Dietitians of Canada
Les diététistes du Canada

The Role of Nutrition in Mental Health Promotion and Prevention (1)

The Role of Nutrition Care for Mental Health Conditions (2)

Nutrition and Mental Health: Therapeutic Approaches (3)

DECEMBER 2012

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Nutrition and Mental Health: Therapeutic Approaches (3)

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This paper, **Nutrition and Mental Health: Therapeutic Approaches (3),** is the third of three papers derived from the Dietitians of Canada comprehensive role paper on nutrition and mental health, ***Promoting Mental Health through Healthy Eating and Nutritional Care.***

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Suggested Citation - Nutrition and Mental Health: Therapeutic Approaches (3):

Davison KM, Ng E, Chandrasekera U, Sengmueller E for Dietitians of Canada. Nutrition and Mental Health: Therapeutic Approaches. Toronto: Dietitians of Canada, 2012. Access at: www.dietitians.ca/mentalhealth.

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Forward

In 2006, Dietitians of Canada partnered with the Canadian Collaborative Mental Health Initiative, creating a toolkit, ***The Role of Dietitians in Collaborative Primary Health Care Mental Health Programs***, to help dietitians and other health professionals in their care of clients with mental health conditions. One of the principles enshrined in the Canadian Collaborative Mental Health Charter, endorsed by Dietitians of Canada, was "All Canadians have the right to health services that promote a healthy, mind, body and spirit." In the same year, the Standing Senate Committee on Social Affairs, Science and Technology recognized the urgent need to transform mental health systems across Canada, releasing the report, ***Out of the Shadows at Last: Transforming mental health, mental illness and addiction services in Canada***[1], which led to the creation of the Mental Health Commission of Canada.

In the six years since publication of the initial toolkit, Dietitians of Canada has continued to speak to issues in mental health care. A brief to the newly formed Mental Health Commission of Canada was submitted in 2007, highlighting dietitian roles in mental health promotion and mental health conditions and citing evidence for association between mental health and diet quality. In 2009, the Mental Health Commission of Canada released its first report, ***Toward recovery & well-being: A framework for a mental health strategy for Canada***[2]. This year, in 2012, the Commission has outlined its strategy in their second report, ***Changing directions, changing lives: The mental health strategy for Canada***[3], calling on all Canadians to play a role in improving the mental health system.

Dietitians of Canada is proud to release this new role paper, ***Promoting Mental Health through Healthy Eating and Nutritional Care***[4], a comprehensive document discussing intersections of nutrition with mental health, from promotion to nutrition care and therapeutic approaches. We believe dietitians will continue to play an important role in mental health promotion and care, supporting Canada's mental health strategy in its strategic directions as outlined by the Mental Health Commission of Canada, helping people to find the right combination of services, treatments and supports.

The World Health Organization has acknowledged "there is no health without mental health"[5]. Health professionals, indeed any people with an interest in nutrition and mental health, will appreciate this extensively referenced, evidence-based resource, complete with many practical tips and links. We hope you will use this comprehensive document, or any one of the three section papers developed, to inform your knowledge and promote nutrition and mental health.

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[1] Canada, Parliament, Senate. (2006). Standing Senate Committee on Social Affairs, Science and Technology. M.J.L. Kirby (Chair) & W.J. Keon (Deputy Chair). Out of the shadows at last: Transforming mental health, mental illness and addiction services in Canada. 38th Parl., 1st sess., p. 42. Retrieved from http://www.parl.gc.ca/Content/SEN/Committee/391/soci/rep/rep02may06-e.htm

[2] Mental Health Commission of Canada. (2009). Toward recovery & well-being: A framework for a mental health strategy for Canada. http://www.mentalhealthcommission.ca

[3] Mental Health Commission of Canada. (2012). Changing directions, changing lives: The mental health strategy for Canada. Calgary, AB: Author. http://strategy.mentalhealthcommission.ca/download/

[4] Davison KM, Ng E, Chandrasekera U, Seely C, Cairns J, Mailhot-Hall L, Sengmueller E, Jaques M, Palmer J, Grant-Moore J for Dietitians of Canada. Promoting Mental Health through Healthy Eating and Nutritional Care. Toronto: Dietitians of Canada, 2012. Access at: www.dietitians.ca/mentalhealth

[5] World Health Organization (2010). Mental health: strengthening our response. Fact sheet Nº 220. http://www.who.int/mediacentre/factsheets/fs220/en/

Summary

Mental health is "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community"[1]. Dietitians of Canada (DC), the national professional association for dietitians, recognizes that there are many intersections between nutrition and mental health and for this reason they commissioned the development of a comprehensive document titled "Promoting Mental Health Through Healthy Eating and Nutritional Care". This paper derived from the larger document provides policy makers, practitioners, and other interested groups and individuals, with an evidence-based summary of the current literature about nutrition and the promotion of mental health.

This document is the third in the series which includes:

1. The Role of Nutrition in Mental Health Promotion and Prevention
2. The Role of Nutrition Care for Mental Health Conditions
3. Nutrition and Mental Health: Therapeutic Approaches

All documents are accessible at: www.dietitians.ca/mentalhealth

Process

A structured literature search was conducted followed by extensive review of more than 210 resources to identify key themes. An integrative literature synthesis was then employed to outline the various intersections among nutrition, mental health, special considerations, models of care, and therapeutic approaches.

The final set of extracted literature was organized into two main themes that included special considerations in nutrition and mental health care, and models of care and therapeutic approaches in nutrition and mental health care. Based on the analyses in these two major theme areas, suggestions to guide the nutrition and mental health care are presented.

Key Findings

Mental health conditions are associated with long-lasting disability and significant mortality through suicide, medical illness, and accidental death. **It is estimated that mental health conditions cost the Canadian economy $51 billion dollars annually.** By 2030, mental health issues are expected to be the leading cause of disability in Canada. Current treatments for mental health conditions (e.g., pharmaceuticals) only provide partial benefit. Other approaches, such as targeted nutrition interventions that can maintain the structure and function of neurons and brain centres and therapeutic approaches to modify disordered eating patterns, can effectively augment medical approaches to mental health care.

Issues affecting mental health and dietetics practice include food insecurity, use of natural health products, and debate about food addictions. Mental health consumers may have diverse needs related to gender, life stage, culture, history of trauma, and co-occuring conditions. Registered Dietitians can draw on knowledge and skills such as cultural competence, trauma-informed care, and harm reduction, to foster mental well-being, reduce disparities, and strengthen response to diverse communities.

Nutritional interventions, as part of collaborative and integrative programs aimed at mental health, contribute to positive health outcomes and are cost-effective. Interventions provided by Registered Dietitians to individuals with mental health conditions

and their care providers can lead to reduced nutrition-related side effects of psychiatric medications, improved cognition, better self-management of concurrent and comorbid conditions, and improved overall occupational, social, and psychological functioning. Therapeutic approaches such as cognitive behaviour therapy, mindful based eating awareness, dialectical behaviour therapy, motivational interviewing, cognitive adaptive training, and applied behavioural analysis used by Registered Dietitians in mental health practice show evidence that food intakes and eating behaviours can be positively modified and lead to enhanced well-being.

Recommendations

Optimal nutrition supports the mental health of Canadians, and could reduce health and social costs. To better integrate nutritional and mental health services, the following recommendations are made:

1. Advocate for Nutrition and Mental Health in Practice and Policy

Advocacy is needed for nutrition interventions targeted for mental health consumers. Strategies include food security initiatives, healthy-eating education, food skills training (e.g., preparing, cooking, growing food), promoting nutrition literacy (e.g., develop easy-to-understand nutrition labelling of foods), and development of nutrition and mental health educational materials (e.g., diet to prevent mental health problems, how to manage nutritional side effects of psychiatric medications, nutrition guidelines for specific conditions).

