



Evaluation Report

Building Resistance An education program for people with pre-diabetes

Diabetes Self-Management Working Group
Saskatoon Health Region

June, 2005

Acknowledgements

The Diabetes Self Management Working Group would like to thank and acknowledge the dedicated work of all staff and community members who helped to develop, implement and evaluate this pilot project.

Rochelle Anthony, Dietitian, SHR

Marilee Bailey, Dietitian, SHR

Audrey Hill, Dietitian, SHR

Blanche Johnston, Exercise Therapist, SHR

Tunie Keating,

Roxane Lavertu,

Laurel Leuschen, Dietitian, SHR

Marlene Matiko, Diabetes Nurse Educator, SHR

Audrey McLelland, Pharmacist, Safeway Canada

Carolyn Medernach, Research Services, SHR

Liane Miller, Exercise Therapist, SHR

Melanie Rathgerber, formerly Research Services, SHR

Gill Reiter, Exercise Therapist, SHR

Myrna Sawatsky, formerly Diabetes Nurse Educator, SHR

Rick Stene, Manager, Cardiac Rehab Program, SHR

Kelly Tokarchuk,

Leslie Worth, Manager, Patient Education and Chronic Disease

Table of Contents

Executive Summary

Background

Project Objectives, Action Plans, Desired Outcomes and Evaluation Design

Results

Goal 1 - Increase awareness and knowledge

Goal 2 - Increase healthy eating and activity

Goal 3 - Increase communication and collaboration with physicians

Goal 4 - Create a template for pre-diabetes client education

Limitations of the Project

Summary of Results

Recommendations

References

Background

The Saskatoon Health Region's Diabetes Plan was developed in March, 2003. The principles for action used to develop this plan, a chronic disease model, the diabetes clinical practice guidelines (CPG) and a quality improvement approach, all influenced the design of the *Building Resistance (BR)* project.

The key issues which defined the project included:

- The increasing emphasis in the CPG on diabetes prevention. One group targeted for diabetes prevention is persons who have been diagnosed with pre-diabetes (impaired fasting glucose and/or impaired glucose tolerance).
- The literature has reported three randomized trials with evidence that lifestyle change is significant in the risk reduction for diabetes
- The increasing amount of time spent by staff members at the Diabetes Education Centre working with people with pre-diabetes. Since the 1998 CPG, the numbers of referrals for persons in this category has continued to increase as has the wait list for service. At the start of the *Building Resistance* program, the DEC was conducting a nurse/dietitian led education group program for pre-diabetes. Although physical activity was discussed, there was no hands-on experience with physical activity and an exercise prescription was not provided. This program was integrated into the new *BR* program.

Summary of Key Studies in the Literature

Three large prospective studies have influenced current practice for those with pre-diabetes. Each is reviewed briefly with key strategies and outcomes highlighted.

The Da Qing IGT and Diabetes Study (1997)¹. This community based study followed 577 individuals diagnosed with IGT over six years. There were 3 intervention groups: diet only, exercise only and diet plus exercise. The cumulative incidence of diabetes after 6 years was 67.7% in the control group and 43.8% in the intervention groups. The risk reduction in intervention groups was: diet only - 31%; exercise - 46% and diet plus exercise - 42%. The interventions were administered through group and individual counseling.

The Finnish Diabetes Prevention Study (2001)².

In this study 522 people with IGT were randomly assigned to either the intervention or control group. Those in the intervention group received individualized counseling. There were five goals: weight reduction of at least 5%; fat intake to < 30% of energy intake; saturated fat intake <10% of energy intake; fiber intake >15g/1000 kcal.; exercise > 4 hours per week. The cumulative incidence of diabetes after four years was 11% in the intervention group and 23% in the control group. The risk of diabetes was reduced by 58% and was directly associated with changes in lifestyle.

The Diabetes Prevention Program (2002)³

The 27 centre randomized trial had 3234 participants enrolled. Forty-five percent of the participants represented racial and ethnic minorities. The interventions used in

this study for lifestyle change were multi-faceted and had eight key features: individual case managers/coaches; frequent contact with participants; a core curriculum for self management strategies for weight loss and physical activity; supervised activity sessions; maintenance session combining individual and group approaches; a toolbox of strategies to individualize the program; tailoring materials and strategies to ethnic diversity; extensive network of training, feedback and clinical support. The study resulted in a 58% reduction in the incidence rate of diabetes.

Project Goals, Action Plans, Desired Outcomes and Evaluation Design

The development of this diabetes plan activity was based on the quality improvement PDSA (plan, do study, act) model. The goals, action plans and desired outcomes are outlined below.

