

Irene Strychar

*Dietary Behaviours,
Nutrition Programs and Counselling:
A Guide for Nutrition Educators*



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*Dietary Behaviours,
Nutrition Programs and Counselling:*
A Guide for Nutrition Educators

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First Edition

About the Author

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Preface

This book was written for nutrition students and health professionals planning nutrition programs and conducting research in the field of dietary behaviour change. It is an academic resource designed to provide professionals with a simple yet comprehensive guide in the field of dietary change. Health professionals face a daunting task in facilitating adoption of healthy eating patterns to reduce risk for chronic diseases. It is a task which requires that nutrition programs and research incorporate theoretical perspectives into behaviour change strategies.

The *Introduction* addresses the importance of promoting dietary change and identifies the multifaceted aspects affecting dietary behaviours at the individual, familial, communal, institutional, governmental, and political levels. *Chapter 1 Dietary Behaviours* examines factors associated with food choices. Four theoretical perspectives are also reviewed: the Health Belief Model, the Theory of Planned Behaviour, Social Cognitive Theory, and the Transtheoretical Model also known as Stages of Change. Each model is described, issues to consider in applying each model are addressed, and an application of each model for dietary change is presented. The example provided in this chapter is reduction of dietary fat intake, since it is a behaviour targeted in many chronic disease primary, secondary, and tertiary prevention programs. *Chapter 2 Planning Programs* reviews the steps in the program planning process. Twelve steps are discussed and these integrate, where applicable, the theoretical perspectives presented in Chapter 1. The example provided in this chapter is prevention of diabetes, since it is related to the obesity pandemic and is the focus of numerous health initiatives. *Chapter 3 Nutrition Counselling* examines the motivational considerations in nutrition counselling, based on the theoretical perspective identified in Chapter 1. A grid to evaluate the counsellor's skill with respect to motivational considerations is included. The *last section* of the book briefly comments on future considerations.

Introduction

THE CHALLENGES

The challenge of eating a healthy diet has never been greater than today. With new food products being introduced regularly to capture the imagination of consumers, health professionals face a daunting task. On the one hand, factors such as culture, taste, and preference are dominant forces in influencing dietary behaviours. On the other hand, health issues, social pressures, and availability of foods are the challenges of the century. How can we balance all aspects in a society in which we find ourselves with less time for preparing meals, less time for family meals, and more readily available prepared foods with a high energy, fat, and sugar content?

Eating patterns remain less than optimal. Results of the 2004 Canadian Community Health Survey (Garriguet for Statistics Canada, 2006), which examined the eating habits of over 35,000 Canadians, indicate that 45% of men and 60% of women, 19-30 years of age, do not consume the recommended 5 servings of fruits and vegetables per day. Furthermore, over 25% of Canadians 31-50 years of age consume over 35% of their caloric intake from fat. These patterns are conducive to an increased risk for chronic diseases.

Despite these alarming statistics, we have difficulty, as a society, to eat well and eat in moderation. While education has often been criticized for not being able to produce behaviour change, there is evidence that, as health professionals, we can be successful (Snyder, 2007; Hornik & Kelly, 2007; Doak et al, 2006; Flodmark et al, 2006; Townsend et al, 2006; Contento et al, 2002, 1995; Fletcher, 2002; Schooler et al, 1997; Diabetes Prevention Program Research Group, 2002; Tuomilehto et al, 2001; Pan et al, 1997; Eriksson & Lindgarde, 1991). Effective long term dietary change, however, remains a challenge (Teixeira et al, 2005; Byrne et al, 2003; Byrne, 2002; Anderson et al, 2001; Klem et al, 1997).

Comprehensive interventions are needed if we are to influence the multiple and complex aspects that affect dietary behaviours (Heart and Stroke Foundation of Canada, 2005; Raine, 2005; Kumanyika et al, 2002; Fisher et al, 2002; Blair & Chenier for Dietitians of Canada, 2002; Schooler et al, 1997). Our interventions need to target changes in social policies and regulations, community resources and environments, as well as individual factors. Personal factors found to be associated with improved outcomes include: skills, self-efficacy, behavioural intentions, outcome expectancies, and self-monitoring (Contento et al, 2002; Schooler et al, 1997). The challenge is to determine the optimal components of interventions, for specific target populations.

The ecological approach provides an interesting framework to look at the numerous facets of dietary behaviour (Raine, 2005; Heart and Stroke Foundation of Canada, 2005; Fisher et al, 2002). Changes need to occur at multiple levels: individual, family, small groups, institutions, community, physical and social environment, and government policies and regulations (Raine, 2005; Sallis & Owen, 2003; Fisher et al, 2002). Multi-level, multi-dimensional, and multi-disciplinary interventions are needed (Figure 1).

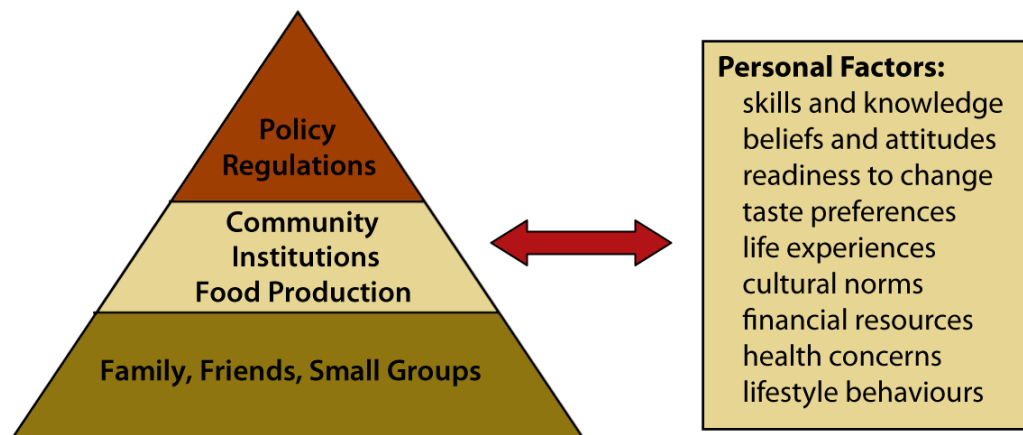


Figure 1. Multi-faceted aspects affecting dietary behaviours

Health Promotion, Prevention, Nutrition Counselling, Nutrition Education

Whether our focus is health promotion, prevention, counselling, or nutrition education, the principles are similar but their application will vary. The definitions, similarities, and differences among these concepts are discussed.

Health Promotion can be defined as a process permitting individuals and communities to increase control over their health determinants and subsequently improve their physical, social, and mental health status (Canadian Institutes of Health Research, 2003; Nutbeam, 1998). Implicit in this definition is the concept of both individual and community action. Involving the community in the process of decision-making and behaviour change is essential. Glanz et al (2003) note that health promotion emphasizes its social structural context and therefore is broader in nature than health education. Health promotion usually targets the general population. Green & Kreuter (1999) state that health promotion has shifted its focus of determinants of health from medical institutions and professionals to individuals, family, schools, and worksites, this being done in the context of community and social support. They view health promotion as including both education and ecological approaches (Green & Kreuter, 2005).

Prevention can be viewed as preventing illness or detecting it in an asymptomatic state (Green & Kreuter, 1999). It targets a population at risk. Prevention can also be viewed, in a broader concept, as consisting of activities designed not only to prevent the occurrence of disease (risk factor reduction) but also to stop the progression of the disease once established and to reduce its consequences (Canadian Institutes of Health Research, 2003; Nutbeam, 1998; US Preventive Services Task Force, 1996; Jenicek, 1995). Primary prevention includes activities that avoid or delay disease states targeting general populations at risk. Secondary prevention includes activities such as identification (screening) and treatment of individuals in their pre-clinical disease state or initial disease state. Tertiary prevention activities include the treatment of individuals with a disease, avoidance or reduction of complications and disabling conditions.

It is evident that there are overlaps in definitions of health promotion and health prevention. For example, primary prevention may include selected health promotion activities. It is therefore important to clearly define what is intended by health promotion and prevention.

Nutrition counselling englobes all situations in which counsellor and client interact to improve health (Houts et al, 2006; Holli et al, 2003; Snetselaar, 2000, 1997; Curry & Himburg, 1998, 1988). The client may be free of disease or with disease. Counselling is a process that assists people in learning about themselves, their environment, and the means to handle various situations through a problem solving approach (Houts et al, 2006; Holli et al, 2003). The counselling process involves the development of a trusting and helping relationship between the counsellor and the client or between the counsellor and a small group of individuals. The processes in counselling can be similar to those applied in education (Houts et al, 2006). However, there is a particular focus on the establishment of a one-to-one relationship between the counsellor and the client using primarily psychotherapy theoretical frameworks, problem solving approaches (Houts et al, 2006), and motivational interventions (Dent et al, 2007; Rollnick & Miller, 1995).

Nutrition education is defined as a series of activities that facilitate adoption of eating and other-related behaviours conducive to health (Smith & Smitasiri, 2007; Achterberg & Miller, 2004; American Dietetic Association, 1996; Contento et al, 1995). The American Dietetic Association recommends that nutrition education be an integral component of all health promotion and disease prevention programs. Facilitating dietary change is viewed as a complex activity influenced by a combination of environmental, personal, and biological factors (Raine, 2005; American Dietetic Association, 1990).

Nutrition education is a dynamic process that includes the application of knowledge from nutrition science in order to better understand the links between food behaviours and health (Achterberg & Miller, 2004; American Dietetic Association, 1998, 1990; Gillespie & Brun, 1992; Guthrie, 1989; Society for Nutrition Education, 1987). To meet the challenges of the 21st century, dietitians-nutritionists must be able to translate the science of nutrition to assist people in making healthy food choices, in either a clinical or community setting, and they

must be able to work with communities to promote skill development and community action in order to address nutrition-related health issues (Dietitians of Canada, 2001).

To conclude, nutrition education may encompass health promotion and/or prevention activities in which both education and ecological approaches could be used, depending on the nature, mandate, or objectives of the education undertaking. Nutrition education may also include nutrition counselling as an activity, either independent or linked to health promotion or prevention.

Chapter 1 of this book contains a discussion of the factors associated with dietary behaviours and theoretical frameworks that influence their change. Chapter 2 reviews the principles of program planning and Chapter 3 deals with counselling principles.

Chapter 1

DIETARY BEHAVIOURS

What triggers people to eat what they do eat? What factors influence an individual's decision regarding how much to eat and how frequently to eat? The first part of this chapter addresses factors associated with food choices. The second part describes four theoretical perspectives on health behaviours: the Health Belief Model, the Theory of Planned Behaviour, the Social Cognitive Theory, and the Transtheoretical Model also called Stages of Change. These perspectives were selected since they are frequently applied in nutrition education. The key components of each model and factors to consider when applying the model are presented. An application of each model is also included.

Factors Associated with Food Choices

In order to develop successful nutrition education programs and research, a comprehensive understanding of the factors that influence food choices is essential. Our choices are shaped by personal, environmental, and social factors (Raine, 2005) beginning in the first years of life. Infants begin with a genetic predisposition for sweet and salty foods over sour and bitter foods (Birch, 2002; Rosen, 2002). However, because of physiological changes that occur with aging, adults become less sensitive to bitter tastes and more likely to accept bitter foods (Drewnowski, 2002). Taste preferences can also be modified by cultural influences. For example, in certain cultures, preferences for unpalatable substances, such as chili peppers, can be developed (Rosen, 2002). What is accepted by one culture may not necessarily be accepted by another. Food preferences can also change throughout the life cycle. Individuals adapt to life events and these transitions often affect eating patterns (Wethington, 2005).

Genetic predisposition has an important role but can be modified by the social and learning environment (Birch, 2002). In early life, Birch states that parents or guardians can play an essential role in shaping the child's food environment: they can select and offer healthy foods, provide positive learning opportunities to shape healthy eating patterns, and serve as models for healthy eating. On a day-to-day basis, Rosen (2002) states that a meal is a function of the degree of hunger or energy deficit, the amount of food available, its palatability and variety, the social setting, the cultural rules regarding what and when to eat, the time available and competing activities, and recollections of eating activities.

Food consumption must be viewed as being part of a global system. Beaudry and collaborators (1991) present a framework of factors influencing optimum nutritional well-being. The foundation is based on our social, economical, and political systems. These systems affect the availability of food that is dependent on its production, processing, and distribution. Food availability, along with education, culture, and income, in turn, influence

food consumption. Finally, food consumption has an impact on nutrient and health status. These are dependent on the biological utilisation of nutrients, as determined by the physiological and pathological status of the individual.

There have been different schematic representations of factors that are associated with food choices (Drewnowski, 2002; Strychar et al, 2000a; Liquori, 2001; Nestle et al, 1998; Harper, 1986). The list of factors is exhaustive and a schematic representation of key factors is presented in Figure 2. In this schema, emphasis is placed on learning and educational opportunities, which play important roles at the national, community and individual levels.

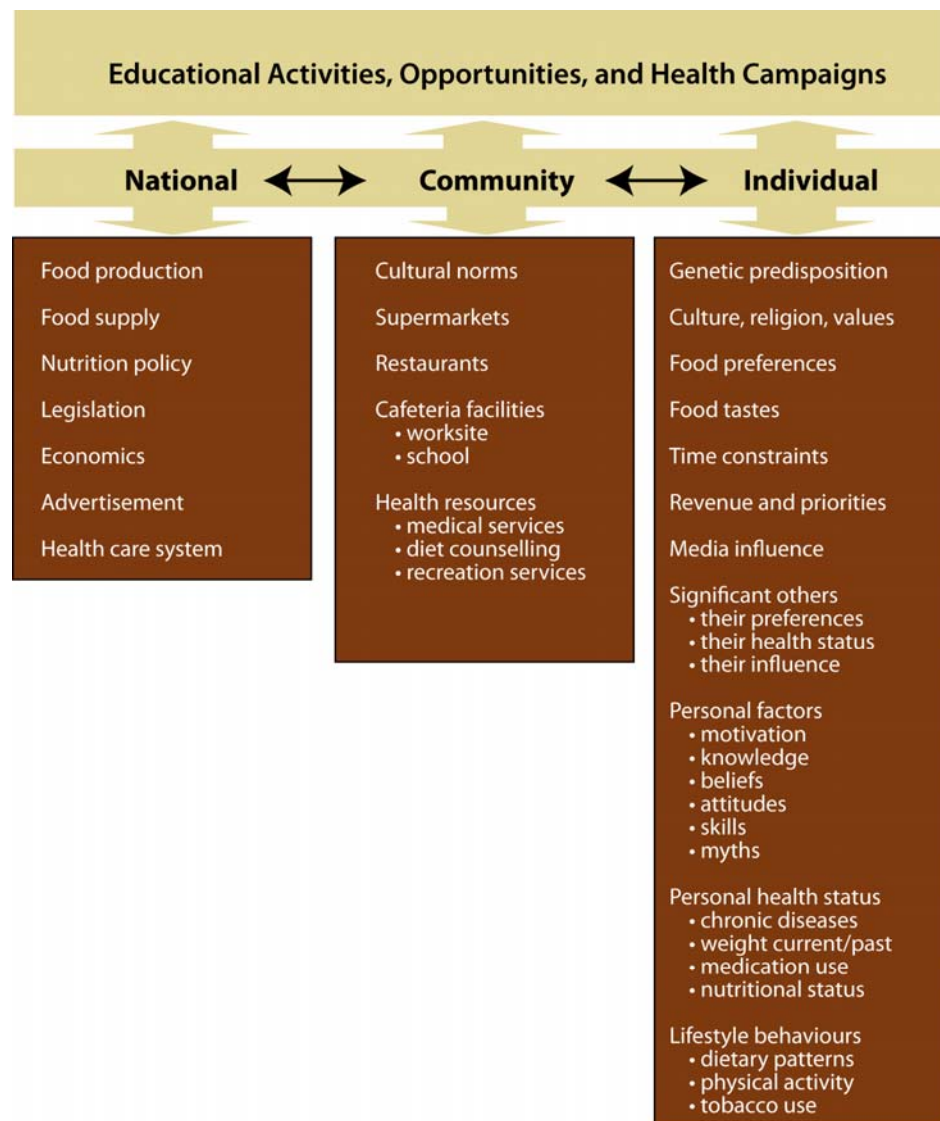


Figure 2. Factors influencing food choices

Theoretical Perspectives

The four theoretical perspectives presented in this section are a basis to examine the multi-faceted aspects of health behaviours. While theoretical in nature, they provide practical information for explaining dietary behaviours, and for planning nutrition programs and nutrition counselling sessions. Furthermore, the components of each of the models are useful for identifying the content and outcomes of nutrition education and counselling programs.

