

**Resource Development – A Pictorial Resource  
on  
“Carbohydrate Counting for Adolescents with  
Type 1 Diabetes Melitus”**

**Summary of Findings – Kelly Kan**

## ***Introduction***

Diabetes Mellitus is a chronic health condition. The types of diabetes are Type 1 Diabetes Mellitus (T1DM), Type 2 Diabetes Mellitus (T2DM) and gestational diabetes. Approximately 85%-95% of the diabetes population have T2DM but the early onset of T1DM and the complications that follow have an impact on the health service resources. The estimated prevalence rate of T1DM in New Zealand is 188 per 100000 and according to a worldwide study New Zealand has a very high incidence rate of T1DM. Approximately 80% of the adolescents with T1DM in New Zealand are of New Zealand European background.

## ***Aim***

To research, develop and pre-test a pictorial resource on carbohydrate counting for use by adolescents with Type 1 Diabetes Mellitus, with input from this group using two focus group sessions.

## **Foods for Teenagers**

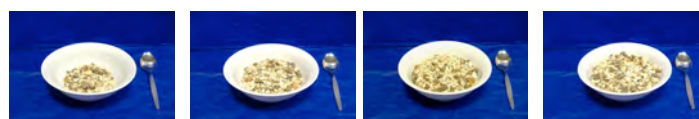
**- Carbohydrate Counting for Adolescents with Type 1 Diabetes Mellitus**



## ***Literature Review***

- Dietary management of diabetes is a challenging task for patients with T1DM, especially adolescents with T1DM. When management of T1DM is sub-optimal, acute and long-term complications can occur. Long-term studies have shown that adolescents with T1DM develop risk factors for macrovascular disease and symptoms of microvascular disease.
- Carbohydrate counting is one of the approaches to the dietary management of T1DM and it is based on the concept that the glycaemic response of carbohydrate in the body is similar regardless of the type of carbohydrate consumed. This approach is used by overseas dietitians and also dietitians in New Zealand. Carbohydrate counting is carried out by adding up the actual grams of carbohydrate in the foods at each meal or snack time. Thus providing flexibility with food choices and the amount of food consumed.

- A survey on dietetic resources for diabetes currently available in New Zealand was carried out with the members of the New Zealand Dietetic Association's Diabetes Special Interest Group. The results of the survey showed that there is no carbohydrate counting dietetic resource designed specifically for adolescents with T1DM. In addition, dietitians reported the use of overseas resources and dietetic resources for people with Type 2 Diabetes Mellitus when educating adolescents with T1DM
- Photographs of food and food substitutes have been used in studies to determine the use of visual aids in improving the accuracy of estimating food intake. The authors have concluded there is a large variability in adolescents' ability to estimate amount of food items at an individual level. However, the resource being developed in this project will be used alongside dietetic input and education from the dietitians, hence the adolescents' ability and skills to estimate portion size could possibly be better than the subjects used in these studies. The studies researched have provided an insight into the use of the food atlas and food photographs.
- Focus groups are widely used in the health care settings. Adolescents are capable of giving constructive feedback and their participation in focus groups have also been reported in the literature. The methodology for conducting focus groups with adults and adolescents are similar but it is recommended that the number of adolescents in any one focus group session should be between 4 and 6. In addition, the length of focus group sessions and participants' knowledge of the topic of interest have to be taken into consideration.