Goal #1

To increase awareness and knowledge regarding pre-diabetes in the target population, specifically:

- knowledge about their own condition and its predisposition to diabetes
- knowledge about benefits of preventive behaviours
- teach practical behavioural-change skills

Activities to meet this goal:

- a) Half-day education session from healthcare professionals (dietitian, exercise therapist and nurse) about pre-diabetes condition
- b) Education session from a healthcare professional about healthy lifestyle choices
- c) Provision of materials and resources regarding healthy lifestyle choices
- d) Conduct body weight and waist circumference measurements and inform participants about their measurement status

Outcomes	Indicator/Measurement of Outcome
1. Target population has an increase in knowledge regarding healthy eating and exercise	<ul style="list-style-type: none"> • pre and post “quiz” on healthy eating - measure change score - pre-session, immediate post-session and 4 and 6 month follow-up • pre and immediate post session measure regarding their own perception of knowledge of healthy eating and exercise both how it affects their health and reduces risk ...
2. Target population shows intent to exercise more frequently than before the program	<ul style="list-style-type: none"> • “stage of change” questions
3. Target population shows intent to change re: eating patterns	<ul style="list-style-type: none"> • “stage of change” questions
4. Target population has an increased knowledge regarding pre-diabetes	<ul style="list-style-type: none"> • pre-questions on their perceived knowledge level re: IFG - who did they talk to? doctor, nurse, dietician, etc? • post questions on perceived knowledge level re: IFG - post session and at 4, 6 month follow-up

Goal #2

To increase healthy eating and activity levels in target population

Activities to meet this goal:

- a) Education session will include practical suggestions for increasing activity levels
- b) Education session will include practical suggestions for healthy eating choices
- c) Phone call one month post program to encourage clients in regard to healthy eating and increased activity
- d) Follow-up session at 4 and 6 months post-program

Outcomes	Indicator/Measurement of Outcome
Clinical changes - decrease body weight	pre and post program (4 and 6 months) measurements
Clinical changes - lower waist circumference	pre and post program (4 and 6 months) measurements
Demonstrated increase in activity level	<ul style="list-style-type: none">• post program question on activity levels (4 and 6 months) - compared with pre-session question on activity levels• did they join an exercise group - ask at 4 and 6 months• stage of change
Demonstrated improvement in diet	<ul style="list-style-type: none">• post program question on changes made to eating (4 and 6 months) - ask for examples of changes they made in order to lessen subjective bias (descriptive analyses only)• stage of change

Ultimate Outcome - to delay onset of type 2 diabetes - cannot be measured as part of pilot program

Goal #3

To increase communication and collaboration between family physicians in the Saskatoon Health Region and health educators regarding clients with pre-diabetes.

Activities to meet this goal:

- a) send letter to family physicians in Saskatoon City informing them of upcoming workshops for people with pre-diabetes
- b) engage in personal communication with family physicians in rural communities informing them of upcoming workshops for people with pre-diabetes

Outcomes	Indicator/Measurement of Outcome
increase in referrals for pre-diabetes program	<ul style="list-style-type: none"> Saskatoon only: track referrals to educators post-communication (cannot compare to pre-communication because of seasonal differences) cannot be tracked in rural setting number of people in programs and number of people who came for 4 and 6 month follow-up

Goal #4

To create a template for education to be used for people with pre-diabetes

Activities to meet this goal:

- a) develop education session for people with pre-diabetes outlining format and content of education
- b) provide 6 education sessions in the pilot period
- c) evaluate the six education sessions and make necessary recommendations for future programming

Outcomes	Indicator/Measurement of Outcome
Participants show satisfaction with education session	<ul style="list-style-type: none"> in-depth focus group with sample of participants regarding satisfaction with the program.
Staff members involved with the sessions show satisfaction with program	<ul style="list-style-type: none"> focus group for staff members regarding satisfaction with the program and suggestions for change

Data Collection and Analysis

Data collection was done at four times during the pilot:

- On the day the individual attended *BR*, pre-session data included a questionnaire on knowledge and beliefs and physical measurements: weight, height, BMI, blood pressure and waist circumference
- On the day the individual attended *BR*, post-session data collection was a questionnaire on knowledge and beliefs to compare to pre-session and satisfaction with the session.
- Four month questionnaire and physical measurements
- Six month questionnaire and physical measurements

For the pilot evaluation, for survey items collected only pre/post-session, data is reported for 51 persons who completed the questionnaires. One person only completed the pre-session questionnaire and was deleted from the data collection.

Thirty-seven persons (71%) from the original 51 participated in the data collection pre and post *BR* and at the four month follow-up. To compare for change in knowledge,

behaviour or physical parameters, data are reported for these 37 participants. Some did not complete single items in the surveys. Percentages reported are based on the actual number answering a question.

Only twenty-six persons participated in the six month follow-up and these were not all the same individuals who were at the four follow-up. As the actual number for comparison pre/post *BR* and both 4 and 6 month follow-up is very small, the six month comparison data is not reported.

Results

During the pilot period, October, 2003 to May, 2004, six *Building Resistance* sessions were held at the Saskatoon Field House. One class was cancelled due to low registration. Interested participants were invited to the next session.

Participants [Goal 3]

In the pilot period 85 people were invited to attend the program and 52 or 61.2% participated. If a participant did not attend on the first invitation, two additional invitations were sent. If there was still no response, a letter of termination was sent to the referring family physician.

These invitees were referred by 50 different family physicians. Thirty-one made a single referral; 17 made 2-4 referrals and one each made 7 and 8 referrals.