In order to appropriately apply the components of the models, an understanding of their origins and their underlying assumptions is essential. These issues are integrated into the presentation of each model. Overall, the Health Belief Model, the Theory of Planned Behaviour, and Social Cognitive Theory are value-expectancy theories (Janz et al, 2003; Montaño & Kasprzyk, 2003; Baranowski et al, 2003; Prochaska et al, 2003). It is important to recognize that value-expectancy theories emerged from social psychology. During the 1950's, attempts to understand behaviour were based on learning theories derived from Stimulus-Response (S-R) theorists (i.e., Skinner) and Cognitive theorists (i.e., Lewin). Janz et al (2003) state that S-R theorists view the frequency of a behaviour as being determined by its consequences or reinforcements. Cognitive theorists emphasize the subjective expectations of the individual. In essence, value-expectancy theories view behaviour as a function of the subjective value of an outcome and the expectation that a specific action will lead to that outcome (Janz et al, 2003). In contrast, the Transtheoretical Model emerged primarily from theories of psychotherapy (Prochaska et al, 2003).

Decisions to be Made Prior to the Application of a Theoretical Perspective

Before applying a model, one needs to identify the purpose, context, and behaviour under study. To illustrate this point, the example of reducing dietary fat intake is provided. Let us begin with the idea of reducing dietary fat intake among 40-60 year old adults in Montreal. The original idea should be thoroughly discussed and examined. Subsequently, it should be refined and reformulated. Initially, one needs to think through: 1) the target behaviour, 2) the overall outcome of the behaviour, 3) the target population, 4) the ways by which the behaviour can be adopted, and 5) the measurement of the target behaviour.

1. *With respect to the target behaviour* - Reducing dietary fat intake is a general target behaviour. Deciding on whether the target behaviour will be total dietary fat intake or, more specifically, saturated fat intake or high-fat food items (i.e., selected snack foods) will affect the rest of the model application process.

2. *With respect to the overall outcome of the behaviour* - Reducing dietary fat intake can be applied to prevent heart disease, to prevent a heart attack, to prevent a second heart attack, to prevent obesity, to prevent weight re-gain, to lose weight to improve diabetes control, to lose weight for a specific oncoming event, or to improve overall health. The selection of the behaviour outcome will affect the rest of the application process.
3. *With respect to the target population* - '40 to 60 year old adults in Montreal'. On the one hand, one may opt for a broad scope, depending on the circumstances of the undertaking. On the other hand, one may choose a scope focused on specific geographic regions (i.e., the Plateau district), ethnic populations (i.e., the Italian community), or socio-economic groups (i.e., families with an income below the poverty line). This is important because the barriers to adopting the health behaviours will vary according to the target population.
4. *With respect to how the behaviour can be adopted* - Reduction in total dietary fat intake can be done in several ways: a) by reducing the frequency of eating fried foods, b) by reducing the frequency of eating high-fat food products (i.e., desserts, snacks), c) by reducing the amount of fat added to breads, muffins, vegetables, salads, etc, d) by reducing the amount of fat added to cooking meats, vegetables, etc., e) by substituting low-fat foods for high-fat food products, or f) by selecting low-fat choices in each food group of Canada's Food Guide (Health Canada, 2007). Barriers to accomplishing each of these sub-behaviours may also differ. For example, barriers for reducing the frequency of fried foods may be taste preference or peer pressure; whereas, barriers for selecting low-fat choices may be the availability of foods at home, at the worksite, or at the restaurant. A decision will also have to be made whether or not to apply the model in terms of the global behaviour (i.e., total dietary fat intake) or in terms of each sub-behaviour, resulting in a lengthy questionnaire for evaluation purposes. The scope of the target behaviour will affect the application of the components of the model.
5. *With respect to measurement of the target behaviour* - This will depend on the resources available as well as on the methodological rigour required. If the target behaviour is percent energy from total dietary fat intake, measurement options include: a 7-day dietary food record, a 3-day dietary food record, a 3-day random telephone food recall, a validated food frequency questionnaire (which questionnaire; length of the questionnaire - short versus long version), etc. If the target behaviour is frequency of fried foods consumption, then the number of times selected fried foods are eaten per week may constitute the measurement of the target behaviour.

The above issues must be considered before the application of any theoretical framework.

HEALTH BELIEF MODEL

Components of the Health Belief Model

The original key components of the Health Belief Model included: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. In the early formulations of the model, Rosenstock (1974) noted that a cue was necessary to trigger action. Cues to action include: mass media campaigns, advice from others, illness of family or friend, print material. Also, demographic characteristics (age, sex, ethnicity, etc.) and socio-psychological characteristics (personality, social class, peer group pressure, etc.) are referred to as modifying factors that influence perceived susceptibility, perceived severity, perceived benefits, and perceived barriers.

The Health Belief Model stipulates that individuals who believe they are healthy will undertake behaviours to prevent disease or to detect a disease. The desire to avoid disease or to get well is essential (Janz et al, 2003). In order for individuals to undertake an action, they must view health as an important dimension of life and they must have knowledge about the condition.

The model proposes that there are two sets of beliefs. The first is readiness to take action that is determined by perceived susceptibility to a disease (perceived risk) and perceived seriousness of a disease (perceived severity). The second is the evaluation of the action to be undertaken that will enhance or impede such action. The perceptions of the benefits of action (perceived benefits) are weighted against the perceived costs of undertaking action (perceived barriers) (Kirscht, 1988; Brownlee-Duffeck et al, 1987). Perceived risk and severity provide the force to act and perceived benefits less the barriers provide the preferred path of action (Becker & Janz, 1985).

The model has evolved during the past fifty years. The Health Belief Model, originally applied to explain why individuals accept or refuse to undertake a health-screening test in order to detect or prevent disease in an asymptomatic phase (Janz et al, 2003; Boyle & Morris, 1994), was later applied to explain adherence to medical regimens and lifestyle behaviours (Janz et al, 2003). It is more difficult to engage in lifestyle modification than to undertake a screening activity. For this reason, other components were added to the model. One of the major additions was the concept of self-efficacy, a component central to Bandura's Social Learning Theory (Rosenstock et al, 1988).

The model continues to evolve with the development of the Expanded Health Belief Model (Charron-Prochownik et al, 2001; Wdowik et al, 2001), the synthesis of the Health Belief Model and the Theory of Reasoned Action (Poss, 2001), and other adaptations (Roden, 2004). The model has been applied to guide the development of a worksite intervention (Abood et al, 2003), to determine the beliefs about iron-fortified soy consumption (Sun et al, 2006) and food irradiation (Thompson & Knight, 2006), to predict dietary fat intake (Schafer

et al, 1995), and to predict glycemic control in type 2 diabetes (Daniel & Messer, 2002). Associations of the components of the model with specific dietary behaviours have also been examined (O'Dea & Abraham, 2001; Dittus et al, 1995; Strychar et al, 1993). Furthermore, the Health Belief Model has been applied in conjunction with other theoretical perspectives (Messina et al, 2004; Ling & Horwath, 2001; Kloeben & Batish, 1999; Harnack et al, 1998). Scales that apply components of the model have also been developed, particularly in the area of diabetes (Lewis et al, 1990; Harris et al, 1987).

Issues to consider in the application of the Health Belief Model

The major limitation of the model is that environmental influences are not a central component. Environmental issues are, however, represented in a limited fashion: 1) via cues to action and modifying factors, and 2) indirectly, if perceived barriers and self-efficacy include environmental factors. The model primarily targets individual factors that influence behaviours. The model does not take into consideration that health behaviours are influenced by reasons other than health, including policy, legislative, community, or institutional factors.

In the majority of studies that have applied the Health Belief Model, the components have been tested as independent factors. The relationships among the model components have not been fully addressed (Janz et al, 2003), as is the case for the Theory of Reasoned Action. Janz et al (2003) note that the perceived barriers component of the model has been found to be the most important predictor of health behaviours. Perceived susceptibility is also an important predictor, particularly for preventive health behaviours.

There are also no explicit instructions on how to develop questions for each component of the model. When developing a new questionnaire, one should consult colleagues who are familiar with: 1) the theoretical underpinnings of the model, 2) the behaviours under study, and 3) the methodology of questionnaire development. If using measures from previous studies, one should ensure that their validity and reliability are adequate. If constructing components of the model, Janz et al (2003) recommend that: 1) the components developed are consistent with the theory, 2) the component measurement is specific to the behaviour (i.e., perceived barriers for adolescents attempting to reduce dietary fat intake will likely be different from perceived barriers to increasing consumption of dairy products), 3) multiple items should be developed for each component to reduce measurement error, and 4) validity and reliability must be re-evaluated for each study since populations and cultural factors differ.

An example of an application of the components of the Health Belief Model is presented in Table 1 for the following scenario: reduction of total dietary fat intake to prevent a heart attack among 40-60 year old adults in Montreal. It is broad in scope. It could become more specific by focusing on saturated fat intake.

Four of the Health Belief Model components are applied: 1) perceived severity, 2) perceived risk, 3) perceived benefits, and 4) perceived barriers.

Perceived Severity	Not serious			Extremely serious	
How serious would it be for you if you had a heart attack?	1	2	3	4	5
How seriously would it affect your family if you were to have a heart attack?	1	2	3	4	5
Perceived Risk	Not at risk			Extremely at risk	
Do you think that you are at risk for getting a heart attack in the future?	1	2	3	4	5
Do you think that you are at risk for getting a heart attack in the future because of your dietary fat intake?	1	2	3	4	5
<i>NOTE: Individuals may respond differently to questions for the perceived severity and the perceived risk components, if 'heart attack' was substituted with 'heart disease'... a more vague connotation than heart attack, or if 'heart attack' was substituted with 'poor lipid-control in diabetes'. This reinforces the importance of the decision in choosing the type of behaviour and the outcome of the behaviour before application of the model.</i>					
Perceived Benefits	Not useful			Extremely useful	
Do you think that reducing dietary fat intake is useful in decreasing your chances of getting a heart attack?	1	2	3	4	5
Do you think that reducing dietary fat intake is useful in improving your health?	1	2	3	4	5

Perceived Barriers	Not difficult		Extremely difficult		
Do you think that reducing your dietary fat intake is difficult because high-fat foods taste good?	1	2	3	4	5
Do you think that reducing your dietary fat intake is difficult because high-fat foods are not expensive?	1	2	3	4	5
Do you think that reducing your dietary fat intake is difficult because high-fat foods are readily available?	1	2	3	4	5
Do you think that reducing your dietary fat intake is difficult because high-fat foods are preferred by your family?	1	2	3	4	5

NOTE: Other formulations for the questions and the responses can be made. For example, statements can be phrased so that individuals could respond whether or not they agree or disagree with the statement on a Likert scale ranging from 1 to 7 (1=strongly disagree, 2= moderately disagree, 3=mildly disagree, 4=neither agree or disagree, 5=mildly agree, 6=moderately agree, 7=strongly agree); example - Reducing dietary intake is difficult because high-fat foods are preferred by my family (responses ranging from 1 "strongly disagree" to 7 "strongly agree").

The mean score of each component, containing 2 or more questions, is calculated after ensuring that there is overall consistency for the assessment between the wording and the scoring. Statistical analyses are then conducted to determine the association between each component of the model with the target behaviour.

Internal-consistency estimates of reliability (i.e., Cronbach's coefficient alpha) should be determined for each component of the model; the more items in the component, the greater the likelihood of obtaining higher reliability coefficients. Low reliability may reduce the chances of finding significant associations when in fact they do exist.

The model stipulates that individuals who perceive themselves to be at greater risk, perceive greater severity of the condition, perceive greater benefits to undertaking the target behaviour, perceive fewer barriers to undertaking the target behaviour, will be more likely to adopt a behaviour. Model components provide direction for hypotheses formulation in predicting behaviour.

The application of the Health Belief Model can also be useful in measuring outcomes of a program. Furthermore, it can guide in the development of program content and activities. For example:

Perceived severity:	discuss the complications associated with the condition and how they may impact on quality of life;
Perceived risk:	discuss the risk factors for the condition; conduct individual risk assessments;
Perceived benefits:	discuss the advantages of taking action and disadvantages of not taking action;
Perceived barriers:	identify the barriers for specific behaviours; brain-storm to identify ways of overcoming the barriers; apply problem-solving strategies to resolve problem behaviours; discuss past success stories in changing behaviours.

In summary, the Health Belief Model can be useful in providing a structure for individuals to change dietary behaviours as well as a guide for counsellors to assist their clients.

THEORY OF PLANNED BEHAVIOUR

Components of the Theory of Planned Behaviour

The key components of the Theory of Planned Behaviour include: behaviour, intention, attitude towards a behaviour, subjective norm, and perceived behavioural control. The Theory of Planned Behaviour (Ajzen, 1991) is an extension of the Theory of Reasoned Action (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980).

The original Theory of Reasoned Action attempted to understand and predict behaviours that are specific in nature, under our control, and in a well-defined situation. The component 'perceived behavioural control' was later added to the model to take into consideration that people may not have volitional control over their behaviour. Three main assumptions of the theory include (Ajzen, 1991): 1) individuals usually behave rationally, 2) they take into account the information that is available and use it, and 3) they consider the implications of their actions before undertaking a behaviour.

The behaviour under study should be well defined and needs to include four characteristics: 1) an action, 2) a target behaviour, 3) a context, and 4) a time. For example, choose (action) foods low in fat (target behaviour) at the worksite cafeteria (context) in the next month (time).

A person's intention is viewed as the most immediate determinant of behaviour.

A person's **Intention** is a function of three determinants: attitude towards a behaviour (personal influence), subject norm (social influence), and perceived behavioural control (environmental influence). Montaño & Kasprzyk (2003) provide an excellent summary of this theory.

1. **Attitude** is the person's positive or negative evaluation of performing the behaviour (Ajzen, 1985).
2. **Subjective norm** is the person's perception of the social pressure to perform or not perform the behaviour (Ajzen, 1985).
3. **Perceived behavioural control** is the person's perceptions of the resources and opportunities available to perform the behaviour (Ajzen, 1991).

For some behaviours, attitudinal considerations may be more important than either normative considerations or control considerations; or vice-versa. The relative importance of each of the three determinants may vary with the behaviour under study. To adopt a behaviour, a person must view the behaviour as positive and beneficial, and must feel that the environment is supportive and that the required resources are available (Park & Ureda, 1999).

Attitudes can be estimated or determined from behavioural beliefs and outcome evaluation (Ajzen & Fishbein, 1980).

- Behavioural beliefs are a person's salient beliefs that the behaviour is linked to an outcome.
- Outcome evaluation is the person's perception of the value of the outcome.

For example, the person must believe that reducing fat intake will decrease the chances of getting a heart attack (behavioural belief); and, the person must also value decreasing the chances of getting a heart attack (outcome evaluation). To predict attitude, each belief is multiplied by the outcome evaluation of that belief.

Subjective norms can be estimated or determined by normative beliefs and the motivation to comply (Ajzen & Fishbein, 1980).

- Normative beliefs are the person's beliefs whether or not specific individuals or groups think he/she should perform or not perform the behaviour.
- Motivation to comply is the person's willingness to comply to the specific individual's or group's views.

For example, the person must believe that the doctor, the spouse, family members, friends, or colleagues at work want him/her to reduce fat intake; and, the person must also want to comply with the doctor's, the spouse's, family members', friends, or colleagues' views. To predict subjective norm, each normative belief is multiplied by the motivation to comply to that belief.

Perceived behavioural control can be estimated or determined by control beliefs and perceived power (Ajzen, 1991; Montaño & Kasprzyk, 2003).

- Control beliefs are the perceptions of the person as to whether or not he/she has the resources (presence or absence of facilitators and barriers) to be able to carry out the behaviour.
- Perceived power are the perceptions of the person as to whether or not the factors/conditions identified in control beliefs make it difficult to perform the behaviour.