Dietitian services are important to all levels of mental health practice: promotion, prevention, treatment, and rehabilitation. Diet therapy should be recognized as a cornerstone of mental health interventions in clinical practice guidelines and standards of care. Adequate funding is needed for nutrition services in mental health care, with monitoring and evaluation for effectiveness and efficiency.

2. Cultural Competency

The development and implementation of mental health content and/or field experience in undergraduate and graduate nutrition programs as well as in dietetic internships, including training in adapted psycho-therapeutic approaches (e.g., cognitive behaviour therapy, dialectical behaviour therapy, mindful eating approaches, motivational interviewing), and culturally competent care would enhance mental health care.

3. Program Planning and Collaboration

Mental health professionals and health care/service providers working with mental health consumers to improve dietary intakes could benefit from increased knowledge of nutrition related to mental health issues. Participation of dietitians should be integrated into primary and specialty care teams and in vocation, education, and residential programs serving this population. Rehabilitative services (e.g., prisons, group homes) should incorporate healthy eating and culturally diverse food policies that encourage residents to choose foods that promote mental and physical well-being. Initiatives that include training of para-professionals and peer workers, dietitian services at drop-in centres, shelters, and transitional houses, and use of technology and telehealth can enhance access to nutrition services. Mental health service staff (e.g., mental health workers, psychiatric nurses) should have easy access to Registered Dietitians for consultation.

4. Standards in Nutrition and Mental Health

Food and nutrition standards for mental health facilities and programs (e.g., community psychiatric homes, shelters, transitional houses, facilities for substance abuse recovery, food relief programs) and organizations that commission mental health services (e.g., non-profit associations) need to be established. Such standards would define menu requirements and specify when referrals to a Registered Dietitian are needed. These standards should be incorporated into current assessments to ensure implementation.

5. Mental Health and Nutrition Research

More investigative work that examines the role of nutrition in mental health promotion, disease prevention, and mental health condition–based interventions is needed. Cost-effectiveness studies are needed to quantify how specific nutritional interventions in mental health practice are economically beneficial. Finally, the effectiveness of nutritional interventions for mental health consumers needs to be examined (e.g., lifestyle interventions that help manage weight for individuals taking atypical antipsychotics). In order for these investigations to move forward, adequate funds for nutrition and mental health research need to be provided to support investigation of the relationship between diet and mental health and facilitate ongoing, meaningful citizen and civil society involvement in planning nutrition and mental health research.

Table of Contents

This paper is the third in a series of three papers derived from the Dietitians of Canada comprehensive role paper on nutrition and mental health, Promoting Mental Health through Healthy Eating and Nutritional Care. The three papers in the series are titled:

1. The Role of Nutrition in Mental Health Promotion and Prevention
2. The Role of Nutrition Care for Mental Health Conditions
3. **Nutrition and Mental Health: Therapeutic Approaches**

Nutrition and Mental Health: Therapeutic Approaches

"The time is now right for nutrition to become a mainstream, everyday component of mental health care, and a regular factor in mental health promotion …The potential rewards, in economic terms, and in terms of alleviating human suffering are enormous."

Dr. Andrew McCulloch, Chief Executive, The Mental Health Foundation

1. Introduction

Mental health is "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community"[1]. Positive mental health enhances social cohesion and social capital, improves peace and stability in the living environment, contributes to economic development in societies, and is a principle of democratic society[2,3]. Mental health problems occur across all ages, cultures, and populations and therefore the provision of mental health needs to adapt to the different individuals it serves.

Dietitians of Canada (DC), the national professional association for dietitians, recognizes that there are many intersections between nutrition and mental health and for this reason they commissioned the development of a comprehensive document titled "Promoting Mental Health Through Healthy Eating and Nutritional Care". This paper derived from the larger document provides policy makers, practitioners, and other interested groups and individuals, with an evidence-based summary of the current literature about nutrition, mental health, and therapeutic approaches.

2. Process

This document is based on a structured literature search (see Appendix A for search strategy). The detailed search yielded 534 resources related to nutrition, mental health, special populations, models of care and therapeutic approaches. Of these 534 resources, 322 provided duplicate or non-relevant information. The remaining 212 resources, underwent extensive review by the advisory committee to identify key themes. An integrative literature synthesis was then employed to outline the various intersections between nutrition, mental health promotion, and mental health condition prevention.

The final set of extracted literature was organized into two main themes that included special considerations in nutrition and mental health care (outlined in the next (second) section of this document), and models of care and therapeutic approaches in nutrition and mental health care (in the third section of this document).

Based on the analyses in these two major theme areas, suggestions to guide nutrition and mental health care are presented in the last (fourth) section of this document.

3. Diversity in Nutrition and Mental Health Practice

"It's clear we're not reaching everybody who is affected by mental illness and health inequities. The need is still great … We need to honour all of the different marginalized groups as well as look at intersections. We don't want to lose sight of specific groups."

Brenda Toner, Head of the Women's Mental Health Program, University of Toronto;
Co-head of Social Equity and Health Research, Centre for Addiction and Mental Health
Canadian Mental Health Association Network Magazine, 2010

Those with mental health problems often have unique circumstances that can create barriers to health care. Experiences such as alienation, stigma, trauma, and institutionalization can lead to a lack of trust in authority figures (e.g., health care providers) and affect the care the mental health consumer receives[4]. Strong collaboration in care, respect for the mental health consumer, and building trusting relationships with reciprocal communication all help the consumer to develop empowerment in regards to their health. In this section, some of the special circumstances that arise in mental health and dietetics practice are highlighted. The reader is encouraged to consider these diversities and to critically examine their own perceptions in the context of nutrition care.

3.1 Engaging the Mental Health Consumer

Over the last 40 years, major changes have occurred in services provided for people with mental health conditions. Deinstitutionalization has led to the development of a number of different systems of caring for people in the community. With these changes has come an awareness of the problems of engaging and maintaining contact with the mental health consumer. Some services, such as crisis outreach, assertive outreach, and early intervention for psychosis have helped to reduce the number of hospital admissions related to mental health[5]. However, although overall admissions have been reduced, there has been a rise in the number of involuntary admissions despite there being fewer overall beds[6].

Consumers who have dropped out of contact with services usually have more unmet needs[7] than those still receiving help. The most commonly reported factors associated with service disengagement are sociodemographic factors including young age, ethnicity, and deprivation; clinical factors such as lack of insight, substance use, and forensic history; and service factors such as availability of assertive outreach provision[8]. Power differences have also been cited as underlying reasons for disengagement. Social power is the ability to influence others. There are natural power differences in many relationships, including those between teacher and student. While power differences may be beneficial, in the context of mental health work they can prevent a connection with the consumer from being established. While it is important to understand the biological aspects of mental health conditions, recognizing psychological and social factors should be a focus in order to facilitate engagement.

3.1.1 Trauma-Informed Care

It has been estimated that up to 90% of people with mental health conditions have been exposed to multiple types of trauma[9;10]. Trauma includes physical, sexual, and institutional abuse; neglect; intergenerational trauma; and disasters that induce powerlessness, fear, recurrent hopelessness, and a constant state of alert. The traumatic experiences of persons with the most serious mental health problems are interpersonal in nature, intentional, prolonged, and repeated; occur in childhood and adolescence; and may extend over years of a person's life. They include sexual abuse or incest, physical abuse, severe neglect, and serious emotional and psychological abuse. They may also include the witnessing of violence, repeated abandonment, and sudden and traumatic losses. As adults, these individuals often experience trauma and revictimization through domestic violence, sexual assaults, gang- and drug-related violence, homelessness, and poverty[11].

