

# Educational booklet on diabetes: construction and content validation

## Cartilha educativa sobre diabetes: elaboração e validação de conteúdo

Jéssica Azevedo Aquino<sup>1</sup>; André Oliveira Baldoni<sup>2</sup>; Claudia di Lorenzo Oliveira<sup>3</sup>; Roberta Carvalho Figueiredo<sup>4</sup>; Clareci da Silva Cardoso<sup>5</sup>; Mariana Linhares Pereira<sup>6</sup>; Cristina Sanches-Giraud<sup>7</sup>

### Abstract

Patients with Diabetes Mellitus (DM) require support for self-management education and care. This study aimed to present the results of the construction and content validation of the educational booklet to be used in an educational program for empowerment of patients with DM. The educational booklet was developed containing the standards needed for self-care in diabetes proposed by the American Association of Diabetes Educators and subjected to evaluation by specialists using the Delphi Technique. The specialists valuation was performed in three stages, an online questionnaire with eight questions was used to get a consensus higher than 80% of all the items that makes up the final material. Later, the educational booklet was subjected to assessment of patients in a pilot study. Twelve specialists in DM participated in the first stage and three items initially did not reach 80% consensus. The booklet was reformulated and six specialists attended the second stage, in which he consensus higher than 80% was obtained. In a third stage, five patients contributed to the assessment of the final version. The educational booklet presents good characteristics of content validate to be used in educational program to empower DM patients in self-management and health care.

**Keywords:** Delphi technique. Diabetes mellitus. Health education. Empowerment.

### Resumo

Pacientes com Diabetes Mellitus (DM) necessitam de suporte para educação e cuidados para autogestão da doença. Este estudo teve como objetivo apresentar os resultados da construção e validação de conteúdo de uma cartilha educativa para ser utilizada em um programa de educação baseado em empoderamento dos pacientes com DM. A cartilha foi elaborada contendo os padrões necessários para autocuidado em Diabetes propostos pela Associação Americana de Educadores em Diabetes e submetida a avaliação

<sup>1</sup> Graduação em Farmácia pela Universidade Federal de São João del-Rei (UFSJ) e Mestrado em Ciências Farmacêuticas pelo Programa de Pós-Graduação em Ciências Farmacêuticas da UFSJ. E-mail: jessica.a.aquino@gmail.com

<sup>2</sup> Graduação em Farmácia pela Universidade Federal de Alfenas (UNIFAL). Mestrado e Doutorado em Ciências Farmacêuticas pela Faculdade de Ciências Farmacêuticas de Ribeirão Preto (FCFRP-USP). E-mail: andrebaldoni@ufs.ju.br

<sup>3</sup> Graduação em Medicina pela Universidade Gama Filho, mestrado e doutorado em Saúde Pública pela Universidade Federal de Minas Gerais (UFMG). E-mail: claudia.dlorenzo@gmail.com

<sup>4</sup> Graduação em Farmácia-Bioquímica pela Universidade Federal de Alfenas (UNIFAL), mestrado em Saúde da Comunidade pela Universidade de São Paulo (USP) e doutorado em Saúde Pública pela Universidade Federal de Minas Gerais (UFMG). E-mail: betafigueiredo@yahoo.com.br

<sup>5</sup> Graduação em Psicologia pela Universidade Federal de São João del-Rei (UFSJ). Mestrado e Doutorado em Saúde Pública Epidemiologia pela Universidade Federal de Minas Gerais (UFMG). E-mail: clarecicardoso@yahoo.com.br

<sup>6</sup> Graduação em Farmácia e mestrado em Ciências Farmacêuticas pela Universidade Federal de Minas Gerais (UFMG). E-mail: marianapereira@ufs.ju.br

<sup>7</sup> Graduação em Farmácia pela Universidade Federal de Santa Catarina (UFSC). Mestrado e Doutorado em Fármacos e Medicamentos na área de Farmacocinética Clínica pela Faculdade de Ciências Farmacêuticas da Universidade de São Paulo (FCF-USP). E-mail: csgiraud@ufs.ju.br

Grupo de Pesquisa em Epidemiologia e Avaliação de Novas Tecnologias em Saúde, GPEANTS, CNPq/UFSJ.

de especialistas utilizando a técnica Delphi. Para avaliação dos especialistas, que ocorreu em duas etapas, foi utilizado um questionário online contendo 8 questões para obter um consenso superior a 80% de todos os itens que compõem o material final. Posteriormente, foi realizada uma terceira etapa em que a cartilha foi submetida a avaliação de pacientes em um estudo piloto. Participaram da primeira etapa 12 especialistas em DM e três itens não atingiram inicialmente o consenso de 80%. A cartilha foi reformulada e seis especialistas participaram da segunda etapa, em que foi obtido o consenso de 80%. Na terceira etapa, cinco pacientes contribuíram para a avaliação da versão final. A cartilha educativa apresenta boas características de validação de conteúdo para ser utilizada em um programa de educação para empoderamento de pacientes com DM e na autogestão e em cuidados da saúde.