For example, the person must identify the facilitators and barriers of carrying out the behaviour (control beliefs) as well as the contribution of each factor in making it difficult to perform the behaviour (perceived power). To predict perceived behavioural control, each control belief is multiplied by the perceived power of that belief.

The Theory of Planned Behaviour has been applied to determine: soft drink consumption (Kassem et al, 2003); sugar restriction (Masalu & Astrom, 2003); dairy product intake (Kim et al, 2003); dietary supplement use (Conner et al, 2003, 2001); fruit and vegetable consumption (Lien et al, 2002); milk consumption (Park & Ureda, 1999); fat intake (Towler & Shepherd, 1992); consumption of selected fat-containing foods (Tuorila & Pangborn, 1988); preferences for different types of milk: skim, 1% fat, 2% fat, whole milk (Brewer et al, 1999); attitudes towards food containing fats among subjects with different body weights (Saba et al, 1999); weight loss (Schifter & Ajzen, 1985); and, perceptions about diabetes (Lautenschlager & Smith, 2006). Other applications are included in the work of Brug et al (2006), Moser et al (2005), Patch et al (2005), Bissonnette & Contento (2001), Strychar et al (2000b), and Dubois et al (1996). Psychometric properties of measures applying the model have also been reported for diabetes (Blue & Marrero, 2006).

Issues to consider in the application of the Theory of Planned Behaviour

Ajzen & Fishbein (1980) provide specific directives on how to develop the questions and response scales for each component of the theory. They recommend that attitudes, salient beliefs, and significant others should be identified by the target audience themselves. They propose a specific methodology for questionnaire development that includes a pilot study to determine salient beliefs. This classic reference should be consulted prior to applying the model.

Table 2 contains an application of the Theory of Planned Behaviour, for the same behaviour (reducing fat intake) and the same outcome (to prevent a heart attack) as the application of the Health Belief Model (see Table 1).

Table 2. Application of the Theory of Planned Behaviour								
Intention	Unlikely							Likely
I intend to reduce my dietary fat intake to decrease my chances of getting a heart attack:	1	2	3	4	5	6	7	
Attitude	Bad							Good
Reducing my dietary fat intake is:	1	2	3	4	5	6	7	
	Harmful							Beneficial
Reducing my dietary fat intake is:	1	2	3	4	5	6	7	
	Unpleasant							Pleasant
Reducing my dietary fat intake is:	1	2	3	4	5	6	7	
Behavioural Beliefs	Unlikely							Likely
Reducing my dietary fat intake will -								
be useful in decreasing my chances of getting a heart attack:	1	2	3	4	5	6	7	
be useful in improving my health:	1	2	3	4	5	6	7	
Outcome Evaluations	Bad							Good
Decreasing my chances of getting a heart attack is:	1	2	3	4	5	6	7	
Improving my health is:	1	2	3	4	5	6	7	
Subjective Norms	Should not							Should
	Reduce my fat intake							
Most people who are important to me think that I:	1	2	3	4	5	6	7	

Normative Beliefs	Should not						Should
	Reduce my fat intake						
My doctor thinks that I:	1	2	3	4	5	6	7
My spouse thinks that I:	1	2	3	4	5	6	7
My family thinks that I:	1	2	3	4	5	6	7
My friends think that I:	1	2	3	4	5	6	7
Motivation to Comply	Not at all						Very much
How much do you want to do what -							
your doctor thinks you should do:	1	2	3	4	5	6	7
your spouse thinks you should do:	1	2	3	4	5	6	7
your family thinks you should do:	1	2	3	4	5	6	7
your friends think you should do:	1	2	3	4	5	6	7
Perceived Behavioural Control	No control						Great control
How much control do you feel you have over reducing your dietary intake?	1	2	3	4	5	6	7
Control Beliefs	Very difficult						Not difficult
How difficult is it for you to reduce your dietary fat intake-							
because high-fat foods taste good:	1	2	3	4	5	6	7
because high-fat foods are readily available:	1	2	3	4	5	6	7
because high-fat foods are preferred by family members:	1	2	3	4	5	6	7

because high-fat foods are inexpensive:	1	2	3	4	5	6	7
Perceived Power	Great influence			No influence			
To what degree do the following conditions prevent you from reducing your dietary fat intake -							
high-fat foods taste good:	1	2	3	4	5	6	7
high-fat foods are readily available:	1	2	3	4	5	6	7
high-fat foods are preferred by family members:	1	2	3	4	5	6	7
high-fat foods are inexpensive:	1	2	3	4	5	6	7

Mean scores for each of the components should be calculated. Internal-consistency estimates of reliability (Cronbach's coefficient alpha) should also be calculated.

When applying the theory, some researchers have used all components while others have not. For example, Brewer et al (1999) did not measure attitudes towards the behaviour but rather attitudes were estimated by multiplying each behavioural belief by outcome evaluation and summing all responses. Park & Urdea (1999) measured control beliefs but not perceived behavioural control or perceived power.

Montaño & Kasprzyk (2003) recommend measurement of all components of the theory. They also suggest that:

- the association be determined between the direct measure of attitudes with the estimated measure of attitudes (behavioural beliefs multiplied by outcome evaluation);
- the association be determined between the direct measure of subjective norm with the estimated measure of subjective norm (normative beliefs multiplied by motivation to comply);

- the association be determined between the direct measure of perceived behavioural control with the estimated measure of perceived behavioural control (control beliefs multiplied by perceived power).

The reasons for this are twofold (Montaño & Kasprzyk, 2003): 1) direct measures of attitudes, subjective norm, and perceived behavioural control are usually more strongly associated with the behavioural intention than the estimated measures; and 2) finding an association between direct measures and estimated measures ensures that appropriate beliefs were identified in the estimated measures. The estimated measures then become useful in guiding the focus of an intervention.

SOCIAL COGNITIVE THEORY

Components of Social Cognitive Theory

The main components of Social Cognitive Theory include: efficacy expectations (self-efficacy, that is, the conviction that one can successfully execute the behaviour), outcome expectations (the person's perception that the behaviour will lead to certain outcomes), and outcome expectancies (the value the person attributes to the outcome) (Bandura, 1995, 1986, 1977). Social Cognitive Theory provides not only a framework to understand the influences of behaviour but also a direction regarding the methods for promoting behaviour change (Baranowski et al, 2003). Other components of Social Cognitive Theory include: environmental interactions, behavioural capacity, observational learning, reinforcement, goal-setting, and managing emotional arousals. In 1977, Bandura first introduced 'Social Learning Theory', and in 1986 he renamed it 'Social Cognitive Theory'. Baranowski et al (2003) provide an excellent summary of this theory.

Behaviour is viewed as dynamic and is influenced by the simultaneous interaction between the characteristics of the person, the behaviour of the person, and the environment in which the behaviour is performed (Baranowski et al, 2003). This interaction is referred to as reciprocal determinism. The relative influence of each of these three factors will vary for different behaviours, circumstances, and individuals (Bandura, 1986).

Self-efficacy, an individual's confidence in being able to carry out a behaviour, occupies a central role in Social Cognitive Theory (Bandura, 1995). Most research that has applied the theory has focused on this pivotal construct. Bandura (1977) proposed that beliefs of personal efficacy (self-efficacy) are based on four factors:

- performance accomplishments, that is, previous behaviours including successes and failures. Strong self-efficacy is developed by repeated successes; negative impact of occasional failures is then likely to be reduced. Providing individuals with the opportunity to accomplish small steps (or sub-components of the behaviour) that

leads to the overall accomplishment of the behaviour is important for increasing self-efficacy perceptions.

- vicarious experience, that is, seeing others perform a behaviour without negative consequences. This can lead individuals to expect that they themselves will be able to carry out the behaviour with the same results. Modelling and observational learning are important.
- verbal persuasion, that is, individuals are persuaded by the comments of others that they are able to do the behaviour. Positive social support can increase perceptions of self-efficacy.
- emotional arousal, that is, specific arousal resulting from stressful situations. An examination of which circumstances cause emotional arousal is useful so that, subsequently, steps can be taken to reduce the threatening situations, enabling individuals to perform the behaviour.

According to Bandura (1995), efficacy beliefs influence the will of individuals to seek knowledge and skills needed to carry out the behaviour, and regulate their motivation by determining goals and the strength of commitment towards the goals. Doubts about one's capacity to carry out a behaviour will overrule the best of skills.

Not only must individuals have the confidence of being able to carry out the behaviour (self-efficacy) but they must also perceive that the behaviour will lead to an outcome (outcome expectations). 'Outcome expectations' is defined as the anticipated outcomes of undertaking a behaviour. Furthermore, individuals must value the outcome as being important to them; this is referred to as 'outcome expectancies'. In the example of reducing fat intake to prevent a heart attack, the person must have confidence of being able to reduce dietary fat intake (self-efficacy), must perceive that reducing fat intake will reduce risk for a heart attack (outcome expectations), and that reducing chances of having a heart attack is important (outcome expectancies).

Other notions in Social Cognitive Theory which may be useful in better understanding an individual's behaviour include the environment, behavioural capacity, observational learning, and goal-setting.

- The environment in which the individual functions provides motives, for or against, undertaking a behaviour. It is useful to consider the physical as well as the social environment. The physical environment may include the availability of food products at home, worksite, or restaurant. The social environment may include family members and friends, peers at the worksite, or community group members. How individuals view their environment affects whether or not they adopt behaviours (Baranowski et al, 2003).
- The notion of behavioural capacity implies that the individual must have the skills to carry out the behaviour. This brings up the issue of knowledge designed to improve the skills of individuals so that they may accomplish the behaviour (skills to plan

low-fat meals, skills to prepare low-fat meals, etc). Motivational-oriented knowledge (reasons for conducting the behaviour) and skill-oriented knowledge (how to conduct the behaviour) are distinct and both should be considered (Contento, 1995).

- Observational learning is important especially among children when they see their parents or their peers perform positive health behaviours. Reinforcements are also particularly useful. They can include self-reinforcement, direct reinforcement, and vicarious reinforcement as in observing others (Baranowski et al, 2003).
- Goal-setting and monitoring one's behaviour may facilitate maintaining self-control. Another useful approach is problem identification and problem re-structuring in order to reduce stressful stimuli that might prevent an individual from undertaking a behaviour.

Bandura's Social Cognitive Theory has been applied to guide the development of interventions in several large community trials. Farquhar (1977) and Benfari et al (1981) were among the first to do so. It was also applied in the Child and Adolescent Trial for Cardiovascular Health, referred to as the CATCH study (Luepker et al, 1994; Edmundson et al, 1996), as well as in other interventions (Rinderknecht & Smith, 2004; Toobert et al, 2002; Miller et al, 2002).

The concept of self-efficacy has also been applied to understand dietary fat intake (Rossi et al, 2001; Liou & Contento, 2001; Ôunpuu et al, 2001; Sallis et al, 1988); disordered eating among adolescents (Neumark-Sztainer et al, 1996); fruit and vegetable intake (Wind et al, 2006; Molaison et al, 2005; Ma et al, 2002); calcium intake among adolescents (Lee & Reicks, 2003; Ievers-Landis et al, 2003), diabetes management (Vallis et al, 2005; Anderson et al, 2000; Ludlow & Gein, 1995; Rubin et al, 1993), and healthy eating (Monge-Rojas et al, 2005).

Bandura's original concept of self-efficacy has undergone intensive study and development (Rossi et al, 2001). The notion of situational self-efficacy has been found to be associated with stages of change in the Transtheoretical Model for various health behaviours (Ôunpuu et al, 2001).

Researchers, however, should be cautious, as stated by Bandura himself (1995), not to simply "pluck" constructs from divergent theories and string them together for the purpose of theoretical integration. Working with a team of experts, who have mastered the theoretical underpinnings of the models, is strongly advised.

Issues to consider in the application of Social Cognitive Theory

An application of selected components of Social Cognitive Theory is outlined in Table 3. The application draws upon the work of Sallis et al (1988), Rossi et al (2001), and Ôunpuu et al (2001).

It is the same behaviour (reducing fat intake) and the same outcome (to prevent a heart attack) as the application of the Health Belief Model (Table 1) and the Theory of Planned Behaviour (Table 2).

Self-Efficacy	Not at all						Extremely
Overall, how confident are you of being able to -							
reduce your dietary fat intake?	1	2	3	4	5	6	7
reduce the number of times per week that you eat fried-foods?	1	2	3	4	5	6	7
reduce the number of times per week that you eat high-fat desserts?	1	2	3	4	5	6	7
reduce the amount of fat you add to bread, vegetables and salads?	1	2	3	4	5	6	7
Situational Self-Efficacy	Not at all						Extremely
How confident are you of being able to reduce your dietary fat intake in the following situations -							
when you had a hard day?	1	2	3	4	5	6	7
when you are feeling low?	1	2	3	4	5	6	7
when eating with friends?	1	2	3	4	5	6	7
when eating at a restaurant?	1	2	3	4	5	6	7
when eating alone?	1	2	3	4	5	6	7
when preparing your own meal?	1	2	3	4	5	6	7
when others around you are eating high-fat foods?	1	2	3	4	5	6	7
Outcomes Expectations	Not at all						Very much so
Do you think that reducing your dietary fat intake will decrease your chances of getting a heart attack?	1	2	3	4	5	6	7
Do you think that reducing your dietary fat intake will help improve your health?	1	2	3	4	5	6	7

Outcomes Expectancies	Not at all						Extremely
Is decreasing your chances of getting a heart attack important to you?	1	2	3	4	5	6	7
Is improving your health important to you?	1	2	3	4	5	6	7

With respect to applying Social Cognitive Theory for guiding the development of program content and activities, the following considerations may be useful:

Environment:	modify the environment to facilitate behaviour change;
Goal-Setting:	identify small steps that lead to goal achievement; identify and set short-term and long-term goals - this provides direction to the tasks that need to be undertaken. Behavioural contracting should be considered;
Modelling:	have parents, family members, peers, physicians, and teachers display positive health behaviours;
Skills:	provide information and practice opportunities to ensure that individuals have the necessary skills to undertake the behaviour;
Monitoring:	monitor progress and provide reinforcements for positive behaviours -reinforcements need to be determined by the target audience to be meaningful;
Problem-solving:	identify the problem and restructure it; brainstorming, role-playing, and testimonials are useful.

TRANSTHEORETICAL MODEL

Components of the Transtheoretical Model

The key components of the Transtheoretical Model are the six stages of change (Prochaska & Velicer, 1997):

- **Precontemplation Stage**, in which individuals are not intending to take action in the foreseeable future;
- **Contemplation Stage**, in which individuals are intending to take action in the next six months;
- **Preparation Stage**, in which individuals are intending to take action in the next month;
- **Action Stage**, in which individuals have taken action within the past six months;

- **Maintenance Stage**, in which individuals are preventing relapse;
- **Termination Stage**, in which individuals are maintaining action and there is no temptation to return to previous behaviours, not even if depressed, anxious, bored, lonely, angry, or stressed.

Prochaska & DiClementi (1986) view change as a dynamic phenomenon and multi-dimensional in nature. Their Transtheoretical Model consists of a framework that covers the full course of change, from being aware of a problem to the time when the problem no longer exists. The model was developed from over 30 theories of psychotherapies. It consists of 10 processes of change, including consciousness raising from Freud's perspective, contingency management from Skinner's perspective, and helping relationships from Roger's perspective (Prochaska & Velicer, 1997).

Prochaska et al describe the 10 processes of change (Prochaska et al, 2003; Prochaska & Velicer, 1997):

1. consciousness raising, that is, increased awareness about the causes of a problem behaviour;
2. dramatic relief, that is, reduced negative emotional experiences after appropriate action is taken;
3. self-evaluation, that is, cognitive and affective assessment of oneself;
4. environmental re-evaluation, that is, examination of the effect of one's behaviour on one's social environment;
5. self-liberation, that is, the belief that one can change and be committed to change;
6. social liberation, that is, increased exposure to social situations that encourage positive change;
7. counter-conditioning, that is, substituting healthier behaviours for problem behaviours;
8. stimulus control, that is, removal of cues to unhealthy behaviour;
9. contingency management, that is, positive reinforcements for undertaking healthy behaviours;
10. helping relationships, that is, caring and trusting relationships that encourage social support.