Trauma impacts one's spirituality and relationships with self, others, and environment, and often results in recurring feelings of shame, guilt, rage, isolation, and disconnection[12]. When a lack of nutrition is part of this equation, it can be difficult to work toward recovery. Most research focuses on traumatic experiences of childhood and their relationship with depression, alcohol and drug abuse, and anxiety, personality, eating, and post-traumatic stress disorders[13;14]. The highest probability of poor treatment outcomes, relapse rates, and drop-outs in people with eating disorders has been observed in those who experienced childhood trauma[15]. Drop-out could represent an expression of victimization or hopelessness that interferes with compliance.

Trauma may impact eating in many ways. Experiences of trauma can lead to sensory issues, hyperarousal, startle reflex, numbness, and appetite changes. Mealtimes may be associated with extreme stress, especially if there is a history of force-feeding and/or vomiting[16]. When exposed to trauma, the affected person may eat emotionally, which can lead to weight gain and/or an eating disorder. Emotional eating and compulsive overeating are ways to cope with issues such as stress, depression, and low self-esteem. Emotional eating is a behaviour that can usually be controlled; however, with compulsive overeating, it is difficult for the person to control their impulses to eat.

Trauma-informed care is an approach to engage people with histories of trauma that acknowledges the role that trauma has played in their lives. Trauma-informed care creates a "to do no harm" environment that reflects physical and emotional safety, and that provides a non-judgmental atmosphere where consumers have opportunities to understand the stories of their lives and find validation, learn to trust, and heal and grow. It utilizes transformative knowledge to mentor, coach, and work toward positive changes as the consumer engages in the healing process. Registered Dietitians can create safe and consumer-centred environments with individualized nutrition care plans as means of trauma-informed care. They also engage in collaborative practice to increase awareness of service-use triggers and use approaches that reduce the rate of retraumatization.

3.1.2 Food Insecurity

Food insecurity is broadly defined as limited, inadequate access to sufficient, safe, nutritious, personally acceptable food that meets dietary requirements for a healthy and productive life[394]. Food insecurity negatively affects all dimensions of individual health and wellness. Those who experience food insecurity are more likely to have multiple

chronic conditions, including heart disease, diabetes, obesity, high blood pressure[17;18], and impaired ability to work and learn[19]. Food insecurity is also associated with mental health issues such as higher levels of stress, anxiety, social isolation, eating disorders, social exclusion, distress, depression, and suicidal tendencies[20-22], and family effects such as lower levels of positive parent-child interaction[23]. A few studies have examined food insecurity in individuals with mental health conditions. One cross-sectional survey indicated that about 41% of individuals in a psychiatric emergency unit lacked food security and these participants showed a higher level of psychological distress than food-secure individuals[24]. Food insufficiency has also been associated with being diagnosed with a clinically defined mental health condition[25].

Insufficient income underlies the issues of food security and mental health. Comparisons of foods based on calorie per calorie analysis (not nutrients per calorie) have demonstrated that healthy foods are more expensive compared with foods with a high energy content primarily derived from fat and refined sugar. In Canada, people with limited incomes who are food-insecure will often chose cheaper, unhealthy foods because of their higher caloric density[26;27]. Compounding this issue are trends of rising global food prices and the changing nature of our food supply (e.g., increasing availability of highly processed foods)[19]. The relationship between food insecurity and low income also includes contextual barriers that hinder access to healthy food. There are often fewer grocery stores with fresh whole foods in low-income neighbourhoods, and cheaper high-fat, high-sugar, and high-calorie food is often more readily available at nearby convenience stores. Lack of personal transportation and the limitations of public transit are additional obstacles. People living in basic accommodations may have limited preparation and storage facilities, which can reduce their ability to purchase lower-cost bulk foods. Those who are functionally impaired may have reduced ability to prepare and consume food[27].

Food insecurity screening should be a regular component of nutrition assessment in mental health practice. Questions to ask would be whether the person has worried that there would not be enough to eat because of lack of money, not had enough food to eat because of lack of money, or if they access the services of any food assistance programs (e.g., food bank, soup kitchen, or other charitable agency). There is also a need to advocate for food access services that are dignified, capacity building, and help reduce the income disparity. Dietitians can work at all levels of the food security continuum (Figure 1) to build food access. Some specific capacity building examples include community gardens where people can grow their own food, community kitchens where people can learn food-related skills and connect with their community, and food buying clubs. Resources such as local listings of food programs should be available to mental health consumers. In various regions, standard food costing studies are conducted on a regular basis (e.g., the Nutritious Food Basket) which provides data on the real costs of healthy eating in that area and can help to monitor trends. Those who work with food insecure groups can use this tool as a means to advocate for food security.

Figure 1: Food Security - A Continuum

Short-Term Relief	***Capacity Building***	***System Redesign***
Charitable programs: Food banks Soup kitchens Community meal programs Food stamps or vouchers Food recovery programs (e.g., gleaning)	Community gardens Community kitchens Farmers' markets and pocket markets Breastfeeding coalitions Buying clubs Co-op grocery stores Mobile stores Local eating initiatives Farm-to-school programs Farm-to-cafeteria programs Food celebrations Rooftop, balcony, or indoor gardens Urban agriculture Small plot intensive (SPIN) farming Education programs for household food insecurity	Food action coalitions Food policy councils Building supportive food environments Indigenous food sovereignty Food planning Agriculture planning Municipal food policy School food policy Workplace food policy Community economic development related to food Social economic enterprises (food focus) Private sector investment Government investment
Focus on Individual	***Focus on Community***	***Focus on Society/Government***

Adapted from Food Security: A Continuum by Food Security Projects of the Nova Scotia Nutrition Council and the Atlantic Health Promotion Research Centre, Dalhousie University June 2005

3.1.3 The Use of Natural Health Products

People with mental health conditions often seek a variety of therapeutic alternatives, sometimes without the knowledge of the health professionals who are working with them. Therapeutic options include natural health products (NHP), defined as agents that include constituents such as vitamins and minerals, herbs, homeopathic medicines, traditional medicines, probiotics, and other products like amino acids and essential fatty acids[28]. Surveys suggest that NHP use tends to be higher in those with anxiety and depressive conditions[29-34]. Reported prevalence estimates of NHP use range from 50% to 80%[35]. The use of NHP may be attributable to many factors, including media interest in the topic, increased availability of various information sources (e.g., the Internet), the perceived efficacy and "naturalness" of the therapies, a desire to reduce side effects of medications, and dissatisfaction with conventional therapies[36;37].

From a public health perspective, there is some concern that NHP are rarely studied, weakening the evidence base, and some NHP may interact with conventional management. For example, studies have reported that St. John's wort combined with trazodone, sertraline, or nefazodone may cause serotonin syndrome[38] and affect the activities of drug-metabolizing enzymes[39]. In people with mood disorders, side effects such as mania may occur with the use of dehydroepiandrosterone (DHEA)[40;41]. Ginseng has been associated with depression and mania in bipolar disorder[42]. Melatonin may worsen depression and interact with sedatives and benzodiazepines[43]. Conversely, increasing numbers of studies indicate that some NHP result in the requirement of lower doses of medicatons[44;45-48].

Table 1 highlights NHP that have been used for mental health conditions and the level of evidence that supports them. A small study of individuals with mood disorders found that about 15% of the sample used NHP with no psychiatric medication to treat their condition[49]. For some people (e.g., pregnant women with a mental health condition), NHP may be safer. Since NHP use in this population appears to be quite prevalent, mental health care providers, including dietitians, face the challenge of becoming aware of the potential benefits and adverse effects of NHP.

