

**DEVELOPMENT OF A NUTRITION EDUCATIONAL TOOL FOR
DIABETIC PATIENTS IN BHUTAN BASED ON
THE BASIC LEVEL OF CARBOHYDRATE
COUNTING CONCEPT**



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ABSTRACT

Diabetes is estimated to be one of the fastest growing non-communicable diseases in Bhutan. However, knowledge of the disease and its management is still limited among Bhutanese citizens. Therefore a nutrition educational tool which would provide necessary information for self management and allow a variety in food choices to fit a person's preferences is necessary. The carbohydrate counting concept used in this study allows for flexibility in food choices thereby making it more acceptable to a diabetic patient.

The purpose of this study was to develop and evaluate the effectiveness of a nutrition educational tool based on the basic level of carbohydrate counting concept. The first phase of the study involved developing the nutrition educational tool and the second phase was assessing the effectiveness of the developed nutrition educational tool.

The effectiveness of the educational tool was evaluated by 32 type 2 diabetic patients (17 males and 15 females) aged 42.02 ± 10.02 years (mean \pm SD) and it involved assessing the participant's knowledge of the disease and carbohydrate counting concept, their perception and conceptualization in using the carbohydrate counting concept and their over all satisfaction with the developed nutrition educational tool. The nutrition educational tool was developed as 2 colorful booklets about diabetes and carbohydrate counting.

The results of the study showed that 78.1 % of the participants were found to be obese, with 65.6% having abdominal obesity. The carbohydrate counting exercise revealed that 46.9 % were able to use the developed tool at a medium level (50%-75% correct score) at week 1. Participants food record analysis and carbohydrate counting practice revealed a significant increase ($p < 0.05$) in carbohydrate counting accuracy between week 2 and week 4, and week 3 to week 4 respectively. The knowledge score of diabetes, carbohydrate counting and total score was significantly improved ($p < 0.0001$) between the pre-test and the post-test with most participants' improving to medium knowledge level (56.3%, 53.3%, 62.5% of participants in the score of diabetes, carbohydrate counting and total score respectively). The mean and median responses given on the book contents, book format, book appeal and other miscellaneous questions related to the developed educational tool was more than 5 and less than 6 which indicated that the participants' satisfaction level with the developed educational tool was somewhere between "very satisfied" to "extremely satisfied" on a 6-point Likert scale.

In conclusion, the developed nutrition educational tool was acceptable as an attractive learning tool for adult type 2 diabetic patients in Bhutan and it helped to increase in the knowledge of both the disease as well as the carbohydrate counting concept.

KEY WORDS: TYPE 2 DIABETES /CARBOHYDRATE COUNTING/ NUTRITION EDUCATIONAL TOOL/

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