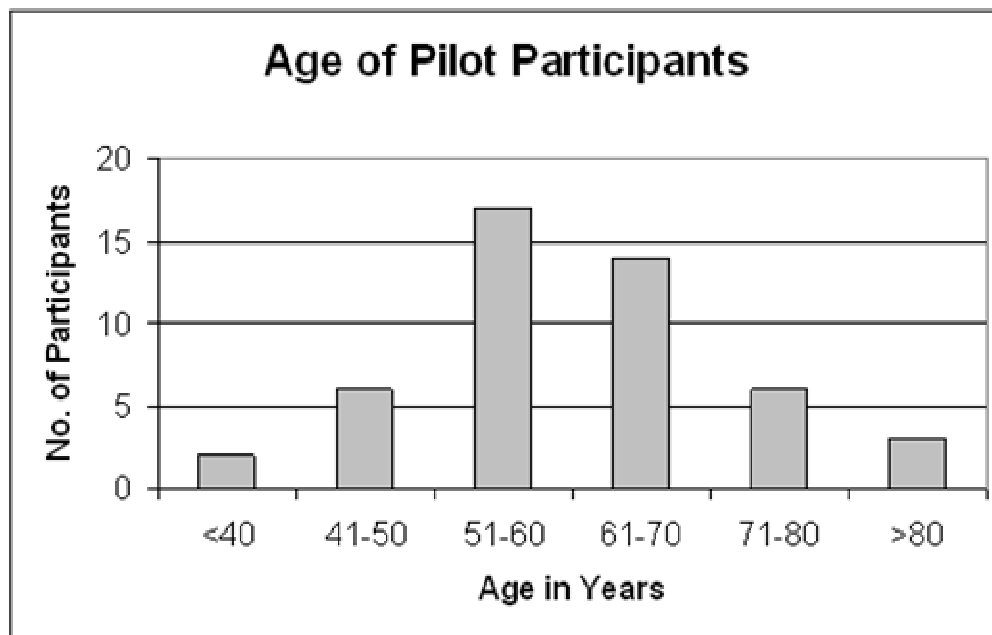
Demographic data is only available on 50 of the pilot participants. There were 32 women (64%) and 18 men (36%). Their average age was 59.9 years. The chart below indicates the age distribution.

The participants self reported other health conditions. The following are the most frequent:

- 21 (10.5%) have hypertension
- 20 (10%) have increased cholesterol level
- 20 (10%) have arthritis
- 37 (18.5%) carry extra weight

Only 4 participants (2%) said they were smokers.

Figure X



Goal 1 Results

Beliefs, Knowledge and Intent to Change for Healthy Eating

BELIEFS

The pre-session survey⁴ had one question about the participants' attitudes towards healthy eating. The results are shown in Table X for all 51 participants who completed the pre-session survey. All participants believed that what they eat is important to their health. Almost all believe they could influence their risk of high blood sugar by making changes to the food they eat. Most would buy or eat healthier food if they knew more about these foods or how to prepare them. Less than half stated they knew the kinds of healthy foods to eat.

Table X Pre-session Beliefs About Healthy Eating

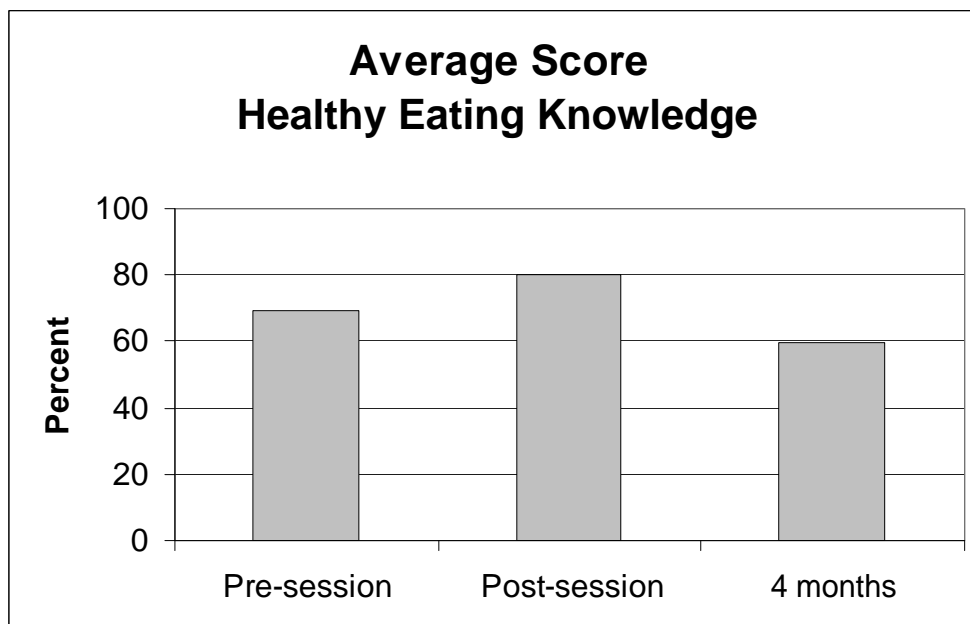
	Agree	Disagree	Not Sure
I believe that what I eat is very important to my health.	100%	0	0
I would need more information or ideas if I wanted to eat healthier.	82%	4%	14%
I would probably buy healthier foods if I knew more about what kinds of food to buy.	82%	6%	12%
I would probably eat healthier foods if I knew more about ways to cook healthy food.	76%	14%	10%
I know what kinds of foods are healthy for me to eat.	46%	8%	46%
I think that I could reduce my risk of having high blood sugar by making changes in the food I eat.	94%	0	6%