According to Prochaska et al (2003, 1992), results of several studies suggest that in the early stages of precontemplation and contemplation, cognitive, affective, and evaluative processes are applied (consciousness raising, dramatic relief, environmental re-evaluation, self evaluation). In the preparation stage, self-liberation is applied. In the later stages of action and maintenance, commitments, conditioning, contingencies, and environmental control are

applied (contingency management, helping relationships, counter-conditioning, stimulus control).

Other components of the model include: decisional balance, self-efficacy, and temptations (Prochaska et al, 2003; Prochaska & Velicer, 1997). Decisional balance is the individual's weighing of the pros and cons of changing. Self-efficacy is referred to the situation-specific confidence of an individual that will prevent him/her from relapsing into the problem behaviour. Temptation refers to the intense urges resulting from emotional distress, social situations, or cravings.

Individuals may not progress from one stage to another in a linear fashion and they may relapse into an earlier stage (Prochaska et al, 1992). According to Prochaska & DiClemente (1982), the best predictor of relapse is low levels of self-efficacy.

Prochaska & Velicer (1997) clearly state that Stages of Change is not a theory since a theory requires systematic relationships between a set of variables, usually culminating in mathematical relationships, such as in the case of the Theory of Planned Behaviour.

The Transtheoretical Model has been applied: to determine the effect of an Internet intervention on movement in Stages of Change (Bensley et al, 2006); to investigate the distribution across the different Stages of Change in 15 European communities for general eating habits (de Graaf et al, 1997); to assess the effect of dietary interventions on fat consumption (Frenn et al, 2003; Finckenor & Byrd-Bredbenner, 2000; Greene & Rossi, 1998); to assess the association between Stages of Change and fat consumption (Rossi et al, 2001; McDonell et al, 1998); to assess the association between Stages of Change and fruit and vegetable intake (Resnicow et al, 2003; Campbell et al, 1999; van Duyn et al, 1998; Laforge et al, 1994); to assess the association between Stages of Change and milk consumption (Gulliver & Horwath, 2001); for diabetes management (Vallis et al, 2003; Jones et al, 2003; Kasila et al, 2003; Sutton et al, 2003; Vallis, 1999); and, for weight loss (Riebe et al, 2003; Logue et al, 2000; Suris et al, 1998; Prochaska et al, 1992; O'Connell & Veicer, 1988).

Most research examining dietary behaviours has not applied the component 'termination' stage of change. Future research is needed in this area since, as health professionals, we have not been able to resolve the problem of maintaining long-term behaviour change, particularly in the study of obesity.

Issues to consider in the application of the Transtheoretical Model

One of the major concerns in applying the model is the methodology used to classify individuals according to the Stages of Change. Kristal et al (1999) discuss three options:

1. Asking individuals their perceptions to determine their stage of change. For example: Are you eating a low-fat diet? Yes, I have been doing so for more than 6 months (maintenance); Yes, I have for less than 6 months (action); No, but I intend to in the next 30 days (preparation); No, but I intend to in the next 6 months (contemplation); No, and I do not intend to in the next 6 months (precontemplation). The advantage of this type of classification is that it is the individual's evaluation of his/her behaviour that is taken into consideration. This can be an underlying force for behaviour change.
2. Asking individuals to first rate their eating behaviours, for instance, rate their overall intake of fat. Those reporting eating a low-fat diet are then asked how long they have been doing so (action or maintenance stage), and those reporting not eating a low-fat diet are asked if they intend to make changes, if they tried to make changes, and if they were successful (precontemplation, contemplation, or preparation stage).
3. Having a health professional determine the eating behaviours of individuals using validated measures (i.e., food records, frequency questionnaires). The disadvantage of this method is that the health professional's evaluation may not be the same as the individual's assessment. In this scenario, classification of stage may not reflect the individual's motivation to change.

An application of the model to characterize an individual's stage of change is outlined in Table 4. It is based on the work of Green & Rossi (1998) and reflects the individual's perceptions of behaviour and motivation.

Table 4. Application of the Transtheoretical Model		
Are you reducing your intake of dietary fat to lower your chances of getting a heart attack? (check one that applies)		
<input type="checkbox"/>	Yes, I have been doing so for more than 6 months	(Maintenance)
<input type="checkbox"/>	Yes, I am doing so since less than 6 months	(Action)
<input type="checkbox"/>	No, but I intend to in the next 30 days	(Preparation)
<input type="checkbox"/>	No, but I intend to in the next 6 months	(Contemplation)
<input type="checkbox"/>	No, and I do not intend to in the next 6 months	(Precontemplation)

The Transtheoretical Model also provides a useful framework for planning and evaluating nutrition interventions. Specifically, it is useful in identifying the types of interventions that will be most effective at each stage of change (Kristal et al, 1999). It can also be useful in directing counselling activities. Kristal et al (1999) provide a thoughtful analysis of the applications of the Transtheoretical Model. Other articles of interest include those by Greene et al (1999) and Ounpuu (1996).

Some researchers have developed different interventions for individuals in different stages of change. This is a large task because it means developing 5 different sets of interventions for any one program. Furthermore, some individuals may be at one stage of change for one behaviour and at a different stage of change for another behaviour. This can be a concern since most nutrition interventions target more than one behaviour. The alternative is to plan the intervention to take people through each stage of change.

Useful strategies for applying the stage of change model to interventions, based on the work of Snetselaar (2000), Kristal et al (1999), Bowlby et al (1997), and Sandoval et al (1994), are:

- | | |
|--------------------------|--|
| Precontemplation: | discuss the pros and cons of changing; identify the individual's beliefs and attitudes towards the new behaviour; increase awareness of the benefits of changing; assess the individual's personal risk; allow the individual to express his/her concerns about changing; |
| Contemplation: | identify the barriers to change and how to overcome them; discuss previous successes and failures of change experiences; emphasize the benefits of changing; provide positive feedback of the individual's current skills; encourage the individual to set up a social support system to facilitate change; |
| Preparation: | identify the small steps that need to be taken to achieve the behaviour; identify short-term goals; encourage the continuation of small steps already achieved; discuss possible rewards for achieving the behaviour; have the individual set up a social support system; |
| Action: | discuss the skills needed for change; provide materials that will assist the individual increase his/her skills; identify and discuss the situations that may prevent the individual from achieving the behaviour; reinforce the individual's capacity to change; reinforce the goals achieved; encourage the individual to use his/her social support system; |
| Maintenance: | discuss problems in maintaining the behaviour; identify solutions to overcome behaviour maintenance problems; review goals and establish new ones, if required; review the importance of maintaining the new behaviour; focus on coping strategies to maintain the new behaviour. |

Conclusion

The frameworks for behaviour presented in this chapter focus primarily on personal factors and the individual's immediate social environment. They must be combined with the ecological approach to changing behaviour, as discussed in the *Introduction*. Not to do so would be a serious omission. Nevertheless, theories from the social and behavioural sciences addressed in this chapter remain an important force in the field of nutrition education (Lytle, 2005; Achterberg & Miller, 2004).

The theoretical frameworks presented in this chapter help us to better understand and predict dietary behaviours; they are particularly useful in research initiatives and can also be integrated into the principles of planning nutrition programs (Chapter 2) and nutrition counselling (Chapter 3).

Chapter 2

PLANNING PROGRAMS

A major role of nutrition educators is to plan interventions to improve lifestyle behaviours. This chapter contains a step-by-step guide for planning nutrition programs. It is designed to assist planners in thinking through the issues that need to be considered at each step in the planning process. Each program is unique.

A guiding principle in planning programs is to be systematic and thorough. It is also important to examine previous programs and to consult colleagues experienced in the field. Involving individuals who are representative of the target population is essential. Over-planning may prove useful. However, no matter how skilled one is in applying the steps in the planning process, it is likely that there will be unexpected outcomes and results. A post-program review is critical for identifying recommendations for future planning efforts as well as for increasing the knowledge base and experience of the planner.

The planning process can include 12 steps (Figure 3) wherein one needs to describe: (1) the origin and context of the program; (2) the program planner's mandate; (3) the health needs of the target population and the program goals; (4) the health issue under study; (5) the specific target audience; (6) the changes required (individual, community, policy) to achieve the program goals; (7) the program objectives; (8) the intervention; (9) the preparatory tasks before the intervention; (10) the evaluation and outcome variables; (11) the costs of planning, implementing, and evaluating the program; (12) the post-program review process.

These steps are based on the classical literature in Adult Education (Warren, 2007; Knowles et al, 2005; 1984; Sork & Newman, 2004; Sork, 1991; Merriam & Cunningham, 1989; Boyle, 1981; Houle, 1972) and Health Education (Green & Kreuter, 2005, 1999; Glanz et al, 2003; Green & Lewis, 1986), and on my experiences in planning community-based programs.

Description of Steps in the Planning Process

Planning is a process that provides direction for deciding what to do and how to do it. Planning is not linear in nature. For example:

- at the time when the planner describes the intervention (step 8), the planner may realize that the objectives need to be refined (step 7);
- at the time when the planner describes the evaluation (step 10), the planner may decide to refine the objectives (step 7) or the program intervention (step 8).

This non-linear process may be unsettling for planners as it implies revisions.

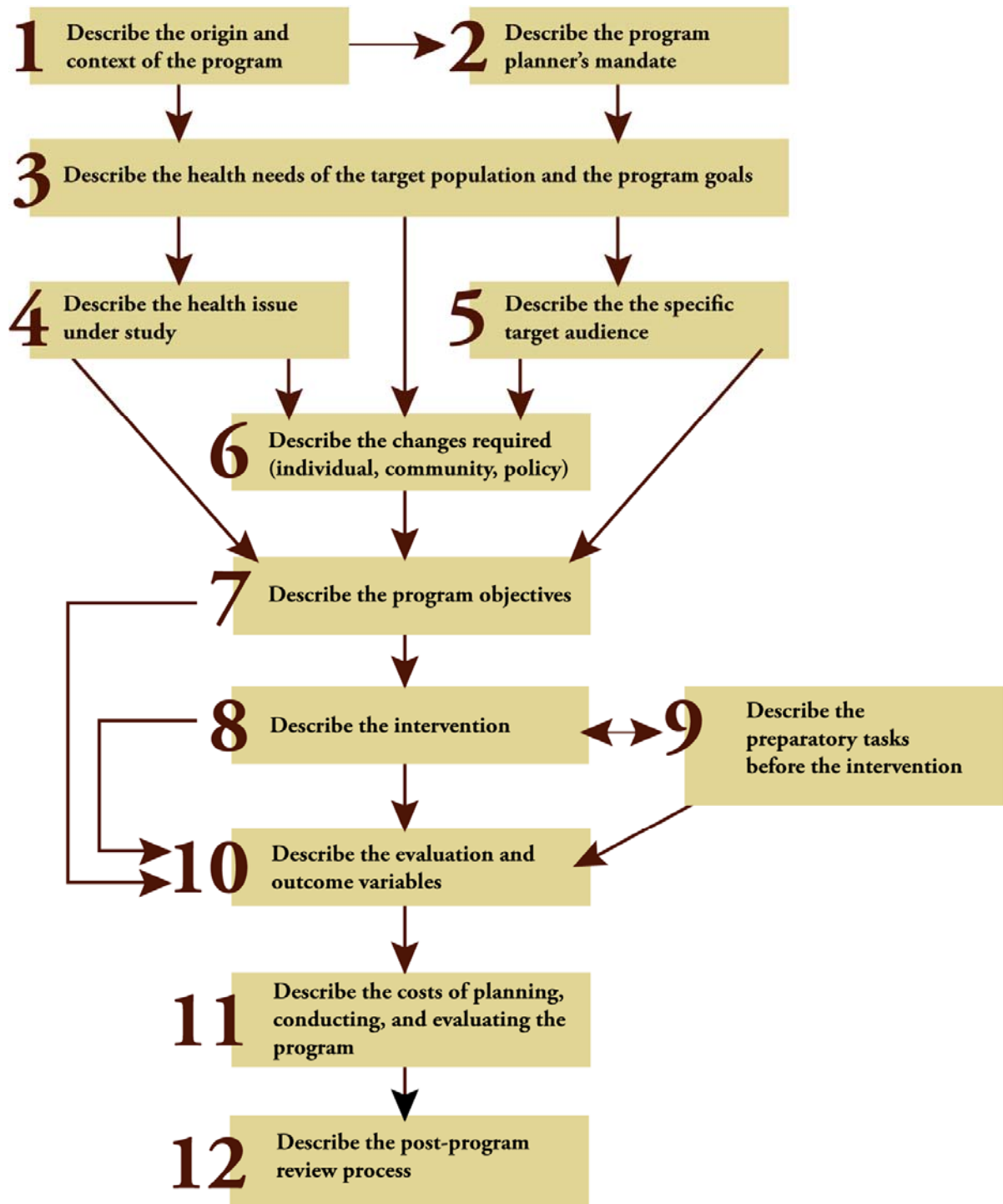


Figure 3. Steps in the planning process

STEP 1: ORIGIN AND CONTEXT OF THE PROGRAM

Programs can originate from several sources. These can be classified according to different levels: national, community/regional, institutional, and individual. Examples are cited below.

National Level:

- a government body decides to give additional financial resources to improve the health of the population.
- a government body identifies a specific health issue/problem.
- a national professional organization identifies a specific health issue/problem.

Community/Regional Level:

- a community wants to improve the health of its constituents.
- a community identifies a specific health issue/problem.
- a local group of health professionals decide to join efforts and work on a specific health issue/problem.

Institutional Level:

- a group of health professionals within one institution decide, or are mandated, to deal with a specific health issue/problem.
- a health professional within an institution decides, or is mandated, to deal with a specific health issue/problem.

Individual Level:

- a health professional decides to initiate a program because of personal interest or to respond to a specific problem frequent in his/her practice.

The origin of the program will clearly affect the breadth and scope of the program as well as the resources required to implement the program. It will also determine at what step in the planning process the planner will begin his/her work.

In the scenario in which a community wants to improve the health of its constituents, a needs assessment must be conducted to determine and prioritize the specific health issue or problem. In the scenario in which a community has already identified a specific health problem (to respond either to a current concern, to a political agenda, to interests of community leaders, or to a lobby group), the planner will not have to conduct a needs assessment or prioritize the health issue to be addressed; the group will already have done so. In the scenario in which an employer mandates a program, in most instances, the health issue or problem has already been identified.

In these scenarios, part of the planning process has already taken place by someone other than the planner.

The origin and context of a program condition the choice of objectives, the type of changes required to achieve the objectives (i.e., individual, community, policy change), and the focus of the intervention (i.e., media campaign, community activities, small group sessions, individual learning opportunities, counselling).

The origin of the program will also influence the resources required, its length and intensity, as well as the constraints and obstacles in its development, implementation and evaluation. A realistic assessment of these issues is warranted early in the planning process: it may result in delaying the program.

A throughout review of existing or competing programs must be conducted. If the program is already available, the best use of resources may not be to repeat the planning process. Existing programs could be adapted, resulting in time and financial savings. However, it may be difficult to find already available programs and obtain copies and permission for use; in this context, personal contact with individuals working in the field is needed.

At this step in the planning process, it is also important to identify the purpose for conducting the program. Is it to develop a new program? Is it to improve an existing program because additional resources are available? Is it to develop a new program that will replace an existing program?

In summary, a program may originate from: a research study, a community/individual needs assessment, a mandate, a request by a community leader or action group, a government policy, or a personal interest on the part of the planner. The origin and context of a program will have a major impact on the subsequent steps of the planning process.

STEP 2: PROGRAM PLANNER'S MANDATE

The planner needs to identify the goals of the planning organization that he/she is associated with. Are the goals of the planning organization different from the goals of the program? If so, is there a conflict of interest between the goals of the planning organization and the goals of the program? In an industry sponsored situation, the planner may face a situation where the company's goal is to increase sales of its food products, some of which are high in fat content, whereas the program goal is to reduce fat consumption, according to nutrition recommendations. Conflicts of interest should be stated and dealt with.

The planner must also determine how the planning organization is viewed by the target population. Credibility of the planning organization will have an impact on whether or not

individuals will choose to participate in the program and whether or not participants will ultimately modify their health behaviours.