3.1.4 Sex and Gender Differences

The terms sex and gender do not have the same meaning. Sex refers to biological differences — chromosomes, hormonal profiles, internal and external sex organs — and gender references the characteristics that a society or culture delineates as masculine or feminine. Studies have noted sex and gender differences in different mental health conditions such as depression and bipolar disorder[50-53], anxiety, substance abuse, and antisocial disorders[54] as well as differences in the link between physical and sexual abuse. These may be attributed to diversity in social roles, biology, and issues of diagnosis (e.g., the gendered items such as crying in depression scales)[53].

Research findings illustrate the importance of considering sex and gender with respect to lifestyle and health outcomes. Men and women often differ in their knowledge of and beliefs about causes and treatments of various diseases[55] and in self-rating of health[56]. Gender may also be related to differences in food choices and in energy and nutrient intake[57]. All food relations are shaped by various structuring differences, including gender, that define people. Registered Dietitians can help women and men perceive roles, responsibilities, and identities that are related to food and how these may affect them. Other considerations include recognizing differences in practices and beliefs, as well as capacities and skills around food and nutrition.

Table 1: Natural Health Products Used for Treatment of Mental Health Conditions and Current Level of Evidence[58]

NHP	Action	Anxiety	Depression	Bipolar Disorder	Sleep Disorders	Schizophrenia	Alzheimer's Disease	ADHD
Ginkgo Biloba	↑ vasodilation, peripheral blood flow, antioxidant action, ↑ cholinergic transmission by inhibiting acetylcholinesterase; may have anticonvulsant activity through elevation of GABA; inhibits neuronal uptake of serotonin, potentiating serotonergic activity					PR/S	+/C	
Inositol	Insulin signal transduction, intracellular calcium concentration control, serotonin activity modulation, and gene expression	PR						
Kava Kava	Blocks voltage-gated sodium and calcium channels (suppress glutamate release). May block MAO-B metabolism. Sedative and antianxiety properties	+						
Melatonin[a]	Hormone produced by pineal gland; regulates circadian rhythms				+/C			
Omega-3 Fatty Acids*	May affect cell membrane composition at neuron synapses and signal transduction; may affect monoamine oxidase		+/S	PR		PR/C/S	PR	PR/C
S-adenosyl-methionine (SAMe)	Brain methyl group donor. May ↑ membrane fluidity, influence monoamine and phospholipid metabolism, ↑ turnover of serotonin, norepinephrine, and dopamine		P/+					
St. John's Wort	Inhibit reuptake of serotonin, norepinephrine, dopamine, GABA, L-glutamate	PR/C	+•					
Valerian[b]	Interacts with central GABA receptors; causes CNS depression and muscle relaxation				+/(C)			
Vitamins								
Vitamin B_6**	See Table 1 in the second paper or the full role paper for details on actions of these vitamins.		PR/S			PR/S		
Vitamin C						PR		
Vitamin D**						PR		
Vitamin E						PR/S	C	

•Mild to moderate depression only, **May be helpful in drug-induced movement disorders (e.g., tardive dyskinesia), C = contradictory results, P = partial improvement, + = positive, PR = preliminary data, S = synergistic effect

[a]May worsen depression and irritability. Interacts with sedatives and benzodiazepines[43] Short-term mild impairments in vigilance, concentration, and processing time for complex thoughts[59-61]. Drug "withdrawal" effect has been reported in those taking high doses[62]. Some may develop a "paradoxical reaction" leading to nervousness or excitability. Using for longer than two months may result in insomnia[42].

3.1.5 Food Addictions

The discussion of food addiction (FA) in the popular and scientific literature has been pervasive and compelling. Although there is literature about food's addictive properties, FA is not considered a mental health condition. However, it has been implicated in chronic overeating, binge eating, obesity, depression, anxiety, attention deficit hyperactivity disorder, and substance use as well as relapse and treatment challenges[63]. This area may be considered controversial, but the dietitian may find it helpful to utilize some of the tools available, such as the Yale Food Addiction Scale[64], when working with consumers who believe they have FA and use it to guide approaches to address food-related issues.

3.2 Special Populations

Mental health concerns can occur at all ages, for both sexes and genders, and in different cultures and population groups. Marginality, or the social exclusion from meaningful participation in society, is an experience affecting many people, but particularly those with mental health conditions[65]. In this section, different marginalized groups and food and nutrition issues they may encounter are discussed.

3.2.1 Children and Adolescents

It is estimated that at least 70% of mental health conditions begin during childhood or adolescence[66]; these include depression, anxiety, disruptive behaviour, ADHD, eating disorders, and developmental disorders. About 5% of those between the ages of 4 and 17 years have extreme impairment[67]. There is evidence to suggest that eating disorder issues are becoming increasingly significant in this group.

Numerous mental health promotion and prevention interventions aimed at children and adolescents can provide wide-ranging and long-term impacts[68-71]. For example, in 2010, the RAND Corporation's literature review of proven early childhood interventions found returns on investment from $1.80 to $17.07 for every dollar spent on mental health programming[72]. Positive economic returns were found for interventions aimed at early childhood education, home visiting, or parent education interventions. Some of the largest net benefits were for programs that undertook long-term follow-up so measurements of the impact on other sectors (e.g., employment, criminal justice) were taken[72]. For children and youth with mental health conditions, developing good nutritional practices is important as they may be at heightened nutrition risk. Helping children develop healthy relationships with food and decreasing the stress and anxiety related to food that can occur within families can be invaluable for the future health of children and youth. Nutrition interventions that promote mental health for children and adolescents need to incorporate family-based approaches that support healthy eating and should address individual needs.

3.2.2 Older Adults

It is estimated that 20% of adults over age 65 have a mental health condition, including dementia, depression, psychosis, bipolar disorder, schizophrenia, and anxiety disorder[73]. Older adults with mental health problems face increased risk of medical illness due to the long-term effects of unhealthy lifestyles, physiological changes, compounding medical conditions, and drug side effects[74]. It has been suggested that individuals with serious mental health conditions are substantially less likely than others to receive appropriate medical care, even when presenting themselves to a medical facility[75]. To promote mental health and sound nutrition for older adults, the consumption of a combination of nutrients available through a varied, low-fat, high-fibre diet should be emphasized. Implementation of nutrition screening will identify individuals who need and should be offered Registered Dietitian services[76].

3.2.3 People Living in Rural or Geographically Isolated Regions

The health of a community is inversely proportional to the remoteness of its location. Health indicators consistently reveal that significant disparities exist in health outcomes between people who live in northern versus southern regions of Canada, as well as between people who live in Atlantic regions versus the rest of Canada[77]. In most rural areas, the cost of the Nutritious Food Basket exceeds provincial averages. Many rural community agencies also have insufficient funds to hire Registered Dietitians. Strategies that enhance food security, nutrition training for allied health professionals and peer support workers, and options such as access to telehealth-based nutrition counselling services are likely to benefit those who have nutritional issues and are geographically isolated.

3.2.4 Individuals with Comorbidities

Many of the impacts that diet may have on mental health mirror its impacts on physical health because of the interdependence of central nervous, cardiovascular, immune, and endocrine systems. The interplay of biology, illness experience, and the social determinants of health (e.g., income, housing) can increase the likelihood of someone living with a mental health condition developing a co-existing physical condition[78]. Individuals with mental health conditions have been reported to have higher than expected rates of hypertension (34.1% versus 28.7% in the general population), diabetes (14.9% versus 6.4%), heart problems (15.6% versus 11.5%)[79;80], and stroke. Other comorbidities associated with mental health conditions include smoking, chronic obstructive pulmonary disease[81], HIV (about 8 times the rate found in the general population), hepatitis B (about 5 times the rate) and C (about 11 times the rate)[82]. Well-controlled studies indicate that eating disorders in adolescent females with Type I diabetes are twice as common as in control groups[83]. The co-occurrence of diabetes and eating disorders presents many unique challenges to health such as the development of depression[84]. The needs of those with comorbid conditions are not being addressed in terms of either prevention or treatment[85].