KNOWLEDGE

The healthy eating quiz had ten true/false questions⁴ focusing on how food eaten potentially contributes to the development of diabetes. In the analysis, the participants’ responses were coded and then reported as a percent correct. Any choices marked as “unsure” were counted as incorrect.

Results shown in Figure X indicates a rise from the average pre-session score (69.2%) to a post-session score of 80.0% correct. At four months the percent correct was below the pre-session percent (59.7%). The knowledge gained in the single session was not retained over time.

Figure X



INTENT TO CHANGE

Participants were asked to indicate their plans to change eating habits using a temporal scale based on the Stages of Change model.⁵ Table X reports data only for participants who attended the *BR* session and the four month follow-up. The percent planning to change in the next 30 days is similar pre and post *BR*. By the 4 month follow-up, the percent indicating a change made in the previous four months had risen from 61.1% and 57.1% pre/post session to 84.8%. None had plans to make changes within the next 30 days.

Table X Stage of Change for Healthy Eating Habits

	Pre-Session [n=36]	Post Session [n = 35]	Four Month Follow up [n=33]
No plans to change	0	0	0
Plan to change within 6 months	0	0	0
Plan to change within 30 days	27.8%	28.6%	0
Made change less than 6 months ago	61.1%	57.1%	84.8%
Made change more than 6 months ago	11.1%	14.3%	15.1%

The change between pre-session and four months is not statistically significant.

Participants were asked to indicate their perception of the amount of change they had made in eating habits at the four month follow-up. Almost seventy-eight percent indicated they had made “lots” or “some” changes and 22% indicated they had made “a few” changes.

Goal 1 Results

Beliefs, Intent to Change and Practices for Physical Activity

BELIEFS

The pre-session survey had one question about the participants’ attitudes towards regular physical activity. The results are shown in Table X for all 51 participants who completed the pre-session survey. All participants believed regular activity was important for their health and almost all believe they could reduce their risk of high blood sugar by getting more exercise. About two-thirds said they would need more information or ideas to become more active, but only 28% said they knew how much exercise to do. Two-thirds said they would be more active if they knew more about the kinds of activities they could do, but only half said they would be more active if they knew where they could go to get more exercise.

Table X Beliefs About Physical Activity - Pre *Building Resistance* n=51

	Agree	Disagree	Not Sure
I think that getting regular exercise is very important for my health.	100%	0	0
I would need more information or ideas if I wanted to be more active.	65%	18%	16%
I would probably be more active if I knew more about what kinds of activities I could do.	67%	20%	12%
I would probably be more active if I knew where I could go to exercise.	50%	35%	15%
I know how much exercise I should do.	28%	16%	55%
I think that I could reduce my risk of having high blood sugar by getting more exercise	92%	0	8%

INTENT TO CHANGE

Participants were asked to indicate their plans to change their activity level using a temporal scale based on the Stages of Change model.⁶ Table X reports data only for participants who attended the *BR* session and the four month follow-up. The percent planning to change in the next 30 days is similar pre and post *BR*. By the 4 month follow-up, the percent indicating a change made in the previous six months had risen from 40% and 31% pre/post session to 77%. Eleven percent had plans to make changes within the next 30 days (preparation) and another 11% had plans to be more active within the next six months (contemplation).

	Pre Session n=35	Post Session n=35	Four Month Follow up n=36
No plans to change	0	0	0
Plan to within 6 months	6%	6%	11%
Plan to within 30 days	34%	34%	11%
Made change less than 6 months ago	40%	31%	47%
Made change more than 6 months ago	20%	28%	30%

ANOVA demonstrated a statistically significant change between the pre-session and four month follow-up intention to change ($p=0.029$).