STEP 3: HEALTH NEEDS OF THE TARGET POPULATION AND PROGRAM GOALS

Identifying the health needs of a selected population/community/group could be a simple or a complex process. The first question to ask is: who should undertake the needs assessment? In the case of a country or community, key stakeholders should be involved. These would include the program planner, community leaders, government representatives, and delegates from the population. Each stakeholder has an important contribution. In some communities it would not be culturally acceptable nor politically astute to undertake a planning initiative if the community leaders were not involved.

Conducting a needs assessment requires the consideration of numerous factors, such as:

- Mortality, morbidity, fertility, birth weight, sexually transmitted diseases, chronic diseases, lifestyle indicators such as dietary intakes, physical activity, smoking behaviours, etc.; rates varying according to age, sex, ethnicity, education, income, and employment status.
- Type of employment, work-related illnesses, disabilities.
- Marital status, household composition.
- Geographic climate, living conditions, water sources, food production.
- Government food and nutrition regulations and policies.
- Food availability (i.e., types of foods, seasonal influences) and distribution (i.e., number and location of supermarkets, small food outlets).
- Recreation facilities, walking and bicycle paths.
- Community services (i.e., schools, universities, hospitals, medical clinics).
- Social groups (i.e., religious groups, women groups, community groups).
- Nutrition services (i.e., hospital clinics, private clinics, weight loss clinics, food programs, community kitchens).
- Use of medical and health services.

An exhaustive needs assessment allows the planner to obtain a comprehensive profile of the country or community or group. It will provide information regarding the type of clientele, the major health problems, the resources, and services utilization as well as the relevant individual life-style factors, social factors, and environmental factors.

How to prioritize needs is a challenge for program planners. The choice will depend on the origin and context of the program as well as on the individuals involved in the planning process. For example, when a government wants to improve the health of its population, more than one health issue is usually identified: i.e., diabetes; cardiovascular disease; obesity; suicide; family violence. The government may decide to deal with one health problem with all resources attributed to it or it may select several health problems, with fewer resources allocated to each component. Prioritization is an important concern in this planning context. The planner may find himself/herself in a situation whereby a government or community decides to first act on a non-nutrition health problem, for example community violence, before acting on a nutrition health problem such as changing dietary intake to prevent obesity. Solomons' (2005) position is that prioritization of needs and resource allocation should be done by policy planners and not by program planners.

Criteria to prioritize needs should be established and agreed upon by all stakeholders involved. These criteria may include: the importance of the need, the feasibility of being able to achieve the need, and the recognition that certain needs may have to be accomplished before others. Prioritization of needs may also be influenced by the resources available, lobby groups, or key leaders (community or health professionals).

The formulation of needs requires attention. Needs should not be equated to 'wants' and 'desires' but should be phrased as statements representing a current situation. Implicit in the statements is the potential for improvement of the current situation. Examples of need statements are outlined below.

NOTE. The example of prevention of diabetes was selected, since it is related to the obesity pandemic and is the focus of numerous health initiatives.

- According to Statistics Canada, 5% of adults in Canada have diabetes.
- According to NHANES III, 23% of overweight adults in America have diabetes.
- According to NHANES III, 3% of adults in America have undiagnosed diabetes.
- According to NHANES III, 4-7% of adults in America have pre-diabetes (impaired glucose tolerance or impaired fasting glucose).

Each need statement should include a description of the population (adults in Canada/America), the health condition (diabetes), the health problem (high prevalence of undiagnosed diabetes/pre-diabetes), and the magnitude of the problem identified (%).

The needs statements should guide the planner in identifying the program goal(s). In the example cited, the overall program goal could be: to reduce the prevalence of undiagnosed diabetes and pre-diabetes in Canada.

STEP 4: HEALTH ISSUE UNDER STUDY

Once a health issue has been identified, the disease state and its health context must be thoroughly described. In the case where undiagnosed/pre-diabetes diabetes is the health issue under study, the following should be considered:

The planner should have a good comprehension of the risk factors for diabetes, the evolution of the disease, the disease state, and its complications. A decision will have to be made whether or not all risk factors will be addressed and how target risk factors will be determined. The set of target risk factors will give rise to the specific target audience for the program. For example, a group may decide to focus on the following diabetes risk factors (Canadian Diabetes Association, 2003): individuals who are overweight, over 40 years of age, dyslipidemic, hypertensive, and from a high-risk ethnic population (i.e., people of Aboriginal, Hispanic, Asian, South Asian, and African descent). Another decision will have to be made whether specific programs will be developed for each high-risk population or whether the high-risk groups are part of a global program. This will likely depend on the resources available and decisions made in the needs assessment phase.

The planner should also identify the nutritional components and lifestyle factors that are related to the risk factors. In the example previously cited, the nutrition related risk factors would include Body Mass Index (BMI, kg/m^2) and blood lipid levels. The nutrition intervention could then focus on lowering BMI (weight loss through diet and exercise) and lowering blood lipids levels (reducing dietary saturated fat intake).

STEP 5: SPECIFIC TARGET AUDIENCE

A comprehensive profile of the target audience is needed. Individuals with the target risk factors (as identified in Step 4) should be described in relation to their:

- *demographic characteristics*: age, sex, ethnicity, income, education, occupational status, marital status, living conditions (i.e., number of individuals in the household).
- *social characteristics*: family traits, community group affiliations (i.e., women clubs, health clubs, volunteer clubs, religious groups), health services utilization, environmental concerns, if applicable, (i.e., genetically modified foods).
- *motivational characteristics*: reasons for changing health behaviours, readiness to change (Stages of Change), attitudes, beliefs, existing knowledge and skills related to the health behaviours to be modified, educational methods preferences (i.e., group, individual, interactive), lifestyle conditions (i.e., stress, family circumstances, working conditions).
- *health status and physiologic characteristics*: medical conditions, medication use, body weight, hunger, appetite, etc.

Information about the target audience will provide the planner with useful data that will affect other steps in the planning process. It will influence: 1) how the target audience will be identified and contacted, 2) when and under what circumstances individuals will be able to participate in the program (date, place, costs, publicity, etc.); 3) factors associated with adoption of healthy behaviours; 4) barriers to implementing health behaviour change; and, 5) type of educational activities to be organized (some populations and medical conditions may require individual rather than group sessions for cultural or confidentiality reasons, etc.).

STEP 6: CHANGES REQUIRED (INDIVIDUALS, COMMUNITY, POLICY) TO ACHIEVE THE PROGRAM GOALS

The first five steps in the planning process set the stage for determining the changes to be targeted by the program. Changes at the individual/family, community/institution, policy/governmental levels should be considered in order to maximize the chances of achieving program goals (see Introduction). The larger the scope of the goal, the more likely that change will be required at all levels.

The planner can determine the changes required to achieve the program goals by conducting a brainstorming session. In the prevention of diabetes example already cited, the following questions could be asked: How can the prevalence of undiagnosed diabetes be reduced and how can the prevalence of pre-diabetes be reduced?

In the case of reduction of the prevalence of undiagnosed diabetes, factors related to screening individuals need to be considered. For example: Do physicians routinely screen their patients for diabetes? In which medical context does screening occur? What are the factors that affect a physician's decision to screen or not to screen? What factors would facilitate having the physician screen for diabetes? Can patients be encouraged to request screening? Will increasing public awareness of risk factors increase the likelihood of patients asking their physicians to be screened? These considerations could lead the planner to focus on: increasing public awareness of diabetes risk factors, increasing physicians screening practices, modifying payments to reimburse physicians for screening, establishing diabetes screening clinics targeting high-risk individuals, etc.

In the case of reduction of the prevalence of pre-diabetes, factors related to reducing number of risk factors and modifying risk factors need to be considered. For example: What are the specific health behaviours to be modified to reduce the number of risk factors? What support systems are in place for individuals to reduce the number of their risk factors?

In the example cited, the nutritional factors associated with diabetes risk factors (weight loss and lower dietary fat intake) must be examined. To lower body weight and reduce dietary fat intake, individuals may undertake a physical activity program and modify their eating behaviours. Eating behaviours targeted to lower caloric/energy intake and dietary fat intake might include: purchase of low-fat low-calorie foods, preparation of low-fat

low-calorie meals, selection of low-fat choices in each of the food groups, replacement of high-fat high-calorie foods with low-fat low-calorie foods, etc.

It is also important to determine what factors will influence health behaviour change and risk reduction (see Chapter 1). There are individual, social, and environmental factors associated with adoption of lower caloric/energy intake and lower dietary fat intake to consider:

Individual: previous dieting history, availability of foods, skills to prepare low-fat low-calorie meals, confidence in being able to carry out the behaviours, beliefs that undertaking the behaviours will lead to reducing the risk of diabetes, etc. A review of the psychosocial factors identified in Chapter 1 is required.

Social: influence of family and friends in terms of: advice on consumption of certain food products (positive or negative), encouraging modification of lifestyle behaviours (positive or negative), and current health and lifestyle behaviours of family members and friends (positive or negative).

Environmental: provision of tax incentives for the production of low-cost, low-calorie, low-fat, palatable foods and their availability in restaurants, worksites, schools, and other community settings; modification of food labelling regulations.

Once all these issues have been considered, the planner can then prioritize changes and identify which ones are feasible depending on the resources and context of the planning process. In the prevention of diabetes example cited, the following changes could be targeted by the program:

Individual change:

- modifying health behaviours to reduce nutrition related diabetes risk factors, i.e., lowering body weight and lowering blood lipid levels that will require reducing energy intake, reducing total dietary fat and saturated fat intakes, and increasing physical activity levels.

Community change:

- increasing public awareness of diabetes risk factors.
- increasing frequency of physician screening practices.
- increasing the number of restaurants offering low-fat, low-calorie food choices.

Policy change:

- modifying payment plan to reimburse physicians for screening for diabetes and treating pre-diabetes.
- providing tax incentives to industry for reducing the caloric and fat content of food products.

STEP 7: PROGRAM OBJECTIVES

The program objectives are statements that describe what has to be accomplished by the program. It sets the stage for the development of the intervention.

Objectives should be realistic, measurable, and correspond to the previously identified needs and changes targeted. The statement of the objective should include:

- a description of the target population.
- what specific change is targeted.
- in what conditions the change will be attained.
- when the change is anticipated.

The wording of objectives should be precise and reflect the desired outcomes. Wording of objectives should be carefully considered. Verbs such as "to know, to understand, to appreciate" are vague; other verbs such as "to identify, to list, to define" are more precise. The wording of objectives should focus on the outcomes of the participants and not on the planner's activities or methods (i.e., to teach, to demonstrate).

Objectives can be presented in different ways. The most common is to classify the objectives as general and specific. Another way is to classify objectives according to Bloom's taxonomy (cognitive, affective, psychomotor domains). The cognitive domain has been the most frequently applied in health programs. It consists of six levels: knowledge, comprehension, application, analysis, synthesis, and evaluation.

The types of objectives identified for the program will depend on all previous steps in the planning process. For the prevention of diabetes example previously cited, the following objectives could be targeted by the program:

1. to reduce the prevalence of undiagnosed diabetes among adults in Montreal, one year after the intervention.
 - to increase public awareness of diabetes risk factors.
 - to increase the frequency of physician diabetes screening practices.
2. to reduce the prevalence of pre-diabetes among adults in Montreal, one year after the intervention.
 - to reduce the prevalence of obesity.
 - to reduce total energy intake.

- to reduce the percent energy from total fat.
- to increase the frequency of selecting low-fat, low-calorie food choices within each food group of Canada's Food Guide.
- to increase the frequency of doing 30 minutes of physical activity, 5 days a week.
- to reduce perceived barriers to modifying eating habits to lower weight.
- to increase perceived confidence (self-efficacy) in modifying eating habits to lower weight.
- to increase the number of restaurants in the Montreal area offering low-calorie, low-fat food choices.
- to increase the number of restaurants in the Montreal area identifying low-calorie, low-fat food choices on the menu.

NOTE. *Each planning context is unique and the planner may find him/herself in the position of starting with a mandate “to reduce percent energy of total dietary fat intake” among a specific population. In this scenario, fat reduction is the starting point in the planning process and it becomes the general objective of the program. In this scenario, specific objectives could include:*

- *to increase knowledge of fat content of food products.*
- *to increase the frequency of substituting low-fat foods for high-fat foods.*
- *to decrease perceived barriers in selecting low-fat foods.*
- *to increase confidence in selecting low-fat foods.*
- *to increase the frequency of purchase of low-fat foods for home.*
- *to increase the frequency of preparing low-fat meals.*
- *to increase the frequency of selecting low-fat foods/ meals when eating at restaurants.*

STEP 8: INTERVENTION

The intervention must be integrally linked to the objectives and the type of changes targeted by the program. There are two issues that are addressed in this section: (1) The first is related to the type of intervention to be planned. It is dependent on whether the change targets policy, community, or individual change. (2) The second is related to the factors that should be considered when planning an educational program (which can be part of the larger intervention).

Type of intervention

The type of intervention needed to attain the objectives should be determined. It can range from a media campaign or lobby campaign to a series of conferences, individual learning opportunities, etc.

If the level of change targets policy, then a lobby campaign involving key stakeholders could be planned. Determining what political and industrial forces facilitate or hinder policy change can assist the planner in identifying strategies to overcome the barriers. What type of information will convince policy makers to foster change? What type of community, governmental, and international support is needed to foster change? What type of financial support is required? Policy change within government (i.e., health, agriculture) and food industry may need to be targeted at both the national and international levels.

If the level of change targets the community, then environmental changes could be pursued such as: ensuring sufficient recreation facilities and increasing access to these facilities; ensuring availability of low-cost, low-fat products at food outlets; increasing availability of low-calorie, low-fat foods at various institutions such as worksites and school cafeterias. In this case, part of the intervention could consist of meetings with those in charge of these facilities. Short presentations and communiqués to advisory board members of these institutions could be organized to present the advantages and disadvantages of change. Support from agencies such as ministries of health and education and health associations could be solicited. Group sessions, print materials, and individual education activities with selected staff members may help to implement the changes.

If the level of change targets the individual, then public campaigns, community activities, group or individual sessions, counselling, Internet programs, food demonstrations, supermarket tours, could be organized. Targeting individual change may involve including family members at various educational activities or for support on the home front.

Factors to consider when planning an educational program

Factors to be considered when planning an educational program, such as a series of conferences, workshops, or individual counselling situations, may include: how to reach the target audience, methods and content, the message, materials, and program publicity. These issues are described as follows:

REACHING THE TARGET AUDIENCE AND DECIDING THE LOCATION OF THE PROGRAM

A review of the characteristics of the target audience (see Step 5) will guide the planner in determining the best way to reach prospective program participants. Useful information may include:

- identification of the key medical caregivers used by the target audience (i.e., physicians, dietitians, nurses, physiotherapists).
- identification of the key medical services used by the target audience (i.e., hospital clinics, private clinics, weight loss clinics, food programs, community kitchens, other community health services).
- identification of the social groups that are frequented by the target audience (i.e., churches, women's groups, volunteer organizations).
- identification of the facilities used by the target audience (i.e., food outlets and recreation centres).

A decision will have to be made as to which contacts would maximize reaching the target audience. For example, if the planner is interested in reaching high-risk individuals for diabetes, then the physician would likely be a primary means of contact. Worksites may be another option (companies and organizations employing individuals in sedentary job positions, i.e., bus drivers, office workers) as well as community centres (individuals participating in low-intensity physical activities).

The selection of the location for the program is another major planning decision. The location will affect participation rates. Settings may include community centres, health professional offices or clinics, schools, libraries, shopping centres, worksites, supermarkets, homes, and universities.

The setting to identify and reach individuals for the program may be different from the setting to conduct the program. *NOTE: This notion is best illustrated using the example of a program targeting pregnant teens. In a community, a large number of pregnant teens may be reached through the school setting. While this setting may be preferred to recruit subjects for the program, it may not be the best location to hold the program. The pros of holding the program at the school is easy access for the majority of pregnant teens, the cons may be the stigma by peers. Other settings may include community health clinics and physician offices.*

Time of the day should also be decided. For individuals who work, it may be appropriate to offer the program in the evening, at the end of the workday, or during the lunch-hour period. The day hours may be suitable for retired individuals, or for new mothers, for whom offering baby-sitting services may be helpful.