There are also a number of conditions that might have mental symptoms. For example, depression may be a symptom of Addison's disease, AIDS, anemia, asthma, chronic fatigue syndrome, chronic infection or pain, colitis, Cushing's disease, congestive heart failure, altered thyroid function, diabetes, hepatitis, cancer, menopause, multiple sclerosis, rheumatoid arthritis, syphilis, lupus, or uremia[86]. A particular challenge in diabetes care is the growing population of individuals with mental health conditions who have recent onset Type II diabetes, often secondary to use of antipsychotic medication[87]. About 12% of those with a mental health condition have Type II diabetes, and an additional 32% are likely to have prediabetes[88]. Treating the mental health condition is essential to stabilize blood glucose levels, but many of the psychotropic medications used in treatment are diabetogenic. Dietitians working in diabetes care can expand their repertoire of skills — especially in communication, rapport building, motivational interviewing, health education, brokering services, contacting local community and social services, and collaborating with mental health agencies[87] — to assist those with diabetes and mental health comorbidities.

3.2.5 Individuals with Dual Diagnosis

"Dual diagnosis" is used to describe people who have a developmental disability along with co-occurring mental health condition and behavioural difficulties[89]. The term "developmental disability" (DD) has both a narrow and a wide definition. As a narrow term, it refers to people with mental retardation according to the DSM-IV (IQ less than 70, onset before 18, and adaptive living skills deficits). A wider definition of DD would include people with DDs such as autism and fetal alcohol spectrum disorder, with impairment in adaptive living skills, but whose IQ is greater than 70[89]. Major causes of DDs include chromosomal abnormalities, genetic or inherited factors such as Fragile X Syndrome, problems of pregnancy and birth including prenatal exposure to alcohol and/or maternal malnutrition, childhood injury or disease, and environmental factors such as poverty resulting in malnutrition or inadequate medical care[90].

Individuals with DD have a high rate of mental health conditions with estimates of 39% in children and 30% in adults reported[91;92]. The most commonly occurring conditions include major depressive disorder, bipolar disorder, anxiety disorders, dementia, and schizophrenia[90]. Many specific DDs are associated with unique behavioural patterns and mental health conditions[93], and these may be due to some underlying commonality such as a specific nucleic acid deficiency[94]. These have been described as behavioural phenotypes, patterns of behaviour that are reliably identified in groups of children and adults with known genetic disorders or syndromes and are not learned. Some common behavioural phenotypes that Registered Dietitians may see in their work are described in Table 2.

Table 2: Behavioural Phenotypes, Patterns, and Co-Occurring Mental Disorder

Behaviour Phenotype	Behavioural Pattern and Co-Occurring Mental Disorders
Autism Spectrum Disorder (ASD)	Pattern of impaired communication and social interaction, restrictive play, and/or stereotyped movements and behaviours. Anxiety, compulsions, and rituals that may result in challenging behaviours are common. Some have hyperactivity and sleep disturbance. There is an association between ASD and bipolar disorder[95;96].
Fetal Alcohol Spectrum Disorder	Permanent neurodevelopmental deficits, growth impairment, and other birth defects. Secondary issues include a high rate of mental health/addiction problems (90%)[97] such as suicide attempts, depression, anxiety, and attention deficit hyperactivity disorder (ADHD).
Prader-Willi Syndrome	Development of appetite deregulation in childhood that often leads to morbid obesity[98]. They may have associated compulsions and bipolar disorder.
Down Syndrome	Three forms: 1) extra chromosome 21 (95%); 2) translocation of chromosome 21 material (5%); and 3) partial trisomy 21 (rare). Prone to develop hypothyroidism, Alzheimer-like dementia at an earlier age, depression, and anxiety disorders. If depressed, they are more likely to be unresponsive to antidepressants[99]. Some develop obsessional slowness, an obsessive-compulsive condition[100].
22q Deletion Syndrome	Persons with velo-cardio-facial syndrome (VCFS 22q11 deletion) have characteristic facial features, learning problems, cardiac abnormalities, cleft palate, or velopharyngeal (sphincter separating oral and nasal cavity) incompetence. ADHD, social difficulties, and mood lability are common[101].
Fragile X Syndrome	In its full form, it affects males, but lesser forms of the condition are found in females. This condition is associated with hyperactivity, some autistic features, ADHD, hyperarousal, anxiety, aggression, and mood lability[102].

Although specialized outpatient and inpatient mental health services are available along with community health and social services, there continue to be significant gaps in services for those with DDs. Those with DDs and their care providers need a comprehensive array of services from early childhood to older adulthood, including prevention, early identification, assessment, diagnosis, intervention, specialized assessment, assistive technologies, education, developmental skill building, behaviour management, and specialized mental health services. Service delivery should focus largely on specialist multidisciplinary teams that are trained in DD and mental health. Interventions need to focus on early engagement; providing easy-to-understand communications; keeping sessions short (15–30 minutes); using modelling, rehearsal, and feedback to teach skills; enhancing family and other supports; monitoring impact of concurrent medications and conditions; and using concrete short-term goals.

Nutrition issues that arise depend on the type and severity of the DD, and may include cardiovascular disease, obesity, osteoporosis[103;104], poor food intake, and dysphagia, as well as limited food preparation skills, nutrition and food safety knowledge, and physical activity[105]. Eating problems have been estimated at 35%[106] in this group and include hearing internal voices that influence food intake, eating non-food or unsafe food items, regurgitating, taking excess fluids, hoarding food, eating very quickly, eating a limited range of foods, hyperactivity, or involuntary movements. For example, people with Prader-Willi Syndrome may be so driven that they may eat discarded or non-edible foods. Some may need residential care and programs that control all food access. It is important to determine if challenging eating behaviours are linked to underlying medical or mental health problem[462]. Applied Behavioural Analysis (ABA) interventions can address various feeding problems[107]. Other techniques include differential reinforcement, planned ignoring, simultaneous presentation, physical guidance, demand fading, short meal duration, contingent access to reinforcers, time out, texture fading, swallow induction, visual cues, and positive reinforcement[108]. Dietitians can help design services that enhance the quality of life for individuals with DD by helping them acquire nutrition information[109], skills in food shopping[110], planning menus[111], and preparing food independently[112].

Primary care guidelines for individuals with DDs[113] include monitoring weight and height regularly and assessing risk status using body mass index (BMI), waist circumference, or waist-hip ratio measurements[114]. A health promotion program can improve attitudes toward physical activity and satisfaction with life[115;116]. Individuals with DDs and their care providers should be counselled annually, or more frequently if indicated, regarding guidelines for nutrition and physical fitness[117;118].

3.2.6 Homeless, Marginally Housed, and Street Youth

It is estimated that 10,000 Canadians are homeless on any given night; many more are marginally housed or under-housed, mostly in urban centres[119]. Homelessness is a major social problem that substantially increases risk behaviour, violence, health inequity distribution, physical and mental health conditions, substance use, and mortality[18;120;121]. People with conditions such as schizophrenia, substance abuse, and major depressive disorders are more likely to become homeless than the general population[491]. Individuals at varying stages of homelessness tend to have higher than average rates of malnutrition, suboptimal intakes of various micronutrients (i.e., vitamins B_1, B_6, B_9, B_{12}, A, C, and the minerals iron, magnesium, and zinc), and consume excess fat[120;122;123]. Poor health also compounds the risks faced by homeless

pregnant women; it has been estimated that about one-quarter of homeless youth are pregnant[124]. German and U.S. studies of homeless individuals suggest high rates of malnutrition based on body mass index and skinfold measures[125;126]. Some studies found significant numbers of overweight[127;128], although the majority in one study had low BMI and possible muscle wasting[129].