Goal 1 Results

Knowledge of Pre-diabetes

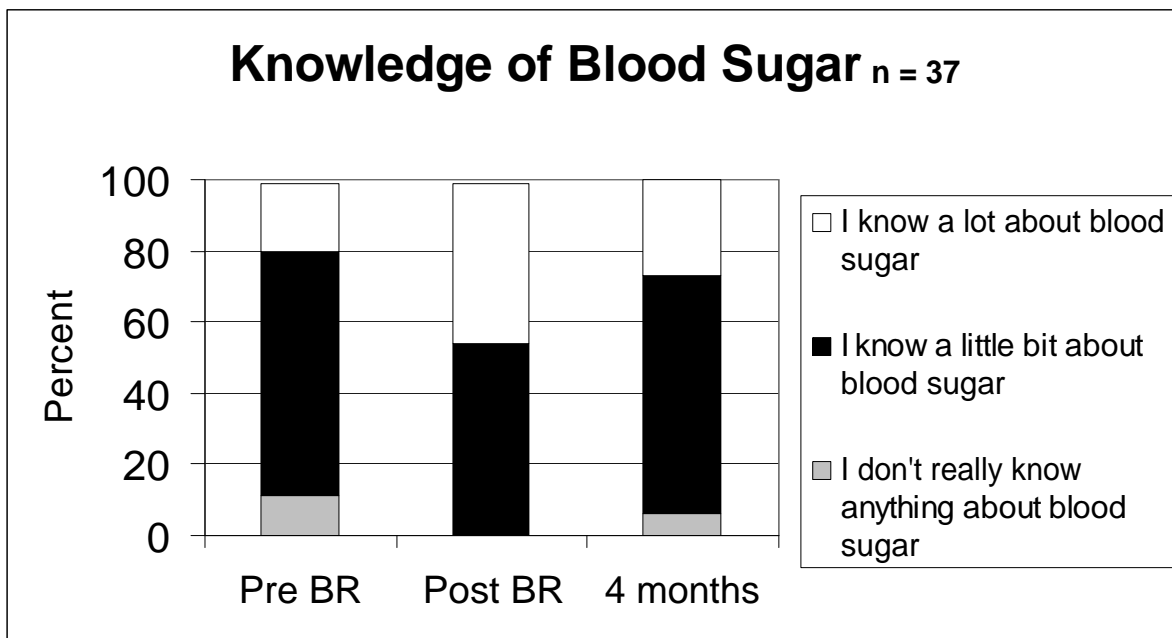
Pre-session in the *BR* program, participants were asked questions about their knowledge about blood sugar, risk of diabetes and the sources of their knowledge. The results are reported for all the pre-session participants.

Ninety-two percent of the participants knew their blood test results indicated they were “at risk” for high blood sugar and 98% said they knew their blood sugar level had been tested.

Almost all participants (98%) reported that their physician had talked to them about what it means to be “at risk” for high blood sugar. About 20% indicated their physician did not discuss either what to do in terms of eating or exercise to reduce the risk for high blood sugar. When asked if they talked with other health professionals such as a nurse, dietitian or pharmacist about any of the above information, about two-thirds indicated they had not talked with these professionals. When asked if they obtained information from other resources, about half responded affirmatively for the meaning of “at risk” for high blood sugar and eating to reduce the risk and about one-third for information related to exercise in reducing risk.

Participants were asked pre and post *BR* and at the four month follow-up to indicate their level of knowledge of blood sugar. Figure X indicates most felt they “knew a little bit” and knowledge level is retained by most over time.

Figure X



Goal 2 Results

Clinical Changes and Demonstrated Increase in Activity/Healthy Eating

CLINICAL CHANGES

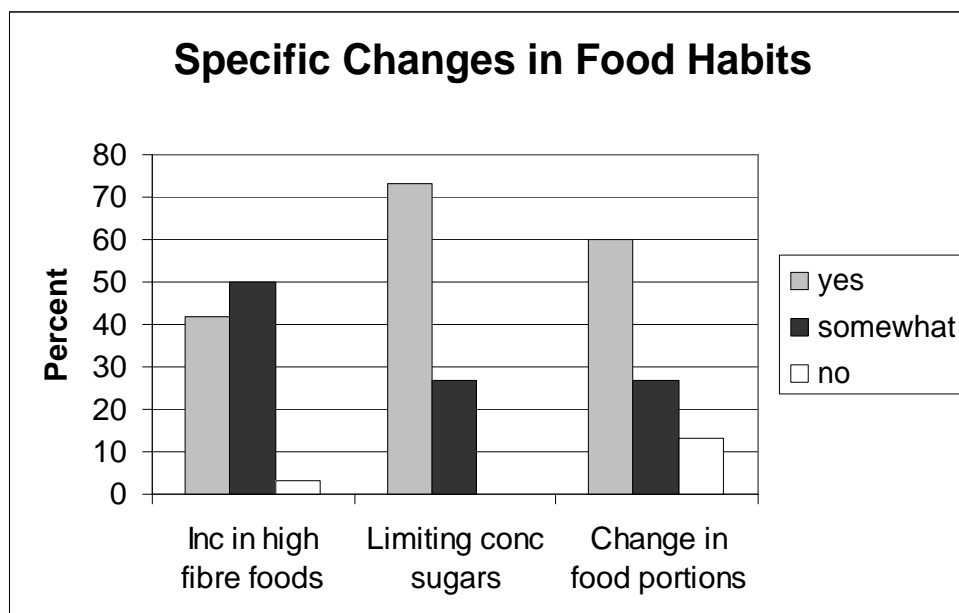
Three clinical parameters were measured: weight, body mass index (BMI) and waist circumference. The results are reported for those who attend both the *BR* session and the four month follow-up and the reductions are all significant ($p < 0.005$).