METHODS AND CONTENT

The methods and content of the program should take into account the characteristics of the target audience. The stage in the life cycle and the motivational characteristics of the target audience (i.e., readiness to change, attitudes, beliefs, barriers, knowledge) that will facilitate or will prevent attainment of objectives are important considerations.

There are different perspectives on how to determine the method and content of an educational program. Some of the perspectives are based on models of behaviour change and include: Stages of Change, Health Belief Model, and Social Cognitive Theory; other focus on the educational method. Each of these perspectives is briefly described. While each of these approaches is presented separately, they may be combined.

Stage of Change

Ideally, program content should be specific to each stage of change. This is easily accomplished in a one-to-one situation whereby the educator can classify individuals according to their stage of change. However, this may not be possible with large groups. In this scenario, the program content could include information and activities for each stage of change. Certain types of information and strategies are recommended for each stage of change (Snetselaar, 2000; Kristal et al, 1999; Bowlby et al, 1997; Sandoval et al, 1994).

Precontemplation:	discuss the pros and cons of changing; identify the individual's beliefs and attitudes towards the new behaviour; increase awareness of the benefits of changing; assess the individual's personal risk; allow the individual to express his/her concerns about changing;
Contemplation:	identify the barriers to change and how to overcome them; discuss previous successes and failures of change experiences; emphasize the benefits of changing; provide positive feedback of the individual's current skills; encourage the individual to set up a social support system to facilitate change;
Preparation:	identify the small steps that need to be taken to achieve the behaviour; identify short-term goals; encourage the continuation of small steps already achieved; discuss possible rewards for achieving the behaviour; have the individual set up a social support system;
Action:	discuss the skills needed for change; provide materials that will assist the individual increase his/her skills; identify and discuss the situations that may prevent the individual from achieving the behaviour; reinforce the individual's capacity to change; reinforce the goals achieved; encourage the individual to use his/her social support system;
Maintenance:	discuss problems in maintaining the behaviour; identify solutions to overcome behaviour maintenance problems; review goals and establish new ones, if required; review the importance of maintaining the new behaviour; focus on coping strategies.

Health Belief Model

Application of the Health Belief Model for the development of program content and activities can include:

- Perceived severity:** discuss the complications associated with the condition and how they may impact on quality of life;
- Perceived risk:** discuss the risk factors for the condition; conduct individual risk assessments;
- Perceived benefits:** discuss the advantages of taking action and disadvantages of not taking action;
- Perceived barriers:** identify the barriers for specific behaviours; brain-storm to identify ways of overcoming the barriers; apply problem-solving strategies to resolve problem behaviours.

Social Cognitive Theory

With respect to applying Social Cognitive Theory for guiding the development of program content and activities, the following considerations may be useful:

- Goal-Setting:** identify small steps that lead to goal achievement; set short-term and long-term goals to provide direction to the tasks that need to be undertaken; consider behavioural contracting;
- Modelling:** have parents, family members, peers, physicians, and teachers display positive health behaviours;
- Skills:** provide information and practice opportunities to ensure that individuals have the necessary skills to undertake the behaviour;
- Monitoring:** monitor progress and provide reinforcements for positive behaviours; reinforcements need to be defined by the target audience to be meaningful;
- Problem-solving:** identify the problem and restructure/redimension it; brainstorming, role-playing, and testimonials are useful.

Choice of methods and content should be suited to the age of participants. Pre-school and school age children are at a stage of exploration and limited attention. Peer and adult modelling, exposure and acceptance of new foods, taste sessions as well as food preparation activities are important for this age group. The family environment and interaction shape the food habits of children. Involvement of teaching and school cafeteria personnel is useful. For adolescents, appearance and peer pressure cannot be underestimated. For adults, empowerment, self-evaluation, goal-setting, social support, active participation, positive reinforcements, and health status are influential.

Nutrition programs incorporating various theoretical perspectives have been extensively studied. Reviews of research related to programs and factors associated with behaviour change at different stages in the life cycle can be found in the works of Delisle & Strychar (2006), Paquette (2005), Taylor et al (2005), Payette & Shatenstein (2005), Willows (2005), Power (2005), Elder (2004), and Contento et al (1995).

Educational methods

The choice of educational method is crucial. Weston and Cranton (1986) provide a classic categorization of methods: educator-centered methods, interactive methods, individualized learning methods, experiential learning methods. These are outlined in Table 5.

A single method or a combination of methods may be warranted. In the case of a conference, the method is primarily educator-centered. In the case of a workshop, the method may include both educator-centered and interactive methods such as group or small group discussions. Workshops and seminars favour interaction between the educator and participants. Online learning is another option (Weston et al, 1999).

Categories	Methods	Comments
Instructor-centered	Lecture Questioning Demonstration	The learning is usually a one-way process, from the educator to the learner. It may be appropriate for large groups and in cases when information transmission and knowledge change is targeted. It may not be the most appropriate method for learning in the cognitive domains including synthesis and evaluation.
Interactive	Group discussion Small group discussion Group projects Peer teaching	This form of learning encourages the active participation of the learner. It may be appropriate when affective change is targeted. Peer teachers can serve as role models and they can demonstrate that mastery of the tasks is feasible. The disadvantages are that these activities are time consuming and the learner may not be prepared to actively participate.
Individualized	Programmed instruction Computerized instruction Internet instruction	This form of learning allows the learner to advance at his/her own rate and receive feedback.
Experiential	Simulations Role-playing Games	In this form of learning, the learner practices in a controlled and monitored environment where he applies his/her skills in a real or simulated situation. Because of the nature of this activity, group size needs to be limited and personnel increased. More sessions may be required because activities are time consuming when each individual has the opportunity to practice.

When giving a lecture, it is important for the educator to be well prepared, enthusiastic, and demonstrate the ability to master the content. The audience should be provided with a plan of the session that includes the objectives. Important issues should be reinforced and examples provided to illustrate abstract theoretical concepts. Holli et al (2003) note that the amount of information provided should be limited to 5-10 major points. In a presentation lasting more than 45 minutes, learner participation activities are suggested (Holli et al, 2003). Media can enhance a presentation: Power Point, handouts, blackboard, flipchart, and models are useful. Equipment malfunction can occur and the educator should have a back-up plan. The presentation should conclude with a synthesis of the content.

The method must be appropriate for the type of change sought as outlined in the objectives. If attitudes and beliefs are targeted for change, group discussion and interaction would be important. Role-playing, case simulations, and demonstrations are useful in skill acquisition especially if it relates to food preparation techniques. Holli et al (2003) reports that individuals retain 10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they see and hear, 70% of what they say, and 90% of what they do.

Regardless of the method chosen, the educator must be aware that individuals will respond differently to the same teaching method. Finally, the learner must reflect on the learning experience (Beffa-Negrini & Cohen, 1990; Weston & Cranton, 1986; Kolb, 1984).

THE MESSAGE

Designing messages which foster behaviour change will depend on how well the program planners are able to select the message content that is most persuasive for the target audience (Wilson, 2007; Hornik & Kelly, 2007).

Meaning of the message

Messages can be viewed differently according to the stage in the life cycle. For example, the notion of weight will vary according to age (Health Canada, 2003). In the preschool child, weight is primarily under the influence of parents and may be viewed as important for growth. Weight for adolescents becomes an appearance issue. Weight for adults may be linked to a risk factor for diabetes and heart disease. The view on weight can also be influenced by the health status of individuals. Severely underweight adolescents may view their weight as normal (anorexia nervosa); whereas, morbidly obese adolescents may view their weight as an emotional burden and a discriminatory issue. The meaning of nutrition messages will also be influenced by the individual's experiences in life (Wethington, 2005).

Framing the message

The way the message is framed should also be considered. Prospect Theory (Rothman & Salovey, 1997) suggests that messages which emphasize gain, that is benefits, are more

effective for the adoption of preventive health behaviours. An example of a gain-framed and a loss-framed message is as follows:

- Gain-framed message: A lower weight will decrease your risk of diabetes.
- Loss-framed message: Not reducing weight will increase your risk of diabetes.

MATERIALS

Deciding what materials to use will depend on the objectives, the target audience, the available resources, and time constraints. Size and preferences of the audience should also be taken into account. Materials for nutrition sessions may include: print handouts and brochures, food models, food packages, and food labels. Audiotapes, discs, videos, DVDs, and CD-ROMs are other resources available to educators. Chalkboards, flip charts, display boards, and pictures may be used in small groups. The advantages and disadvantages of these resources should be examined before use (see references: Holli et al, 2003; Proulx, 1993).

Developing materials

When preparing Power Point presentations, Holli et al (2003) recommend that the number of words per screen should be approximately 36; 6 words per line and 6 lines per screen.

The content of materials should be accurate and the wording concise. The message must be comprehensible and not expressed in too technical terms for the target audience. Page set up should contain blank spaces. Graphic or schematic representations are useful in summarizing key messages or conveying complex notions. Lettering should be simple; script, italics, and other fancy types are more difficult to read. The size of the characters should not be less than 12-point font size; 14-16 points for older adults. All capital letters are more difficult to read than lower case letters (Holli et al, 2003; Smith & Alford, 1988). The materials developed should be tested with the target audience (Gallagher, 1996) and other health professionals working in the field. The reading level of participants should be considered in the development of print materials. Several resources are available (Holli et al, 2003), including the SMOG test to determine the grade level of the text (McLaughlin, 1969).

While all these factors are important, the planner must not lose sight of the fact that the educational program must benefit the program objectives. Preparation of a teaching plan may be useful to provide an overview of the educational program objectives, methods, content, activities, and resources. Table 6 provides examples of a teaching plan outline.

If the educational program consists of several sessions, the planner should outline the program content by sessions. Each session can address different objectives. The sequence of the sessions should match the development of knowledge, attitudes, and skills (Holli et al, 2003).

Objectives	Methods	Content/Activities/Resources
To reduce energy intake by 10%	Public seminars - lecture - group discussions - demonstrations	<ul style="list-style-type: none"> ▪ Sources of high-fat foods and tips on how to reduce intake of high-fat, high-energy foods. ▪ Evaluation of individual energy intake. ▪ Suggestions on how to decrease energy intake. ▪ Identification of problems that will prevent change. ▪ Discussion on how to deal with problems to change. ▪ Solicitation of family member support to change. ▪ Identification of reinforcements when positive change is accomplished.
To increase awareness of diabetes risk factors	Media campaign - radio announcements - newspaper articles - celebrity radio/TV talk shows	<ul style="list-style-type: none"> ▪ Listing of diabetes risk factors. ▪ Risk factor assessment form. ▪ Benefits of taking action. ▪ Suggestions on what changes to make and how to make them.

PUBLICITY OF THE PROGRAM

The following issues should be raised when planning program publicity:

- How will the program be advertised? Means of announcements include: radio, television, community, Internet and e-mail, regular mail, pamphlets and posters (location for distribution to be determined: i.e., health professional clinics, worksites, restaurants, community group meeting places, community centres).
- What type of information will need to be transmitted to the target audience? Information may include: location, date, time, duration, topic, and methods of the educational program, cost or financial compensation, if any, conditions for registration, if applicable.
- Who will organize the publicity?
- When will the publicity be conducted? How long before the program begins?

STEP 9: PREPARATORY TASKS BEFORE THE INTERVENTION

The planner should list the tasks that need to be completed before the implementation of the intervention, and establish a time frame. Questions to consider include:

- Who will develop the educational sessions? Who will pre-test the sessions? Who will conduct the sessions?
- Who will reserve the rooms and facilities? Who will verify the reservations? Who will be on-site to ensure good functioning during the sessions?
- What type of equipment is needed (i.e., video, computer, pointer, screen, flip-chart)? Is the equipment rented or provided free of charge from an institution? Who will reserve it, ensure it is available on-site, monitor its operation during the session, and return it?
- What materials are needed for the sessions (i.e., pamphlets for distribution, materials for group activities, food and materials for the food demonstrations)? Who will order the materials, make them available on-site, and remove them after the sessions?
- Will on-site registration be required? If so, who will do it and what materials are needed to operate the registration desk?

STEP 10: EVALUATION AND OUTCOME VARIABLES

Evaluations can be conducted for various reasons and in different contexts. In this chapter, evaluation is presented in the context of planning a new program. Other situations for conducting an evaluation can include: justification to continue an existing program, justification of additional resources to continue carrying out an existing program, or elimination of a program if the program is found to be ineffective.

Those involved in the evaluation should be informed of the context and reasons for conducting the evaluation. Evaluation is a powerful tool and can be perceived as a threatening activity. Transparency is essential.

When planning a new program, evaluation is usually conducted to:

- determine whether or not the program objectives have been met.
- determine whether or not the program was implemented as planned.

The person who will conduct the evaluation needs to be determined. Will it be the same person as the planner? In some cases, an external evaluator may be called in, who has not been involved in the program development or implementation: he/she will still need to retrospectively document and review the previous steps in the planning process in order to fully comprehend the activities to be evaluated.

There are numerous classic evaluation frameworks in the health and education literature. One frequently referred to is the work of Green. He distinguishes between three types of evaluation: process, impact, and outcomes (Green & Kreuter, 2005; Green & Lewis, 1986). Process evaluation is designed to refine the implementation of the program. Green identifies five targets of formative evaluation: 1) program implementation, that is, the extent to which the program has been implemented as planned; 2) site response, that is, how the program is perceived by the community, professional groups, and competing organizations; 3) recipient response, that is, learners' satisfaction with the program, comprehension of the content and progress; 4) educator response, that is, insight and feedback by the educator regarding the program structure, sequencing of activities, content, and educational materials; and 5) competencies of personnel, that is, the competencies of the educator who delivered the program. Impact evaluation includes evaluation of knowledge, beliefs, attitudes, skills, social support, and behaviours. Outcome evaluation includes evaluation of quality of life and health status, i.e., mortality and morbidity rates. Another interesting framework is the resource by Glasgow (2007) on how to evaluate and enhance the reach and dissemination of health promotion interventions.

When conducting an evaluation, one should consider the following key issues (Green & Kreuter, 2005; Holli et al, 2003; Contento et al, 2002; Green & Lewis, 1986; Edwards et al, 1986):

- Were the program objectives achieved (short and long term)?
- Was the program appropriate for the target population?
- Did the program participants understand the messages?
- Did the program provide sufficient direction to participants to carry out the behaviours targeted for change?
- Was the program implemented as designed?
- Were sufficient resources available to implement the program?
- Were the costs of the program within the planned budget?

Methodological issues in evaluation

When conducting an evaluation, the instruments to measure the impact/outcome variables must be selected. If knowledge, attitudes, and beliefs are to be assessed, questionnaires are commonly used. A decision will have to be made to develop the measures or use existing measures. Content validity and reliability must be ensured (Kolotkin et al, 2001; Parmenter & Wardle, 2000; Axelson & Brinberg, 1992).

Measurement of dietary behaviours can include a validated food frequency questionnaire, a 24-hour food recall, a 3-day food intake record, a 3-day random telephone food recall, etc. (Rutishauser et al, 2005). Measurement of biochemical indicators, mortality indicators, and morbidity indicators may also be warranted, depending on the program objectives.

The evaluation design must also be determined. Who will form the sample? Will all participants or a sub-sample be evaluated? What are the necessary resources required to conduct the evaluation? When will the evaluation be conducted? Who will receive a copy of the evaluation report?

Evaluation is one of the most important steps in the program planning process. It is often omitted or considered an afterthought. It should be an integral part of the planning process.

STEP 11: COSTS OF PLANNING, IMPLEMENTING, AND EVALUATING THE PROGRAM

The planner should prepare a list of all resources required for planning, implementing, and evaluating the program. It should consist of an exhaustive list of materials required to develop and pre-test the program, to organize the publicity, to conduct the registration, to implement the sessions/activities, and to evaluate the program. Items that are donated or available need to be identified along with items that need to be rented or purchased. Costs estimates are subsequently calculated based on the resources required. Financial monitoring will ensure that costs are within budget estimates.

STEP 12: POST-PROGRAM REVIEW PROCESS

The post-program review is essential (Sork & Newman, 2004; Sork, 1991). Each step in the planning process should be reviewed retrospectively in order to:

- identify difficulties encountered in planning, implementing, and evaluating the program.
- recognize things, events, and people that facilitated planning, implementing, and evaluating the program.
- determine whether or not the tasks to be completed in planning, implementing, and evaluating the program were accomplished as planned (see process evaluation).