Individuals who are homeless also tend to have high rates of nutrition-related disease, such as diabetes, obesity, and hypertension[130]; the presence of these conditions presents further challenges in obtaining appropriate foods for consumption. A study of diabetes management among the homeless in Toronto[131] indicated that participants had a difficult time dealing with health issues that impact their dietary needs. Most found it difficult to manage diabetes and maintaining an appropriate diet. Nutritional interventions that focus on linking consumers with low-cost meal options, community resources, and support programs; alleviating food insecurity; and providing therapeutic diet counselling as needed can help support the food and nutrition needs of this vulnerable group.

3.2.7 Aboriginal Peoples

Aboriginal peoples describes the members of three distinct cultural groups: 1) First Nations, defined as a person who has registered or is entitled to be registered according to the *Indian Act*; 2) Metis people; and 3) Inuit. Although Aboriginal peoples in Canada are considered within these three cultural groups, it is important to recognize, for example, that there are over 600 unique First Nations governments or bands with distinctive cultures. Aboriginal peoples are more likely to encounter both nutrition[131] and mental health issues[132]. Broad social factors that contribute to such elevated levels of risk among Aboriginal People include lower standards of living, poverty, lower levels of education, higher unemployment rates, and cultural stress. The mental health concerns of Aboriginal peoples are linked to a long history of oppression and cultural trauma. These include the intergenerational scars from the residential school system, loss of control over living conditions, suppression of beliefs and spirituality, loss of political institutions, breakdown of cultural rules and values, and racism. Mental health conditions in this cultural group include depression[133], suicide, and substance abuse[134], all of which affect the physical, emotional, and spiritual well-being of Aboriginal peoples, their families, and their communities.

Aboriginal peoples face unique food-security considerations related to the harvesting, sharing, and consumption of traditional food[135]. Aboriginal households experience more general food insecurity (33% are food-insecure versus 9% of non-Aboriginal households) and food insecurity at severe levels (14% versus 3% of non-Aboriginal ones)[136]. Access to traditional food has been impacted by transitions to large urban centres and changing lifestyles, increased access to store-bought food, concerns about environmental contamination, changing animal migratory patterns and the decline in some species, and the high cost of hunting and harvesting (e.g., fuel, ammunition, equipment). Those living in geographically isolated communities have additional food-security challenges due to the high cost of store-bought food, limited availability of healthy choices, and inconsistent quality of fresh food. Indigenous food sovereignty (IFS) is a policy approach that addresses the underlying issues impacting Indigenous peoples and their ability to respond to their own needs for healthy, culturally adapted foods. The key principles of IFS include[137]: 1) sacred or divine sovereignty: the right to food is sacred and cannot be constrained or recalled by colonial laws, policies, or institutions; 2) participatory: IFS is based

on the day-to-day practice of maintaining cultural harvesting strategies; 3) self-determination: the ability to respond to needs for healthy, culturally adapted Indigenous foods; and 4) policy: reconcile Indigenous food and cultural values with colonial policies and mainstream economic activities.

Registered Dietitians working with Aboriginal peoples can use nutrition counselling approaches that incorporate and reflect the values and natural helping styles of a culture. Key principles include teaching positive self-image, encouraging and assisting Aboriginal consumers to explore traditional healing practices and to participate in cultural rituals, utilizing family and community-based approaches, and facilitating the use of traditional foods and culinary tradition.

3.2.8 Immigrant, Refugee, Ethno-Cultural, and Racialized Groups

Canada is one of the most diverse countries in the world. Newcomers and ethno-cultural groups contribute to a significant portion of the population. Ethno-cultural communities may be defined as a group of people who share and identify with certain common traits, such as language, ancestry, homeland, history, and cultural traditions[138]. According to a report by the Mental Health Commission of Canada and the Centre for Addiction and Mental Health[139], persons from these communities are more exposed than the general population to the social determinants of health (e.g., low income, underemployment, isolation) that can put them at higher risk of poor mental health. In addition, their mental health is influenced by migration, minority stress, and language differences.

It is important to acknowledge the diversity within ethno-cultural communities to avoid stereotyping and blaming. Nutritional interventions should be mindful of the power difference in the provider-consumer relationships, of culturally specific power dynamics and levels of hierarchy within families, and the socio-political and historical context in which these people live. It is important to provide culturally competent care. This includes understanding and respecting cultural variations in health beliefs around mental health, and their intersection with perceptions of food and nutrition[139;140]. In addition, language-appropriate information and services need to be advocated for based on community engagement and development activities[141].

3.2.9 Lesbian, Gay, Bisexual, Transgender, and Questioning

Individuals who are lesbian, gay, bisexual, transgender, or questioning (LGBTQ) are often at risk for physical, emotional, and social problems. Very limited research has been done on the mental health status of LGBTQ communities. Studies often treat LGBTQ communities as a single population, which may not accurately reflect their diversity. A report by the U.S. Institute of Medicine noted higher rates of disordered eating among adults and youth who were LGB when compared with their heterosexual counterparts[142]. Depression, anxiety disorders[142], and suicidal behaviour[143] also appear to be more prevalent. Other concerns include alcohol use[142]; chronic nutrition-related diseases such as heart disease, cancers, stroke, diabetes, hypertension, osteoporosis, and HIV infection in gay men[144]; and body image in transgender populations (e.g., trying to "bulk up" to create a stereotypically male body)[145]. When working with LGBTQ communities, it is important to be mindful of the history of pathologization and marginalization of this population[146] and current issues that they encounter; this is essential to building empathy and rapport. Until recently homosexuality was still considered a mental health condition under the DSM; gender identity disorder was listed in the DSM-IV, which was

changed to gender incongruence in the DSM-5. People who are LGBTQ are subject to institutionalized prejudice, social stress, social exclusion (even within families), hatred, and violence, and may internalize a sense of shame about their sexuality[143;147].

A study that explored food choice processes of gay men indicated that many learned to cook at an early age and that this was judged negatively. The process of coming out freed participants to question gender constructions[148]. The mental and nutritional health of this population can be promoted by considering their social context, ensuring equitable access to dietetic services, providing safe space for nutrition counselling, supporting food security, promoting positive body image, and using inclusive language (e.g., using the term "partner" or "support person" when asking about home life; using gender-neutral words or pronouns such as "them, they, this person," or asking the person about their preferred pronoun).

3.2.10 Risk Behaviour and Harm Reduction

Poor mental health is closely linked to risk behaviours related to eating (e.g., anorexia), sex, and substance use[149]. The associated harmful consequences of risk behaviours include physical illness, increased risk of infection (e.g., HIV, hepatitis C, and other blood-borne infections), family breakdown, economic issues, criminal involvement, and deaths by overdose or violence[150;151]. It is important to recognize that people may be led into risk behaviours due to reasons such as poverty, addiction, lack of education, or abuse. For example, survival sex workers may exchange sex in order to gain access to the basics of life such as food or a place to stay[152]. Harm reduction is an approach to keep people safe and reduce the rate of death, disease, and injury associated with high-risk behaviours. It involves a range of non-judgmental strategies and approaches aimed at providing and enhancing the knowledge, skills, resources, and supports that individuals, their families, and their communities need to be safer and healthier. Harm reduction includes a range of delivery modes, including fixed sites, mobile and outreach services, syringe vending machines, and pharmacies[153].