Table X Comparison of Clinical Changes

	Pre <i>BR</i>	4 month follow-up	paired t-test
Weight (kg)	88.03±16.6	84.98±17.6	$p < 0.005$
Waist Circumference (cm)	106.7±15.4	101.7±15.3	$p < 0.005$
BMI	31.6±5.3	30.5±5.5	$p < 0.005$

HEALTHY EATING

At the 4 month follow-up participants were asked about any changes made in intake of high fibre foods, use of concentrated sugars and any changes in food portions. The results are in Figure X showing that most participants had made changes in all three areas.



Participants were asked to indicate changes in specific areas:

- amount of high fibre foods consumed such more whole wheat breads, whole grain products, bran cereals, vegetables and fruit

- limiting highly concentrated sugar food choices with less table sugar, using artificial sweeteners, limiting sweets (desserts), sodas and candies
- changing portions of food at a meal such as increasing portions of fruit/vegetables, decreasing starches, reducing overall amount eaten, spreading intake throughout the day or measuring food servings

Examples of other changes made included: reducing intake of fat or meat and reading labels.

Thirty-five percent (n=13) said they had always eaten three meals per day. Of the remaining 24 participants, 66.7% (n=16) said they were eating three meals per day now and 21%(n=5) described themselves as “somewhat” in this behaviour change. Only 12.5 (n=3) said they were not eating three meals per day.

PHYSICAL ACTIVITY

The survey⁷ given pre/post *BR* and at the four month follow-up asked participants to categorize their daily activity as vigorous, moderate, as walking or as sitting. When the staff members spoke with the participants, they realized that the tool was not being used accurately and participants were sometimes doing more activity than they actually reported and the participants were not all answering the questions in the same way. Subsequently to tool for recording activity was changed.

The 2003 Clinical Practice Guidelines (CPG) recommend the accumulation of at least 150 minutes of moderate-intensity aerobic exercise each week, spread over at least 3 non-consecutive days of the week⁸. Due to the issues with data collection, specific levels of activity cannot be reported. However pre-session and at the four month follow-up 27 persons (73%) appeared to meet the CPG standard for number of minutes of activity. Only 4 persons (11%) reported no physical activity at both measurement times.

As part of the four month follow-up survey, participants were asked whether or not they had joined any type of exercise program since the *BR* session. Six participants (16%) indicated they had joined a program at either a fitness or leisure centre. Of these, three attended 2-3 times per week; two attended 4-5 times per week and one attended daily.

Goal 4

Client and Staff Member Satisfaction with the BR Program

CLIENT FEEDBACK

Client feedback comes from two sources: the post-session evaluation form and a focus group held in June, 2004.

The post-session feedback can be summarized in three theme areas to describe what participants liked about the program: the helpful staff members, the information session and the overall format. Each will be described briefly.

Participants stated they found staff members to be pleasant, friendly, and not critical in the way they presented the information. Participants also liked time allowed for questions and discussion of information. Some comments included:

- "...easy to understand, very helpful staff..."*
- "...lectures were not critical, but helpful..."*
- "...instructors were kind..."*
- "...questions were answered with good detail..."*

Many participants simply described the session as "very informative". Others elaborated that information about specific topics was appreciated, such as diet, blood glucose metres, exercise, and blood sugar levels. Specific comments about the informative nature of the session included:

- "...finding out what I can eat..."*
- "...I enjoyed the sessions and learned from each..."*
- "...the suggestion of what to eat and an exercise program..."*
- "...makes you think about your body and your health..."*

Numerous participants commented positively on the format of the session. They liked the hands on activities; time for interaction; the variety of presentations; and, that there were pamphlets and other information for them to take home with them.

Specific comments included:

- "...good handouts, covered exercise home and away, covered food groups in simple terms..."*
- "...very good info pamphlets, great also how to use them..."*
- "...I appreciated that there were several presenters... was not boring...personal examples from presenters was a plus..."*
- "...measurements, hands on activities, slides on obesity and diabetes..."*
- "...presentations were clear and simple...variety so it didn't get boring..."*
- "...there were lots of short sessions to cover a broad topic which kept the pace going and made it varied and interesting..."*

About one-third of participants also provided feedback about aspects of the program which they did not like: the session length, technical difficulties with the computer and the lack of in-depth information on some topics.

The responses about the session length were contradictory. That is, some thought the session was too long, with “...too much sitting..”. Others thought that the session was not long enough and suggested that it should be run over two days.

A few participants commented on the technical difficulties experienced by the presenters. They indicated that the screen was sometimes difficult to see, and at one time, the computer was not projecting an image on the screen. One other participant commented on the presenter having problems with the video - and felt the presenter was not prepared.

Several participants commented that they would have liked more indepth or personalized information. Specific comments included:

“...I wanted more indepth nutrition information but I didn’t feel comfortable talking about personal things in front of a group of people...”

“...would have liked a little more information on exercise techniques..”

About one third of participants provided additional comments. Many participants congratulated staff members on presenting a “...good program...” or said that they were “...glad I came...”, or thanked the staff for the program.

A couple of participants indicated that they thought that programs such as this should be taught in other situations, such as school, or children in sports.

A few participants indicated that there could have been other discussions, such as:

“...could have used a bit more discussion about glycemic index and some examples of the GI of common foods..”

“...maybe more time on glucometers..”