**Palavras-chave:** Técnica de Delphi. Diabetes mellitus. Educação em saúde. Empoderamento.

## Introduction

Diabetes Mellitus (DM) is a chronic disease that requires continuing medical care, education for disease self-care and support to prevent complications (ADA, 2015). However, many patients with DM do not receive enough support from health services and/or professionals care, which contributes to difficulties in maintaining glycemic control, high risk of DM complications and psychosocial problems (KEERS et al., 2006). In this context, it is essential to adopt educational and motivational practices such as self-care education, which is the basis for the DM patients' empowerment, fundamental for effective management of the disease treatment (FUNNELL; ANDERSON, 2004).

Empowerment is defined as helping patients discover and develop the inherent capacity to be responsible for their own lives (FUNNELL; ANDERSON, 2004). Thus, this study aimed to present the results of the construction and content validation of the educational booklet to be used in an educational program for empowerment of patients with DM.

## Methodology

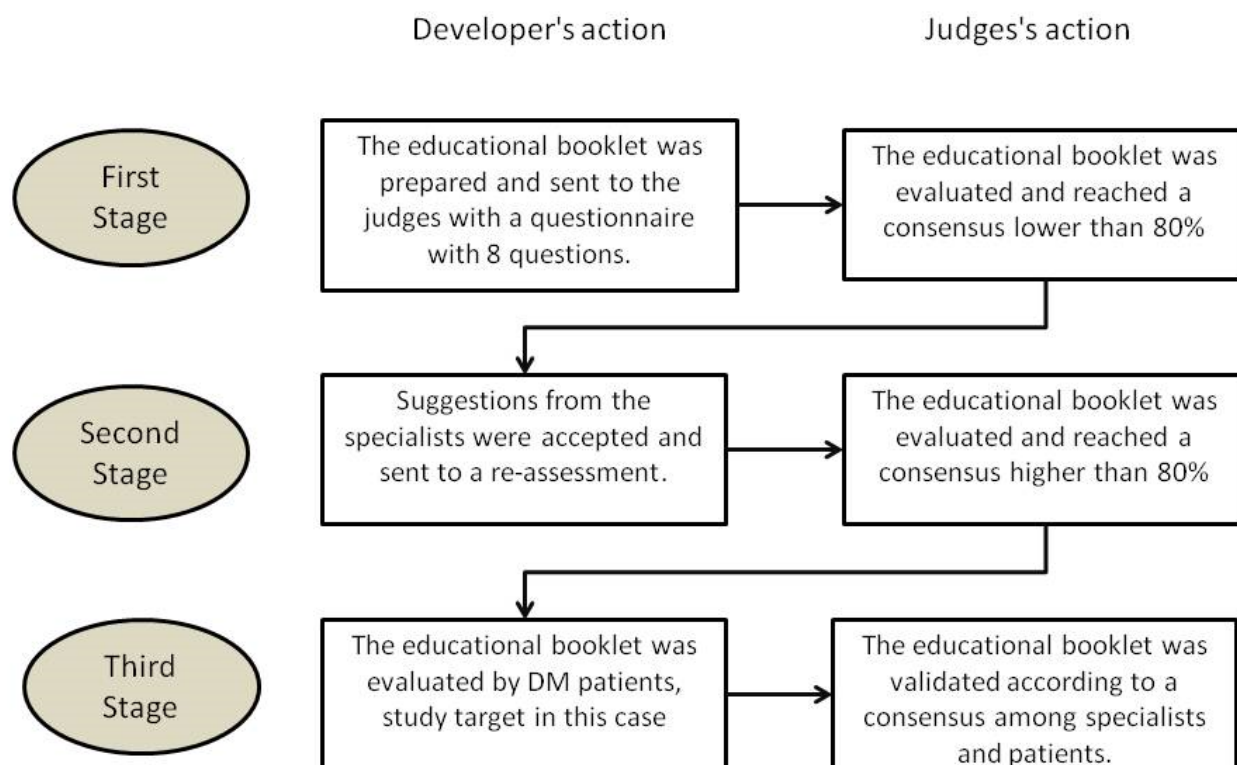
The “*Educational Booklet on Diabetes*” and it was developed covering the actions necessary to diabetes self-care education proposed by the *American Association of Diabetes Educators*, that are: healthy eating, being physically active,