A key attribute of harm reduction practice is the concept of low-threshold service delivery[154]. Low-threshold services have minimum requirements for participation and normally address basic health and social needs. For many people, it is impossible to address drug dependence or deal with the multitude of related health problems without first having a safe, stable place to live, and nutritious food to eat. Good nutrition also lessens the adverse effects of using harmful substances. To lessen harms associated with poor nutrition, several practices can be implemented[155] and may include providing access to safe and nutritious food through meal programs, including safe fluids (e.g., distilled water) in pick-up kits, encouraging the person to eat throughout the day when using substances, working with the person to arrange to buy their groceries before purchasing substances, helping the person use meal programs (particularly those that give them the opportunity to leave the house), helping with practical matters that can affect access to proper food (e.g., arranging to have a broken refrigerator fixed), facilitating socialization and learning opportunities through group food education programs, helping the person find easily accessible alternatives where they can eat inexpensively, and providing counselling and education to help minimize the effects of disordered eating practices.

3.2.11 Individuals at Risk of Suicide

Suicide is a complex phenomenon emerging from a dynamic interaction of biological, psychological, social, cultural, and spiritual factors. Conditions associated with suicide include mood disorders, substance use disorders, psychosis, and personality disorders. Factors that protect against suicide include a strong sense of competence and optimism in coping with life's problems and social connectedness. General considerations for working with individuals who may be at risk for suicide include developing a therapeutic alliance, responding proactively to those who drop out from treatment, and, to the greatest extent possible, engaging family members (e.g., spouse, parents) as key collaborators[156]. Food insecurity and low levels of omega-3s have been associated with suicidal tendencies. The mechanisms explaining the links between the essential fats and suicide include that omega-3 fats are known to change the levels and functioning of both serotonin and dopamine (which plays a role in feelings of pleasure) and low levels of this essential may compromise the blood-brain barrier that protects the brain. Omega-3 deficiency can also decrease normal blood flow to the brain[157]. A recent review on the role of nutrition in suicide suggested that persons with lower levels of serum cholesterol were found to have greater risk of carrying out suicidal acts, but intervention trials that lowered cholesterol levels had no significant effect on suicidality[158].

3.2.12 Individuals Who Are Currently or Were Formerly Incarcerated

In total, just over 251,500 adults were admitted to provincial or territorial jails between 2006 and 2007. The percentage of individuals committed to federal jurisdiction with a mental health condition at time of admission is increasing. Female inmates are twice as likely as male inmates to have a mental health condition at time of admission[159]. In one seven-year study done in British Columbia, over 30% of the corrections population had been diagnosed with a substance use disorder. An additional 26% were diagnosed with a mental health condition unrelated to substance use. More than three quarters were diagnosed with a concurrent disorder[160]. These figures do not necessarily include alcohol abuse, fetal alcohol syndrome, or developmental disabilities, which are rarely diagnosed.

Addressing physical, mental, and nutritional health issues among individuals who are incarcerated could meet individual needs as well as those of the community[161;162]. Correctional facilities are important settings for intervention because they allow for a population with a disproportionate burden of disease to be reached efficiently[163]. Registered Dietitians working in correctional facilities can provide their expertise in areas such as menu development, food services management, nutrition counselling, and food skills training for inmates.

Food insecurity among families in which one member is incarcerated is believed to be prevalent. Incarceration may particularly impact food security of children as their incarcerated parent is no longer a potential source of income. Registered Dietitians can work with families of incarcerated individuals to help with food access and connect them with community and skills building programs.

For those who were formerly incarcerated, the experience of being in prison remains imprinted on their minds and bodies. They also face challenges that could include being under continued surveillance, a sense of dislocation or marginalization, and a need to renegotiate their lives[164]. Housing support and adequate food are essential components of successful reintegration into the community post-incarceration. Unfortunately, many former prisoners are released only to find themselves homeless or marginally housed[165] and experiencing food

insecurity. Working within a collaborative framework, the Registered Dietitian can help support those who are reintegrating into the community by offering assistance that supports individual food security and education for any therapeutic needs related to diet.

3.3 Cultural Competence and Safety

The relationships between diet and mental health are complex. Poor diet could be seen as a contributor to mental health conditions. However, poor diet is part of a complex web that may include income, geography, culture, upbringing, institutional history, and substance use. Cultural competence is the application of knowledge, skills, attitudes, and personal attributes to provide care and services appropriate to the cultural characteristics of consumers (i.e., individuals, groups, populations). Cultural competence includes valuing diversity, knowing about cultural mores and traditions of the populations being served, and being sensitive to these while caring for the individual. Cultural safety moves beyond the concept of cultural competence to analyze power imbalances as they apply to health care[166]. It is important to understand that there are power differences inherent in interactions between dietitians and consumers. Cultural safety requires that an individual evaluate their own beliefs and attitudes, and be respectful of nationality, culture, age, sex, gender, sexual orientation, and political and religious beliefs. This notion is in contrast to transcultural or multicultural care, which encourages health care providers to deliver service with no or little regard for these aspects of a person.

The dietitian can foster a consumer-centred practice by a variety of means[138]:

- considering the cultural significance of eating in order to make education and counselling relevant
- building communication, engagement, and relationships for cross-cultural interactions
- understanding that spatial relationships vary among cultures and among individuals
- fostering consumer-driven problem-solving skills
- utilizing active listening skills that require patience and silence
- drawing upon interpersonal skills to build rapport with family and other support systems
- assessing the role of socio-economic disadvantage, racism, homophobia, or ableism in presenting problems
- using appropriate tools with consumers who may have literacy or language issues
- networking to learn more about services, resources, and cultures from other agencies; working specifically with ethno-cultural groups; and exchanging ideas, expertise, and innovative initiatives with other groups or agencies
- advocating to work toward enhancing access to services
- uncovering any assumptions and limited knowledge about people.

4. Models of Care and Therapeutic Approaches in Nutrition and Mental Health Care

"Such a (mental health) system will provide people of all ages and their families with a choice among medical, psychiatric, psychological, and other treatment services – whether delivered in primary health care settings, by specialized services, or in a hospital – as well as the ability to choose from a full range of community-based services – including access to peer support and clubhouses, psycho-social rehabilitation, assertive community treatment, case management, supportive housing, employment support, and recreational activities."

Mental Health Commission of Canada, Toward Recovery & Well-Being: A Framework for a Mental Health Strategy for Canada[66]

Rehabilitation involves working within individuals' social networks, working with their families, and enabling their access to opportunities in education, occupation, and leisure. Rehabilitation focuses on a sustained and respectful relationship with the individual, and on a longer-term response to their needs. Recovery is an active process through which an individual adapts to living with a mental health condition. During the person's recovery, the Registered Dietitian would work with them to share an understanding of their life story and help them to draw upon the resources and skills available in rehabilitation services. Fundamental to this process is working with individuals and their families and care providers to instil and maintain hope. Dietitians can be an integral part of mental health rehabilitation and recovery. For example, a recent study indicated that significant reductions in sugar, calories, and sodium could be implemented when kitchen staff of mental health rehabilitation programs are assisted with menu planning[167]. This section highlights different models of mental health care and how dietetics practice can intersect with them. To complement this information, specific Canadian programs for mental health that incorporate dietitian services are highlighted in Appendix E. This section also outlines different therapeutic approaches used in mental health that have been adapted to dietetics practice.

4.1 Models of Mental Health Care

4.1.1 Assertive Community Treatment

Assertive Community Treatment (ACT) is consumer-centred, recovery-oriented mental health service intended to facilitate psychosocial rehabilitation for persons who have the most serious mental health conditions and have not benefited from traditional programs[168]. The ACT model of care has been widely implemented in the United States, Canada, and the United Kingdom. ACT teams may support people who have been in the hospital many times, are homeless, have been involved in the criminal justice system, or have a dual diagnosis (both a mental health condition and developmental disability) or a concurrent diagnosis (both a mental health condition and substance use disorder). ACT services are delivered by a multidisciplinary team who provide individually tailored treatment, rehabilitation, and support services. ACT teams are usually mobile, deliver services in locations that are convenient for people, are directed by a coordinator and a psychiatrist, and include enough staff to work in shifts to cover 24 hours per day, 7 days a week.