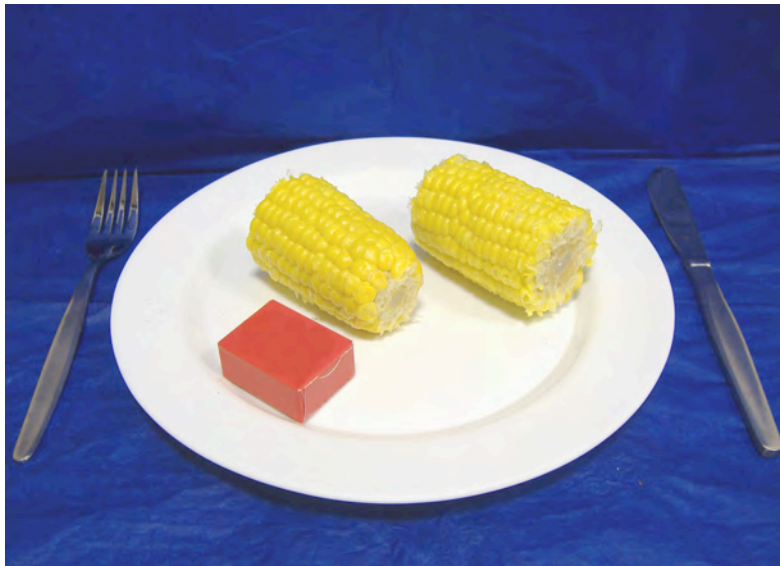


## *Methods*

Adolescents (n=6) from the Christchurch Diabetes Centre consented to take part in the two focus group sessions.

- 1<sup>st</sup> Focus Group: To find out the usual amount and the common types of carbohydrate foods consumed by adolescents, the size of the pictures and ideas and suggestions from the participants about what they would like to see in a carbohydrate counting pictorial resource specifically developed for them.
- 2<sup>nd</sup> Focus Group: To obtain feedback from the participants about the first draft of the pictorial resource and discuss what could be improved.

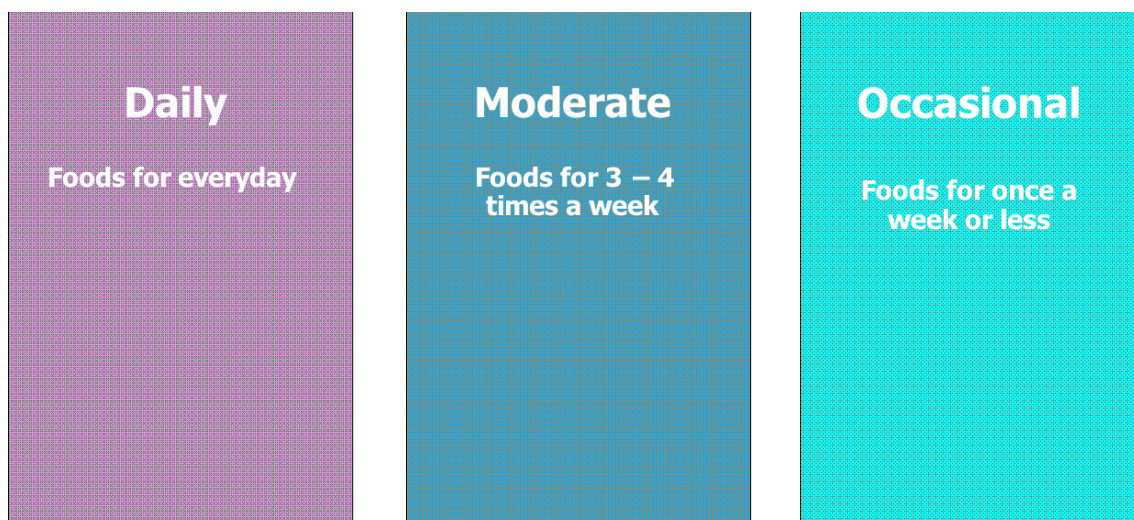
The photographs of the food were taken using a digital camera set at an angle of 45° and on a tripod stand. Cutlery was placed beside the plate and bowl to help the adolescents estimate the size of the food. In addition, a box of raisins was also used to give them a better perspective of the life-size food.



Size of pictures in the pictorial resource - 7.49cm x 10.36cm

### *Key Findings*

- Boys generally eat larger amounts than girls
- Participants listed food items they usually consume
- Clear pictures are necessary for easy identification of food item
- Must be in colour as “black and white is unappealing”
- Adolescents wanted to see “modern Kiwi foods”, “normal foods - not just fat-free and sugar-free” and “normal foods in recommended amounts”
- Traffic light colours suggested to categorise the food items
- All of them requested a “pocket-size” resource material



### *Conclusion*

‘Foods for Adolescents - Carbohydrate Counting for Adolescents with Type 1 Diabetes Mellitus’ was developed based on literature research, input from adolescents with T1DM and professional advice from dietitians working in the area of diabetes. This is the only carbohydrate counting pictorial resource developed in New Zealand for adolescents with T1DM. This resource material would be a useful addition to the dietetic resources for dietitians working with adolescents with T1DM and would complement the other resources available.