

ORIGINAL ARTICLE

Spanish translation, adaptation and validation of the Hypoglycemia Fear Survey in adults with type 1 diabetes in the Community of Madrid[☆]



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Abstract

Background and objective: The negative impact of hypoglycemia on patients with type 1 diabetes mellitus (T1DM) may lead to development of fear of hypoglycemia. In this study, the original Hypoglycemia Fear Survey (HFS) questionnaire was translated into Spanish, adapted and validated, and variables associated to fear of hypoglycemia in T1DM were analyzed.

Materials and methods: The HFS was translated and adapted to Spanish using the forward-backward translation method. The resulting questionnaire, EsHFS, was administrated to a population with T1DM. The following parameters of the questionnaire were analyzed: feasibility, reliability (Cronbach's alpha), content validity (correlating EsHFS and EsDQOL [Diabetes Quality of Life] questionnaire), and stability (by means of test-retest correlation).

Results: The EsHFS questionnaire consists of 24 items and three subscales including: *subscale 1* on worry; *subscale 2* on hypoglycemia-avoidant behavior, and *subscale 3* on hyperglycemia-influenced behavior. Study population: 163 subjects, with a mean aged (SD) of 36 (10.5) years, 24% on continuous subcutaneous insulin infusion. Of these, 99.8% completed the EsHFS questionnaire in less than 10 min. Cronbach's alpha for global EsHFS was 0.92. EsHFS and its subscales correlated with EsDQOL. Test-retest correlation (Pearson) was $r=0.92$. Age, female sex, lower educational level, living alone, frequency of daily self-monitoring and non-severe hypoglycemia, and history of severe and/or asymptomatic hypoglycemia were independently associated to the result of EsHFS.

Conclusions: The Spanish version of the HFS, EsHFS, has good psychometric properties and may be a useful tool to assess fear of hypoglycemia in Spanish-speaking patients with T1DM.

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PALABRAS CLAVE

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Traducción al español, adaptación y validación del Cuestionario de miedo a la hipoglucemia en adultos con diabetes tipo 1 de la Comunidad de Madrid

Resumen

Antecedentes y objetivo: Las consecuencias negativas de la hipoglucemia en las personas con diabetes mellitus tipo 1 (DM1) pueden resultar en el desarrollo de miedo a la hipoglucemia. Este estudio traduce al español, adapta y valida, el cuestionario original Hypoglycemia Fear Survey (HFS) y analiza qué variables se asocian con el miedo a la hipoglucemia en DM1.

Material y métodos: El HFS fue traducido y adaptado mediante el proceso de traducción-retrotraducción y el nuevo cuestionario obtenido, EsHFS, fue administrado a una población con DM1. Se analizó: factibilidad, confiabilidad (α de Cronbach), validez de contenido (mediante correlación del EsHFS y el cuestionario de calidad de vida, EsDQOL) y estabilidad (correlación test-retest) del cuestionario.

Resultados: El EsHFS consta de 24 ítems, identificándose 3 subescalas: *subescala 1*, de preocupación; *subescala 2*, de comportamiento asociado a evitación y la *subescala 3*, de comportamiento que produce hiperglucemia. Población incluida: 163 sujetos, M (DE) 36(10,5) años, 24% tratados mediante infusión subcutánea continua de insulina. El 99,8% autocumplimentó el EsHFS en < 10 min. El α de Cronbach para el EsHFS global fue de 0,92. El EsHFS y las subescalas se correlacionaron con el EsDQOL. La correlación test-retest (Pearson) obtuvo una $r=0,92$. Edad, sexo femenino, menor nivel formativo/estudios, convivencia sin pareja, frecuencia de autoanálisis y de hipoglucemia no grave, antecedentes de hipoglucemia grave y/o asintomática, se asociaron independientemente al resultado del EsHFS.

Conclusiones: La versión española, EsHFS, posee unas buenas propiedades psicométricas y podría ser útil para evaluar el miedo a la hipoglucemia en población con DM1 que hable español en nuestro entorno.

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Introduction

Hypoglycemia is one of the main limiting factors for achieving adequate glycemic control in patients with type 1 diabetes mellitus (DM1).¹ In diabetic patients, the unpleasant symptoms of hypoglycemic episodes, as well as their negative consequences, are often associated with the development of the fear of hypoglycemia (FH), which has a negative impact on the quality of life of both diabetic subjects and family members.^{2,3} This fear is of clinical relevance in diabetes management, metabolic control, psychological well-being and quality of life.⁴

Individuals who develop FH take counterproductive actions to prevent potential hypoglycemic episodes, such as reducing the insulin dose or consuming large amounts of carbohydrates, which leads to worsened blood glucose control and an increased risk of long-term complications.² On the other hand, people with DM1 and FH experience severe hypoglycemia (SH) and asymptomatic hypoglycemia (AH) more often, thereby further increasing FH and complicating disease control.⁵

Fear of hypoglycemia can be assessed using the Hypoglycemia Fear Survey (HFS), published in 1987 by Cox et al., which quantifies FH-related worries or concerns and the behavior in people with DM1.⁶ The HFS has been widely used in clinical trials, and has been translated into more than 50 languages, demonstrating its reliability and validity.⁵ Following the first version, the same authors have recently developed two more versions.^{5,7} The FH questionnaire, and specifically the original version (HFS), has been translated and adapted in many countries, though not in Spain. Being

able to use this questionnaire in Spain is important, since it remains the gold standard diagnostic tool in this field.

The present study was designed to translate into Spanish and adapt and validate the HFS in its initial version, and to analyze the variables associated with FH in a population with DM1.

Materials and methods

This was a cultural adaptation and evaluation observational study of the psychometric properties (feasibility, reliability, validity and stability) of an FH questionnaire—the HFS—in a population with DM1 representative of the corresponding healthcare area, together with an assessment of the clinical variables associated with the outcomes of the HFS.

Adaptation and evaluation of the psychometric properties of the questionnaire

The cultural adaptation process of the questionnaire was conducted based on the forward/backward translation strategy.⁸ In our study, this process involved the translation into Spanish of the original version of the HF by two independent bilingual Spanish translators. This first translation was reviewed by an expert committee of three endocrinologists and three diabetes education nurses in order to maintain the conceptual and semantic equivalence of both versions, while adapting the instrument to our setting.

The resulting version in turn was backtranslated by two bilingual translators from the United Kingdom, and was

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