“...would have liked more indepth information on different foods and eating strategies..”

There were technical difficulties with the format, recording and transcribing of the focus groups for both participants and staff members. Therefore, only general impressions as summarized by the facilitators can be reported.

Twenty-four participants attended the participant focus group.

Generally the participant comments reflect the survey findings and the feedback given immediately post-program. Overall, the participant response to the program was positive. It appears that the program did impact most participants thinking and subsequently their actions about food and/or activity in relation to diabetes prevention. Generally participants indicated an intention to continue with the changes they had already made. There were similar comments about the length of the program and the depth of information presented by a few of the participants.

Participants found the program location, the Saskatoon Field House, convenient and appreciated the free parking.

Some focus group members expressed interest in either a support group format or a refresher course post-program. However, it is noted that only 70% returned at four months and about 50% at the six month follow-up sessions.

STAFF MEMBERS

Eleven staff members attended this focus group. Again because of the technical difficulties only general impressions can be reported.

Overall the reaction of staff members to the program and its outcomes was positive.

Staff members were concerned about the volume and depth of information presenting. On the one hand they wanted to ensure enough information was given; and, on the other hand were concerned about overloading participants with information.

Staff members identified the following positive aspects of the program: a team approach amongst the staff members; the “willing spirit” amongst the program participants.

Staff members also had concerns about the program: its length being too long and the lack of interaction in the program - information given without sufficient application. Staff members were also concerned about who “owns” this program and will be responsible for its sustainability.

The group discussed the possibility of group follow-up rather than individual follow-up sessions. They would address participant desire for group support. Other possible change areas discussed were

- reviewing the content to determine “nice to know” versus “need to know” information
- revising the participants surveys to clarify the activity portion to ensure better documentation of changes made by participants

Limitations of the Evaluation

The evaluation process had limitations which must be considered in interpretation of the results:

- The total number of participants was small (n =51) for the baseline data and even smaller at the 4 month follow-up (n=37). As a PDSA quality improvement cycle the pilot provided adequate opportunities to continuous improve the program processes. The results are cannot be generalized to other populations.
- During the pilot staff members became aware of participant difficulties with the tool used to record usual amount and type of physical activity. Participants had difficult understanding the tool and recording was not consistent. Only limited reporting could be done from this section of the data collection.

- As indicated in the review of qualitative data, there were technical difficulties in both the participant and staff focus groups. This limited the reporting of results.
- Some participants found the questionnaires lengthy and this may have influenced the completeness of their responses.

Summary of Results

GOAL 1 To increase awareness and knowledge regarding pre-diabetes in the target population

DESIRED OUTCOMES	MEASUREMENT OF OUTCOME	KEY RESULTS
1. Target population has an increased in knowledge regarding healthy eating and exercise	<ul style="list-style-type: none"> • pre and post “quiz” on healthy eating - measure change score - pre-session, immediate post-session and 4 follow-up • pre and immediate post session measure regarding their own perception of knowledge of healthy eating and exercise both how it affects their health and reduces risk 	<p>HEALTHY EATING</p> <ul style="list-style-type: none"> • Knowledge increased post <i>BR</i> session, but returned to the pre-session level by the 4 month follow-up • Pre <i>BR</i> 75-100% of participated indicated a positive belief about eating healthy and health, reducing the risk of high blood sugar + their probability of buying + eating healthier food if they had the knowledge • Less than 50% believed they knew what kinds of foods are healthy for them <p>PHYSICAL ACTIVITY</p> <ul style="list-style-type: none"> • Pre <i>BR</i> 92-100% believed regular activity was important to health and preventing high blood sugar • Only 28% felt they knew how much exercise to do • 50-67% said they would be active if they knew what to do, where to go to exercise or had more information.
2. Target population shows intent to exercise more frequently than before the program 3. Target population shows intent to change re: eating patterns	<ul style="list-style-type: none"> • “stage of change” questions 	<p>For both healthy eating and physical activity there was no change in intent to change (plan to change within 30 days) post <i>BR</i> session. However, by the 4 month follow-up it was obvious that participants had made changes as with</p> <ul style="list-style-type: none"> • <u>healthy eating</u> 84.8% indicated a change in the previous 6 months compared to 61% and 57% pre + post program. No one indicated they were in pre-contemplation, contemplation or preparation stage • <u>physical activity</u> there was a small change in the previous 6 months for action stage at 47% compared to 40% and 31% pre +post <i>BR</i>. 11% indicated they were in contemplation and preparation respectively. <p>Participants appear to change their eating habits more readily than their activity levels as noted in their self-staging.</p>

DESIRED OUTCOMES	MEASUREMENT OF OUTCOME	KEY RESULTS
4. Target population has an increased knowledge regarding pre-diabetes	<ul style="list-style-type: none"> • pre-questions on their perceived knowledge level re: IFG - who did they talk to? doctor, nurse, dietitian, etc? • post questions on perceived knowledge level re: IFG - post session and at 4 month follow-up 	<ul style="list-style-type: none"> • The highest percentage of participants in all measurement times (pre/post BR, 4 months) indicated they “knew a little bit about blood sugar”. There was a small increase in those indicating they knew “a lot” immediately post-session, but this was not sustained at 4 months. • Few participants ever indicated “they didn’t really know anything” • The majority of information about the risk for diabetes came from the participant’s physician with only about 1/3 seeking information from other professionals and half getting information from other sources.