Conclusion

Each step of the planning process is essential in making the program a success. The steps are not linear in nature and the process needs to be continuously revised. Attention to details is an asset for planners and will contribute to effective planning procedures.

Chapter 3

NUTRITION COUNSELLING

Nutrition counselling has long been considered the cornerstone of the dietetic-nutrition profession. The purpose of this chapter is to focus on the motivational aspects that need to be integrated into a nutrition counselling situation.

Whether the counselling takes place in a hospital in-patient setting, hospital/medical out-patient clinic, or private-practice office, the principles are similar but the context and applications will vary. Table 7 outlines the main contextual differences according to practice setting. Counselling can range from a health promotion activity in a private practice setting to a prevention activity at the tertiary level in a hospital setting.

Table 7. Contextual differences in counselling according to the practice setting			
Contextual differences:	Hospital In-Patient Setting	Hospital/Medical Out-Patient Clinic Setting	Private-Practice Setting
Medical condition related to counselling	Medical condition that requires hospitalization.	Medical condition that can vary with a disease.	Medical condition: present or absent.
Referring agent for the counselling	Physician referral. Dietitian review of hospital charts.	Physician or client initiated request.	Client or physician initiated request. Recommendations of family members or friends.
Reasons for the counselling	To prevent recurrence of hospitalization, to prevent progression of a disease, to prevent discomfort caused by factors (nausea, etc.) related to a disease, to control a disease, or to prevent a disease.	To prevent a disease, to prevent progression of a disease, to prevent discomfort caused by factors (nausea, etc) related to a disease, or to control a disease.	To maintain overall health, to improve overall health, to prevent a disease, to control and prevent progression of a disease in the early phases of development.

The setting will determine the number of sessions and the amount of time that can be devoted to each session. In the hospital in-patient setting, a one-time visit is likely. Nevertheless, attendance at even one nutrition counselling session has been found to be associated with improved short-term clinical outcomes (Gaetke et al, 2006). It is clear that the health condition, frequency of recurrence of the problem, previous nutrition counselling, motivation of the client, presence of other individuals in the hospital room (medical staff or family members) will influence the counselling situation. The nutrition counsellor must prioritize, depending on the medical condition, what should ethically be addressed in the session to ensure the safety of the client and adequate follow-up after discharge. In an out-patient or private-practice setting, the number of counselling sessions will depend on the health condition/health concern, the counselling goal, the motivational disposition of the client, and the financial resources available (government health care coverage, company insurance coverage, or personal resources). How many visits can be scheduled? What is the likelihood of the client returning for the follow-up? A goal-directed plan for each session becomes crucial.

Motivational Considerations in Counselling

Motivational considerations should begin with an assessment of the: 1) origin and reasons for the counselling and readiness to change; 2) individual characteristics and household living conditions; and 3) attitudes and beliefs towards the health condition. The counselling goals and objectives for behaviour change should then be determined.

The motivational assessment proceeds by determining the client's situation related to the counselling objectives and targeted behaviours to change. These can include: 4) beliefs and attitudes towards the targeted behaviours; 5) knowledge and skills related to the targeted behaviours; 6) dietary preferences, taste preferences, hunger and satiety issues; 7) social and environmental support; and 8) barriers and problem situations that may prevent behaviour change. The counselling objectives may need to be revised following motivational assessment addressed in points 4-8.

These eight points for motivational assessment are based on the literature on factors associated with dietary behaviour change. Chapters 1 and 2 of this book prepare the reader to comprehensively address motivational assessment in nutrition counselling.

1) Origin and reasons for the counselling and readiness to change

The origin for the counselling session is usually determined in the initial session. Information regarding the source of the referral (client, physician, etc.) provides baseline information. Additional information can be obtained by asking questions such as: Whose idea was it that you schedule this session? If the client replies it was his/her idea, then questioning could revolve around 'what was behind your decision'. Possible reasons may

include: concern for personal health; fear of the consequences of not taking action; observing negative consequences of the same health condition among family members or friends; esthetical reasons; a change in life circumstances, etc. If the client replies it was the idea of a physician, family member, or friend, then a discussion can occur to determine whether the client is attending the session to please these individuals or whether the client is there for personal reasons. This discussion will provide information to the counsellor on whether or not the physician, family members, and friends will be part of the support system during the behaviour change process or will be an obstacle to change.

It is also important to know whether the client has previously been seen for the same health concern. If so, the client should be asked to describe the context, previous successes, and previous difficulties encountered. If the client states that he/she is there because of a newly diagnosed medical condition, then the counsellor can discuss the context of the diagnosis and his/her initial reaction to the diagnosis. Are other family members or friends affected by the same health condition? What are the family member's/friend's personal experiences?

The counsellor should also determine whether the client made any changes prior to the first session. The counsellor may ask the question: Have you made any changes before coming to this session? If yes, the client is likely to be in the contemplation or action stage of change; whereas, if the client describes a scenario whereby he/she is still thinking about it or does not know how to go about it, the client is likely in the pre-contemplation stage of change. (Transtheoretical Model).

2) Individual characteristics and household living conditions

Individual characteristics of the client should be identified. Gender, age, health status, tobacco and alcohol use, medication/laxative/herbal supplement use, and vitamin/mineral supplementation should be determined. These characteristics can affect the meanings attributed to food, diet, and health. The type of work the individual does (day-shift/night-shift, sedentary/active, student, etc.) can also influence eating patterns. Physical activity (type and frequency) is another important consideration. Does the client exercise? If yes, does the client exercise alone, in groups, or with friends? If the client does not exercise, why not?

Identification of the number of individuals living in the household and financial resources available are also important to determine. Is there sufficient income for the number of household members? Does the client live alone, with a spouse, with children, with other family members? Who is the person responsible for purchasing food and preparing meals? How frequently are meals purchased outside the home? Are family members on a specific diet? These factors will affect strategies for behaviour change.

In the case where the client lives alone, the implications include: the lack of interest in preparing meals for one person; higher food costs because small quantities of food or prepared meals are expensive; and, greater frequency of eating outside the home. In the case where the client lives with other individuals, the implications include: taste preferences of household members that will influence the type of foods available in the home as well as the type of meals prepared. Will household members be supportive towards the dietary changes or are they a barrier to change? These factors will also affect strategies for behaviour change.

3) Attitudes and beliefs towards the health condition

Attitudes and beliefs towards the health condition should be assessed. How does the client view the health condition? Does the client perceive him/herself to be at risk for developing the health condition or its complications? (Perceived Risk according to the Health Belief Model, see Chapter 1). What value does the client place on reducing his/her risk? (Outcome Evaluation according to the Theory of Planned Behaviour or Outcome Expectancies according to Social Cognitive Theory, see Chapter 1). Does the client perceive the severity of the condition if action is not taken? (Perceived Severity according to the Health Belief Model, see Chapter 1).

After a preliminary evaluation of the client's personal circumstances (as outlined in points 1-3), the client and counsellor must determine the goal/objectives of the counselling sessions as well as the specific behaviour changes required to achieve the objectives. Selection of the targeted changes will be based on the medical condition, previous medical history, clinical examination, biochemical evaluation, diet history, and diet evaluation. It will also depend on: 1) the severity of the health condition; 2) dietary behaviours required to improve the health condition; 3) the feasibility of making the changes; and, 4) the willingness of the client to make certain changes.

After identification of the objectives and dietary behaviours targeted for change, the number of sessions required to achieve the objectives as well as the time between sessions should be determined. Short-term objectives should also be established for each session. Objectives should be realistic and achievable.

Once the specific behaviours targeted for change have been established, a thorough assessment of the motivational considerations related to achieving change must be completed (points 4-8). This assessment should include:

4) Beliefs and attitudes towards the targeted behaviours

Beliefs of the client as they relate to the health behaviours targeted for change need to be determined. A discussion should take place regarding the benefits for changing dietary behaviours. (Perceived Benefits according to the Health Belief Model, see Chapter 1). Benefits for changing can include: health reasons, appearance, satisfying family member's

concerns, listening to the physician's recommendations, etc. Do the benefits perceived by the client correspond to the benefits as perceived by significant others?

Does the client perceive that undertaking the targeted behaviour will lead to the desired outcome? (Behavioural Beliefs according to the Theory of Planned Behaviour or Outcome Expectations according to Social Cognitive Theory, see Chapter 1). For example, the client must perceive that reducing dietary fat intake will lead to reducing the risk of a heart attack.

What are the client's 'significant others' (physician, spouse, family members, friends) perceptions of the targeted behaviour? Does the client perceive that significant others think he/she should perform the new behaviours? (Normative Beliefs according to the Theory of Planned Behaviour, see Chapter 1). Does the client wish to comply with the views of significant others? (Motivation to Comply according to the Theory of Planned Behaviour, see Chapter 1).

Perceptions will differ with each client and are dependent on the characteristics of the client as well as the reasons for the counselling (points 1-3).

5) Knowledge and skills related to the targeted behaviours

The client's present knowledge and skills related to the targeted behaviours must be examined. Does the client have the necessary knowledge to change the behaviour and the necessary skills to change the behaviour? Too much information may confuse the client. Knowledge needed to change the behaviour should be directly related to the behavioural outcome: for example, it is interesting to know about the role of dietary fats in the development of atherosclerosis but it may be more useful for the client to know about food products that are high in fat content. The counsellor must decide which information to provide, taking into consideration the number of sessions and the time available for the sessions.

Contento et al (1995) address the distinction between two types of knowledge: motivation-related knowledge and skill-related knowledge. Motivational knowledge focuses on information related to the reasons for changing behaviour; whereas, skill-related knowledge focuses on how to make the changes. A client in the pre-contemplation or preparation stage of change may require motivational knowledge; whereas, a client in the action stage of change may require skill-oriented knowledge. An example of skill-oriented knowledge is the ability to plan and prepare low-fat meals.

The client must be convinced to change behaviour as well as to have the necessary knowledge and skills to do so. Does the client perceive that he/she is able to carry out the behaviours targeted for change? (Self-Efficacy according to Social Cognitive Theory, see Chapter 1).

6) Dietary preferences, taste preferences, hunger and satiety issues

Dietary and taste preferences of the client must be determined. Are there specific food products that the client will not eat? Is the client allergic to certain foods and what type of reaction occurs? Reasons behind food aversions should be discussed.

Is the client able to recognize cues of satiety? Does the client eat all the food before him/her or is the client able to leave the table even when large amounts of food are served? What are the cultural/religious influences that affect food intake? What are the mealtime dynamics that influence satiety? Are meals eaten with other members of the household? Are meals eaten when watching television? Are meals eaten when working on the computer? Are meals eaten at regular hours? When is the client hungry? (Before meals, mid-meals, special circumstances, smelling/seeing appetizing food, when eating with others).

7) Social and environmental support

The social and environmental situation must also be assessed. What foods are available in the home? Who has control over availability? Are the eating behaviours of household members positive? How will household members support behaviour change? Which household members will provide the most support? Does the client perceive that he/she has control over the behaviours to be changed? (Perceived Behavioural Control according to the Theory of Planned Behaviour, see Chapter 1).

8) Barriers and problem situations that may prevent behaviour change

Identifying barriers to changing behaviours are a critical part of the motivational assessment. Three key questions can be asked: What conditions are essential for you to be able to change? What will prevent you from changing? What situations/circumstances will be the most problematic? Barriers will differ for each client and must be determined on an individual basis. A barrier for one individual may be an enabling factor for another. One individual may be able to eat fewer high-fat snack foods even though they are available in the home; whereas, another individual may require that the high-fat snack foods not be available in the home.

Discussions regarding problem behaviours with the client need to be conducted during the assessment phase; they should continue during subsequent sessions. *NOTE. If the client does not change, the client must be asked to re-examine the barriers and propose other solutions to resolve the problem.*

Once the motivational assessment (points 4-8) is completed, the objectives of the counselling session may need to be revised.

Approaches to Counselling and Change Strategies

How the counsellor asks questions and how the counsellor frames the discussion will affect the outcome of the counselling sessions.

There are numerous approaches to counselling based on the theories of psychotherapies. In the 'psychoanalytical approach', the counsellor is viewed as the expert and the counsellor sets the objectives for therapy. In contrast, 'client-centered therapy' developed by Carl Rogers, views the counsellor as a facilitator who helps the client explore his/her feelings towards a specific problem. The counsellor provides a climate for the client to grow and to explore issues. The counsellor should be genuine, caring, and have a positive regard towards the client (Houts et al, 2006; Maclellan & Berenbaum, 2003; Holli et al, 2003; Snetselaar, 1997; Eisenberg & Delaney, 1977; Brammer, 1973; Corsini, 1973).

Other approaches that have been used with success in nutrition counselling include behaviour and cognitive therapy (Holli et al, 2003), problem solving (Houts et al, 2006), and motivational interviewing interventions (Rubak et al, 2005; Rollnick & Miller, 1995).

A behaviour therapy approach focuses on the environment as the key component of the behaviour change strategy (Holli et al, 2003; Maclellan & Berenbaum, 2003; Brammer, 1973). The environment includes physical, social, cultural, and psychological factors. This approach, as noted by Holli et al (2003), pays close attention to the antecedents of the behaviour (stimuli or cues), to the behaviour itself (eating), and to the consequences of the behaviour (positive rewards or negative effects).

Behavioural modification techniques are designed to modify either the antecedents of the eating behaviour, the behaviour itself, or its consequences. Antecedents of the behaviour may refer to: the smell of food, seeing food, watching television, a social event, feelings of hunger, boredom, frustration, etc. Modification of antecedents could then be useful in changing eating behaviour: removal of negative cues or replacement with positive cues. Modification of the behaviour itself is also useful: i.e., reduce the speed of eating, not watching television when eating, etc. Positive consequences of the behaviour are conducive to adopting healthy eating patterns. Rewards should be established by the clients themselves. A behavioural contract for change is recommended whereby the goals (what to change) and the rewards for changing (reinforcements) are identified. Self-monitoring is another key element of behaviour therapy.

A cognitive therapy approach can be an interesting adjunct to behaviour therapy (Holli et al, 2003). In attempting to modify eating behaviours, it is important to recognize one's thoughts about eating (cognitions), especially as they relate to problem eating behaviours. It is suggested to write down what was eaten, where and when, and the thoughts occurring

before, during, and after eating. This permits the client to identify problem areas. The client can then take action to modify negative cues and behaviours. Holli et al (2003) state that changing thinking about eating (restructuring thoughts) to foster positive behaviours is helpful (cognitive restructuring). For example, a person at 10:00 pm has a snack consisting of a slice of pie. The person's thought before eating is 'I feel hungry'. When eating, the person's thoughts are 'the pie tastes good but it is too much food'. After eating, the person believes that he/she 'ate too much, was really not as hungry as presumed, and feels guilty for having eaten the pie'. The person needs to restructure and modify his/her cognitions. Possible examples include: 'Eating pie will add calories that I do not need' or 'I am hungry but not that hungry, so I shall have a light snack' or 'I am trying to lose weight and I know that I will exceed my caloric allotment for the day' or 'I need to do something else so that I can avoid eating when I am really not that hungry'. The person needs to have the confidence in being able to carry out the new behaviour (self-efficacy) and to maintain it. Better understanding one's behaviour and using cognitive restructuring is particularly instrumental in avoiding relapse. Holli et al (2003) note that client awareness of high-risk situations and identification of management strategies to overcome these difficult situations are recommended in relapse management.

A problem solving approach for nutrition counselling, as proposed by Houts et al (2006), has five elements: 1) problem orientation, including identifying attitudes and expectations, 2) problem definition, including identifying obstacles and setting realistic goals, 3) generating alternatives, including discussing new approaches to tackling the problem, 4) decision making, including cost-benefits analysis, and 5) implementation, including behaviour change and evaluation of results.

A motivational interviewing approach by Rollnick & Miller (1995) is based on the following: motivation to change must come from the client and is not imposed by the counsellor; the counsellor is not responsible for resolving client's ambivalence on the course of his/her action (i.e., adhering to or not adhering to a low-fat diet); the counsellor should avoid direct persuasion in getting the client to change; the counsellor's style is not confrontational or argumentative; the counsellor focuses on providing direction to help the client examine the course of action; the counsellor should perceive resistance not as a bad trait but rather as a cue to indicate that the motivational strategy needs to be modified; and, the counsellor-client relationship is that of a partnership. According to Dent et al (2007), this approach includes: 1) feedback of risk, 2) ownership of responsibility for change, 3) clear advice, 4) change options, 5) empathy, and 6) increased self-efficacy.

