4%) were studied. Personalized A1C target was set in 60 patients (range from less than 6.5% to 8.5%, A1C ≤ 7.0% in 65% of patients). The prevalence of IAH in overall patients was 33.3%. A higher (41.9%) prevalence was observed in long-standing (≥15 years) T1DM patients. Almost half of patients (44.0%) experienced nocturnal hypoglycemia during study period. The incidence of severe hypoglycemia in the year preceding the study was much higher in those identified as having IAH (12% vs 4%, odds ratio 3.27). Only 17.3% of patients had a high score on validated diabetes-specific nutrition knowledge. No association was found between knowledge score and the occurrence of IAH, severe hypoglycemia, or nocturnal hypoglycemia.

**Conclusion:** Impaired awareness of hypoglycemia (IAH) represents a great challenge for both the patients and the healthcare professional. About one-third of Thai adults patients with T1DM have this condition, leading to more episodes of severe hypoglycemia. Nonetheless, identification of IAH in routine clinical practice and structured education programs should be aimed at rigorous avoidance of recurrent hypoglycemia without relaxing overall control.

**Keywords:** Impaired awareness of hypoglycemia, Type 1 diabetes mellitus, THEPTARIN DM questionnaire