GOAL 2 To increase healthy eating and activity levels in target population

OUTCOMES	MEASUREMENT OF OUTCOME	KEY RESULTS
1. Clinical changes - decreased body weight	<ul style="list-style-type: none"> pre and post program (4 months) measurements 	There was a significant decrease in weight from pre <i>BR</i> to 4 months ($p < 0.005$). On average participants lost 3.05 kg or 6.7 lbs. BMI also decreased significantly ($p < 0.005$).
2. Clinical changes - lower waist circumference	<ul style="list-style-type: none"> pre and post program (4 months) measurements 	There was a significant decrease in waist circumference from pre <i>BR</i> to 4 months ($p < 0.005$). On average participants lost 5 cm or 1.97 inches.
3. Demonstrated increase in activity level	<ul style="list-style-type: none"> post program question on activity levels (4 months) - compared with pre-session question on activity levels (International Physical Activity Questionnaire) did they join an exercise group - stage of change 	<p>The number of participants who met the CPG standard for a minimum of 150 minutes of activity/week was unchanged pre <i>BR</i> and at the 4 month follow-up ($n=27$ or 73%). Four persons were inactive throughout.</p> <p>A very small number of participants ($n=6$) joined an exercise group.</p> <p>Stage of change is reported under goal 1</p>
4. Demonstrated improvement in diet	<ul style="list-style-type: none"> post program question on changes made to eating (4 months) stage of change 	<p>Participants indicated they were</p> <ul style="list-style-type: none"> eating food with higher fibre (more whole grains, fruits and vegetables) limiting concentrated sugars (sweets, desserts, sodas) changes food portions at meals (more fruits and vegetables, fewer starches, reducing overall amount eaten, spreading out intake) <p>Stage of change is reported under goal 1</p>

GOAL 3 To increase communication and collaboration between family physicians in the Saskatoon Health Region and health educators regarding clients with pre-diabetes.

OUTCOMES	MEASUREMENT OF OUTCOME	KEY RESULTS
Increase in referrals for pre-diabetes program	<ul style="list-style-type: none"> Saskatoon only: track referrals to educators post-communication number of people in programs and number of people who came for 4 follow-up 	During the pilot there were 85 referrals from 50 different family physicians in the urban SHR. 61.2% of persons referred attended the program. Of those 71% attended the four month follow-up and 50% attended at six months.

GOAL 4 To create a template for education to be used for people with pre-diabetes

Outcomes	Measurement of Outcome	KEY RESULTS
Participants show satisfaction with education session	Post program feedback and focus group at conclusion of pilot	<p>Overall participants indicated a high level of satisfaction with the BR program. Three areas were highlighted: helpful staff members, the information session and the overall format which participants saw as hands on and interactive with information to take home. These findings were confirmed with the focus group.</p> <p>Some participants had concerns about the length and depth of the program. The feedback about the program length was contradictory with some wanting and others wanting less. A few participants indicated a desire for ongoing support.</p>
Staff members involved with the sessions show satisfaction with program	Focus group at conclusion of pilot	<p>Generally staff members were please with the program – its impact on participant behaviour and the team approach taken in program delivery.</p> <p>Staff members also questioned the program length, but did not reach consensus about making a change. They suggested group follow-up rather than individual might address the interest in group support post program.</p>

Conclusion and Recommendations

To be completed at a meeting of the Working Group.

References

- ¹ Pan X-R, Li G-W, Hu Y-H, Wang J, Yang W-Y, An Z-X et al. Effects of Diet and Exercise in Preventing NIDDM in People with Impaired Glucose Tolerance. *Diabetes Care* 1997;20(4):537-543.
- ² Tuomilehto J, Lindstrom J, Eriksson JG, Valle TT, Hamalainen H, Ilanne-Parikka P et al. Prevention of Type 2 Diabetes Mellitus by Changes in Lifestyle among Subjects with Impaired Glucose Tolerance. *N Engl J Med* 2001;344(18):1343-1350.
- ³ The Diabetes Prevention Program Research Group. The DPP Description of Lifestyle Intervention. *Diabetes Care* 2002;25:2165-2171.
- ⁴ The survey was adapted from questions in the Saskatchewan Nutrition Survey and other resources.
- ⁵ Add reference for Stages scale
- ⁶ Add reference for Stages scale
- ⁷ Craig C, Marshall A, Sjostrom M, Bauman A, Booth M, Aninsworth B, Pratt M, Ekelund U, Yngve A, Sallis J, Oja P. International Physical Activity Questionnaire: 12 country reliability and validity. *Medicine and Science in Sports and Exercise*. 2003;35(8):1381-1395.
- ⁸ CPG S25

This document was created with Win2PDF available at <http://www.daneprairie.com>.
The unregistered version of Win2PDF is for evaluation or non-commercial use only.