Counselling Skills

The key issues when conducting interviews are briefly addressed in this section. They include: (1) type of communication, (2) conditions that facilitate the interview, and (3) components of the interview. Further information about counselling can be obtained from the following references: Houts et al, 2006; Maclellan & Berenbaum, 2003; Holli et al, 2003;

Sigman-Grant, 2002; Pawlowski, 2002; Eaton et al, 2002; Snetselaar, 2000, 1997; Strychar et al, 2000a, 1997; Doherty et al, 2000; Block et al, 2000; Vallis, 1999; Green, 1999; Drouin & Sauvageau, 1999; Curry & Jaffe, 1998; Foreyt & Poston II, 1998; Omichinski, 1995; Héту, 1994; Warpeha & Harris, 1993; Curry & Himburg, 1988; Hauenstein et al, 1987; Eisenberg & Delaney, 1977; Brammer, 1973; Corsini, 1973.

TYPE OF COMMUNICATION

The counsellor has to be able to ask pertinent questions, listen, and fully comprehend what the client is saying. A proactive approach is helpful to set objectives and examine solutions to problem behaviours with the client. Snetselaar (1997) notes that questioning, clarifying, paraphrasing, reflecting, observing congruence between verbal and non-verbal communication, probing, and confronting are useful skills:

- *Questioning*. A general question (or a statement) will ease the way to more specific questions to gather details about a particular subject. Open-ended questions are useful when the counsellor wants to have a general idea of what the client is thinking and closed-ended questions are useful when specific responses are needed.
- *Clarifying*. Asking questions on what the client has said during the interview will prevent misunderstandings which could lead the interviewer in the wrong direction.
- *Paraphrasing*. Rephrasing what the client has stated is a powerful tool. It is one of the most difficult skills to master. When the counsellor restates what was said, the client will respond by agreeing or disagreeing with the statement. If the client agrees with the statement, he/she may expand on what he/she said and provide new information. If the client disagrees with the statement, he/she will then clarify what he/she meant.
- *Reflecting*. Reflecting provides the client the opportunity to better understand his/her situation. It generates ideas to resolve the problem or to find out what is the source of the problem. It can be integrated with behavioural techniques as well as cognitive restructuring.
- *Congruence*. Congruence between verbal and non-verbal communication: The client's non-verbal demeanour should be consistent with the verbal statements. If the client states that a certain situation is stressful, while smiling, then clarification is needed.
- *Probing*. Asking the client sharp questions to obtain specific information is useful to conduct the motivational assessment. It is also useful when discussing the client's progress.
- *Confronting*. Confronting a client should only be undertaken when necessary and with caution. It frequently provokes a negative reaction since the individual is being challenged. The way it is carried out is crucial. One can say: "last week you mentioned that and this week you mentioned that", or, "I am getting two different messages ... can you explain ... did I understand you correctly ...". These statements should not be made with a judgmental attitude, for it can make the client feel that he/she is not telling the truth.

CONDITIONS FACILITATING THE INTERVIEW

Holli et al (2003) note that the physical environment for the interview must place the client at ease. Attention should be given to the seating arrangements. If the counsellor is sitting behind a desk, this is a more formal and authoritarian seating arrangement. If the counsellor and client are seated at a table, this can be useful when examining materials/ documents. Eye contact should be maintained to show interest and to observe the client's reactions. Crossing arms or legs can be interpreted by some as non-acceptance or disapproval. A distance of several feet (3-4) between the counsellor and client is usually acceptable in the North American context (Holli et al, 2003). Taking notes during the session should be limited. Interruptions or looking at one's watch are to be avoided.

Being enthusiastic, positive, and having a genuine interest in what the client has to say leads to the establishment of a good rapport. Trying to understand the client's situation from his/her perspective is crucial. Moments of silence are helpful. A judgemental or haughty attitude is conducive to poor relations. Condemnation, prejudice, imposing personal values or religious beliefs, or discussing personal problems have no place in a counselling session. Counselling should not be used to valorize the counsellor's worth.

Other practical suggestions are as follows: limit the amount of information given at one time; do not dominate the interview and give the client the opportunity to express him/herself; do not set the objectives for the client and do not impose solutions to the client's problems: discussion permits the client to set his/her own objectives and identify his/her own solutions.

Components of the interview

Each counselling session consists of three major parts: the introduction, the main discussion, and the conclusion. The welcome and introduction will vary depending on whether it is a first time interview or a repeat visit.

First Interview

Introduction

The referring agent is identified and the reasons for the session are reviewed.

Main session

Most of the time is spent on the medical, dietary, and motivational assessment. Overall goals and behaviours to change are identified.

Conclusion

Determine the total number of sessions as well as the time interval between the sessions. Set up the appointment for the next session and identify one or two behaviours to change prior to the next session. Bring closure to the session.

Subsequent Interviews Introduction

Find out what behaviours were changed since the previous session; identify the problems that were encountered.

Main session

Most of the time will likely be spent on identifying how to resolve the problems using behaviour modification techniques, cognitive restructuring, and problem-solving strategies. Behaviour change strategies and objectives should be revised, if needed.

Conclusion

Set up the next appointment and continue seeing the client until all objectives have been achieved. Leave the door open for future contacts to monitor follow-up and deal with relapse.

Evaluation Guide

Evaluation of counselling has two components: 1) evaluation of the client's achievement of goals and objectives, and 2) evaluation of the counsellor's skills. Table 8 contains an assessment grid that can be used to evaluate the counsellor's abilities to address the motivational factors in an interview.

Table 8. Grid to evaluate the nutrition counsellor's skills		
Factors to be Assessed	Criteria for Assessment	Comments by Evaluator
Assessment of the reasons for the counselling and of readiness to change	<ul style="list-style-type: none"> ▪ Did the counsellor determine the source of the referral? ▪ Did the counsellor discuss why the client came to the session? ▪ Did the counsellor discuss the views of the client's physician and family members regarding attendance at the counselling sessions? ▪ Did the counsellor determine whether the health condition was a new diagnosis? If so, was the reaction of the client to the new health condition discussed? ▪ Did the counsellor determine the Stage of Change of the client? 	
Assessment of individual characteristics and of household living conditions	<ul style="list-style-type: none"> ▪ Did the counsellor identify the characteristics of the client: age, health status, type of employment, financial situation, tobacco and alcohol use, medication use, vitamin/mineral supplementation, level of physical activity, number of meals consumed outside the household? ▪ Did the counsellor determine the number of individuals living in the household, the person responsible for purchasing food for home, the person responsible for meal preparation at home, the influence of family household members on food purchasing and food preparation? 	

Assessment of attitudes and beliefs towards the health condition	<ul style="list-style-type: none"> ▪ Did the counsellor determine how the client views the health condition or health concern? ▪ Did the counsellor determine the client's perception of risk for developing the condition or its complications? (Perceived Risk according to the Health Belief Model). ▪ Did the counsellor determine the client's perceived severity of the condition if action is not taken? (Perceived Severity according to the Health Belief Model). ▪ Did the counsellor determine the client's value placed on reducing his/her health risk? (Outcome Evaluation according to the Theory of Planned Behaviour or Outcome Expectancies according to Social Cognitive Theory). 	
Establishment of goals and objectives and of the dietary behaviours to change	<ul style="list-style-type: none"> ▪ Did the counsellor obtain the client's medical history, clinical examination results, biochemical evaluation results, diet history, and eating habits assessment? ▪ Did the counsellor determine, with the client, the long-term objectives? ▪ Did the counsellor determine, with the client, the short-term objectives? ▪ Did the counsellor determine, with the client, the total number of sessions planned? 	
Assessment of the benefits and attitudes towards the targeted behaviours	<ul style="list-style-type: none"> ▪ Did the counsellor determine the client's perceived benefits for changing behaviour? (Perceived Benefits according to the Health Belief Model). ▪ Did the counsellor determine the client's perceptions about whether or not undertaking the targeted behaviour will lead to the desired outcome/counselling objectives? (Behavioural Beliefs according to the Theory of Planned Behaviour or Outcome Expectations according to Social Cognitive Theory). ▪ Did the counsellor determine the client's perceptions of significant others regarding the behaviours to be changed? (Normative Beliefs according to the Theory of Planned Behaviour). Did the counsellor determine whether or not the beliefs of significant others are important and whether or not the client wants to comply with their wishes? (Motivation to Comply according to the Theory of Planned Behaviour). 	
Assessment of knowledge and skills related to the targeted behaviours	<ul style="list-style-type: none"> ▪ Did the counsellor determine the client's knowledge about the behaviours? ▪ Did the counsellor determine the client's knowledge about the foods that need to be consumed to attain the objectives? ▪ Did the counsellor determine if the client has the necessary skills to carry out the behaviour change? ▪ Did the counsellor spend enough time to discuss the skills required to change the behaviour? ▪ Did the counsellor determine the client's perceived level of confidence in being able to carry out the behaviour? (Self-Efficacy according to Social Cognitive Theory). 	
Assessment of dietary and taste preferences, and of hunger - satiety issues	<ul style="list-style-type: none"> ▪ Did the counsellor determine the foods the client likes, dislikes, or is allergic to? ▪ Did the counsellor determine at what time of the day the client is the most hungry? ▪ Did the counsellor determine what circumstances trigger hunger? 	

Assessment of the social and environmental support	<ul style="list-style-type: none"> ▪ Did the counsellor determine the availability of foods at home and at the worksite or other eating establishments frequented by the client? ▪ Did the counsellor determine the environmental conditions at home and at the worksite that will facilitate behaviour change? ▪ Did the counsellor determine the social support available at home, at the worksite, etc. to facilitate behaviour change? 	
Assessment of the barriers and problem situations that may prevent change	<ul style="list-style-type: none"> ▪ Did the counsellor determine the conditions necessary for the client to succeed in behaviour change? ▪ Did the counsellor determine what will prevent the client from changing successfully? ▪ Did the counsellor determine the circumstances that will prevent the client from changing behaviour? 	
Assessment of the client-counsellor relationship	<ul style="list-style-type: none"> ▪ Did the counsellor listen to the client? ▪ Did the counsellor exhibit empathy towards the client? ▪ Did the counsellor comprehend what the client was saying? ▪ Did the counsellor demonstrate negative behaviour towards the client (being judgemental, being critical, disrespecting the client's values)? ▪ Did the counsellor make the client feel that he/she was given constant and full attention? ▪ Did the counsellor exhibit positive non-verbal behaviour towards the client (smiling, etc)? ▪ Did the counsellor monopolize the counselling direction and make the client feel that he/she was not being listened to or not participating in the discussion or decisions? 	
Assessment of the counsellor's communication skills	<ul style="list-style-type: none"> ▪ Did the counsellor appropriately use the skills of clarification, paraphrasing, summarizing, questioning, probing, confronting, and providing feedback at the appropriate times? 	
Assessment of the counsellor's interview structure (parts and components)	<ul style="list-style-type: none"> ▪ Did the counsellor welcome the client? ▪ Did the counsellor set the stage for the session and discuss the session's objectives? ▪ Did the counsellor use behavioural and cognitive therapy approaches to determine useful strategies for behaviour change? 	
Assessment of the client's progress	<ul style="list-style-type: none"> ▪ Did the counsellor monitor the client's progress? ▪ Did the counsellor reinforce positive changes made by the client? ▪ Did the counsellor discuss problem-solving strategies with the client? 	

Group Counselling

The counselling process and general principles in a one-to-one situation are similar to those of a group session. However, several characteristics of group counselling are briefly addressed in this section (Holli et al, 2003; Sigman-Grant, 2002; Snetselaar, 1997; Gladding, 1994; Ohlsen, 1988).

Planning is needed to determine group membership. It is essential to ensure that the participants want to be part of a group intervention and are the best candidates for this type of intervention. Individuals must be willing to share their experiences, receive feedback, and provide constructive help to other group members. If not, group participation is not recommended. Curry & Jaffe (1998) identify different types of groups: educational, problem solving, psychotherapy, and family counselling. Some types of groups may be more appropriate for certain individuals than others. Gladding (1994) suggests that the group leader screen group members prior to beginning the sessions.

The setting for the group meeting and size of the group are also important to consider. The room should be in a quiet locale and chairs should be arranged in a circle, providing a feeling of equality among members (Gladding, 1994). Curry & Jaffe (1998) note that groups should be limited to 4 to 8 people since participants may be less involved with larger groups and the counsellor may not be able to accurately observe all members. Gladding (1994) suggests a group size of 8 to 12 people, depending on the type of group and objectives. In large groups, it is important to ensure that sub-groups are not formed.

The group leader is viewed as a facilitator for change. He/she must be respectful of the contribution of each member. The leader must ensure that individuals feel secure in sharing their experiences, and that sharing experiences will not create problems but rather bring resolution and closure.

Group interactions appear simplistic yet can be complex. The group leader needs to keep track of the communications patterns among group members. Attention should be given to both verbal and nonverbal messages (Gladding, 1994).

Ohlsen (1988) proposes that the group will pass through different stages: competitive and individually centered phase, frustration and conflict phase, group-harmony phase, group-centered phase, and productive phase (i.e., problem solving and resolution). In groups dealing with sensitive and emotionally charged nutrition issues (i.e., anorexia, weight loss, diabetes, cancer), participation of a psychologist may be warranted. Referrals to other health professionals should readily be available after the sessions.

Groups have their own culture (Curry & Jaffe, 1998) and members can take on different roles (Ohlsen, 1988). Some may focus on group-task roles such as the information seeker, information giver, recorder, opinion giver, and coordinator. Others may be group builders and provide a maintenance role such as the encourager, compromiser, follower, observer, and standard setter. Individual roles include: aggressor, blocker, recognition seeker, help-seeker, confessor, and attention seeker.

Dependent clients are not easily helped in groups. The silent member, the anxious one, the griever, the scapegoat, the acting out client, the resister, the hostile client, the monopolist, need special attention to ensure harmonious functioning of the group (Ohlsen, 1988).

The group leader should set the stage for the discussion, ensure that all participants are respectful of other members, that the topic does not stray from the original purpose, and that problem group members and emotional issues are dealt with appropriately. The group leader may prepare for the session by identifying a set of key questions to ensure that the discussion remains focused on the original purpose of the group. It is also crucial to bring closure to each session for every group member. These skills are not easily mastered. Group dynamics are not only influenced by the group's purpose, norms, and cohesiveness, but also by the decision and communication styles of participants and leaders alike (Curry & Jaffe, 1998). The group is a powerful entity and, if well managed, can increase motivation of members to take positive action for change.

Conclusion

The counselling process must take into consideration the factors associated with dietary behaviour change and the theoretical perspectives of behaviour change. Counselling skills are developed over time and nutritionists should be encouraged to have colleagues evaluate their skills and make suggestions for improvement. Reflection about one's behaviour as a counsellor will improve skills and ensure success.

Challenges for the future

We need to have a paradigm shift regarding how we view food and the amount of food we consume if we are to make significant progress in improving eating habits to reduce risk for chronic diseases (Strychar, 2004). An important challenge we face as a society is to ensure sufficient resources to facilitate such changes. The major challenge we face as a profession is to design and implement prevention interventions which are successful at the population level and can be easily integrated into existing health care services. Whether our future efforts should be directed towards the development of new theoretical perspectives to change dietary behaviour or towards a better application of existing theoretical perspectives will continue to be debated.

Behaviour change is multidisciplinary and we need an eclectic approach to achieve change. Collaborative efforts are required to bring us into the next decades.

Look up and reach for the stars

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Dietary Behaviours, Nutrition Programs and Counselling: **A Guide for Nutrition Educators**

This book was written for nutrition students and health professionals planning nutrition programs and conducting research in the field of dietary behaviour change. It is an academic resource designed to provide professionals with a simple yet comprehensive guide in the field of dietary change. Health professionals face a daunting task in facilitating adoption of healthy eating patterns to reduce risk for chronic diseases. It is a task which requires that nutrition programs and research incorporate theoretical perspectives into behaviour change strategies.

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