monitoring of blood glucose, medication adherence, good problem-solving skills, healthy coping skills and risk-reduction behaviors (PEEPLES et al., 2007). The educational booklet was submitted to an assessment using the Delphi Technique by pharmacists, nutritionists, educators physical, nurses, psychologists, doctors and endocrinologists. This technique is a method of trial information used to reach a consensus opinion among these specialists (judges) on a given theme (SCARPARO et al., 2012).

In order to guide the evaluation of instrument, it was made a questionnaire containing eight questions prepared by a frequency Likert scale of 11 points ranging from zero through ten. The answer was later converted into percentage for consensus averaging between experts. Besides, after each question, there was an optional open field for the judges' comments. The specialists were invited to participate of the study by e-mail containing a link to access the online questionnaire. Responses were anonymous and the time to answer the first stage was 14 days.

Thereafter, the agreement level between the judges's first stage answers was estimated by percentage of agreement. For this study, was considered acceptable an agreement of, at least, 80% among all the specialists. The items reached an agreement less than 80% were reformulated and the material was sent, again, to the specialists for a second stage, until an agreement of 80% or more between all topics. The Figure 1 shows the development stages of educational booklet.

**Figure 1** - Development and validation of the Educational Booklet about Diabetes according to the consensus among specialists and patients using Delphi Technique.



**Source:** Authors.

Furthermore, it was done a study pilot where the educational booklet was evaluated by DM patients in order to improve the instruments and adequate it for the population of interest, a third stage study. This study was approved by Human Research Ethics Committee from the Federal University of São João Del-Rei (Protocol: 731.321).

## Results and Discussion

From a total of 14 experts invited to participate in this research, 12 answered the first stage and

six, the second stage evaluation of the educational booklet. Table 1 shows the percentage of agreement between the judges' answers for each item. The items "Language Material", "Physical Activity" and "Healthy Eating" achieved agreement less than 80% in the first stage and then have been reformulated. Despite agreement higher than 80% in the other items, they were also reformulated according judges' suggestions. Thereafter, the educational booklet was submitted to the second stage of the Delphi Technique.

**Table 1** - Percentage of agreement between the judges' evaluations of the content that will compose the final instrument, Divinópolis-MG, 2015

Item	First Stage (n=12)	Second Stage (n=6)
	Mean % (SD)	Mean % (SD)
Adaptation to language	79,2 (1,98)	91,7 (0,75)
Encouraging a practice of physical activity	79,2 (1,93)	97,6 (0,82)
Encouraging healthy eating	74,2 (1,73)	96,7 (0,52)
Stimulating glucose monitoring	85,0 (1,73)	100,0 (0,00)
Teaching the correct use of medicines	85,8 (2,35)	95,0 (0,84)
Acute complications prevention	83,3 (1,92)	100,0 (0,00)
Complications chronic prevention	82,5 (2,01)	98,4 (0,41)
Utility as empowerment instrument	84,2 (1,83)	93,0 (0,82)

SD: Standard Deviation

Source: Authors

After the evaluation of the judges in the second stage, all items reached the consensus higher 80% and a material was considered adequate to be used with patients with DM. In the third stage of the study, five patients participated in the pilot and demonstrated positive assessment of the educational booklet. The suggestions of the patients were related to improvements in some figures which were redesigned in the final version.

Finally, it is important to note that empowerment philosophy is subjective and requires that we acknowledge the control that patients have over their decisions. Thus, the educational booklet only provides the information on which patients can base those decisions. Furthermore, a potential limitation of this study may be that the percentage of agreement, although simple and practical, does not take into account the probability of agreement due to chance.

The “*Educational Booklet on Diabetes*” can be visualized from the Universidade Federal de São João del-Rei<sup>8</sup>.

The construction of the educational booklet involved scientific knowledge and its content has been validated according to consensus of experts and patients. The construction and content validation of an educational booklet for empowerment requires knowledge and multidisciplinary evaluation, and critical analysis by patients. In addition, the Delphi Technique is an effective tool for construction and content validation booklets for health education.

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<sup>8</sup> Web site at: [http://www.ufsj.edu.br/tecnologiasemsaude\\_pesquisa/cartilhas.php](http://www.ufsj.edu.br/tecnologiasemsaude_pesquisa/cartilhas.php)

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