A team of professionals whose training includes social work, rehabilitation, counselling, nursing, nutrition, and psychiatry provide ACT services

including case management, initial and ongoing assessments, psychiatric services, employment and housing assistance, family support and education, substance abuse services, and other supports critical for an individual to live successfully in the community. Registered Dietitians work with the ACT interdisciplinary team to develop and implement nutrition care plans that can prevent malnutrition, improve nutritional status, and improve or reduce the impact of many conditions such as diabetes, cardiovascular disease, and hypertension.

4.1.2 Primary Health Care

The primary health care (PHC) approach as defined by the World Health Organization is both a philosophy of care and a model for providing health services. The focus of PHC is on preventing illness, promoting health, and the principles of accessibility, public participation, health promotion, appropriate skills and technology, and intersectoral cooperation. Plans for PHC share several general visions for a system that is accessible, better coordinated, consumer centred, comprehensive, and community focused. These visions reflected in dietetics practice are outlined as follows:

Accessibility

Accessibility means that nutrition services are universally available to all, regardless of geographic location. In general, many smaller communities have difficulty recruiting qualified dietitians. Challenges include having insufficient funds to hire a dietitian to meet service needs and difficultly in maintaining nutrition professionals to work with consumers with very special nutritional needs (e.g., home tube-feeding). Nutrition programs that target informal caregivers, natural helpers, peer helpers, and paraprofessionals may be of particular importance in improving access to appropriate nutrition services. Telemedicine and additional training options need to be considered. Issues of accessibility also pertain to transportation. Transportation support for consumers helps address issues of isolation, distance from professional resources, and lower utilization of services in rural areas. However, simply providing a transit pass may not be sufficient, particularly for those with mental health challenges. Other options, such as home visits, may be more beneficial as the context in which the mental health consumer lives is visible and interventions can be individualized.

Collaborative Structures

Collaboration means that people from various disciplines (e.g., mental health, education, financing, housing, employment, immigration) function interdependently to meet the needs of consumers. All key stakeholders, including consumers, should be involved in mental health care. Collaborative practice involves consumer-centred care with a minimum of two caregivers from different disciplines working together with the care recipient to meet that individual's health care needs[169]. Interdependent care includes ad hoc collaborations that are developed to deal with issues of immediate concern and then disbanded after resolution of problems. In brokered service models, a dietitian has developed informal relationships with other providers and, through referral or interagency service agreements, has obtained access for the consumer to nutrition services without reciprocal collaboration. Initiatives might also provide diverse services in one setting with complete integration of operations.

In such collaborative efforts, services are streamlined, service integration is long-term, and collaboration outside the core service group are enhanced (e.g., with shelters, drop-in centres, and other advocacy groups or service providers. Table 3 outlines how dietitians from a variety of settings can provide complementary services related to key elements of PHC, if there is sufficient staffing to provide the required care.

Richness of Collaboration

The mental health consumer may need several potential team players for support. Dietitians collaborate with community partners, including:

- Housing programs and services (e.g., shelters and drop-ins)
- Immigrant/refugee services
- Police, corrections, legal aid
- Hospital discharge planners
- Specialized services (e.g., for diabetes and dyslipidemia)
- Public health; Social services
- Programs for veterans
- Home-care services
- Long-term care facilities
- Employment/vocational services
- Public guardian and trustees office
- Addiction recovery programs
- Community psychiatric facilities
- Mental health agencies (children, adult)
- Rehabilitation and recreation programs
- Volunteer organizations/ advocacy groups
- Schools, preschools, and daycares
- Religious groups; Support groups
- Meals on Wheels
- Food programs (e.g., food banks, community kitchens, community gardens, buying clubs)

Consumer and Family Centredness

Consumer participation means consumers are encouraged to participate in making decisions about their health, identifying health needs in their community, and considering merits of alternative approaches. Some challenges like stigmatizing factors can make it difficult for mental health consumers to advocate for themselves. Some strategies to enhance consumer centredness include inclusive meetings between consumers and providers, involvement in programs (e.g., peer helpers), having advocate officers available, enabling consumer self-referral, and providing the option of home-based care. Most consumers utilizing primary care services bring family members to their appointments, thus presenting an opportunity for family-focused care, which leads to better individual and family outcomes[170].

*Table 3: A Network of Registered Dietitian (RD) Services in Relation to Primary Health Care**

		Key Elements of Primary Health Care (PHC)			
Dietetic Practice Settings	**% Dietitians in Practice Setting****	**Range of Comprehensive PHC Nutrition Services Provided**	**Utilizes Population Health Strategies**	**Collaborative Practice**	**Affordable and Cost Effective*****
Community Health Centre model; RD a salaried member of the interdisciplinary team	6%	Full range	√	√	√
Public Health	26%	Population health promotion and disease prevention services including for mental health	√	√	√
Home Care	20%	Services for "homebound" consumers at risk or with existing physical and/or mental health conditions	Services for "homebound" consumers	√	√
Ambulatory/Primary Care Practice	15%	Services for consumers at risk or with existing physical and/or mental health conditions	Services for consumers at risk or with existing medical conditions	√	√
Consulting/Private Practice	33%	√	Work with individuals, groups, facilities, and programs; can provide population health services	Dietitian maintains consumer record and liaises with other care providers as needed	Fee for service is a barrier; insurance coverage available in some instances

*Adapted from Table 2 – *Dietetics Practice – A Complementary Network of Services Relative to Key Elements in Primary Health Care*[171]

**% of dietitians in each practice setting based on approximation derived from DC's Skills and Practice Registry relative to the number of DC members working in a primary health care setting (N=1390) in 2001

***Potential for savings relative to decreased hospitalization and long-term disability as a result of nutrition intervention is well documented[172]

4.1.3 Peer Support Model

Peer support has been defined as "any organized support provided by and for people with mental health problems." Peer support is sometimes known as self-help, mutual aid, co-counselling or mutual support[173]. Formalized peer support begins when a person with lived experience, *and* specialized training, assumes a unique, designated role within the mental health system to support another individual's expressed wishes. Specialized peer support training is peer developed and delivered; endorsed by consumers, survivors, peer support organizations, and consumer councils; and rooted in principles of recovery, hope, and empowerment. The success of peer support could be due to the informed perspective of people with a chronic illness, who are familiar with the "system"; the possibility of recovery is embedded among those helping one another.

Given the shortcomings in the social determinants of health for this population (income, housing, and food access), strategies to support self-management and prevention must be accessible, affordable, and practical. Mental health peer support workers know and understand this reality and have experience in supporting people to improve their health and quality of life under difficult circumstances. Mental health peer support organizations operate across Canada in a wide variety of formats including[174]:

- unfunded self-help meetings, drop-in peer support and social recreational programs
- consumer councils of general and psychiatric hospitals
- alternative businesses, or social purpose enterprises
- survivor-operated and survivor-delivered mental health services
- academic research and evaluation units and groups
- housing, crisis supports, and warmlines
- training programs; recovery, leadership skills
- political/legal advocacy and lobbying groups
- historical remembrance and recognition projects and activities
- peer support training programs and worker associations
- local, provincial, national, and international networks
- arts and cultural activity groups
- specialized peer support (e.g., those who have experienced trauma or substance abuse)

The evidence base for the effectiveness of general peer-run initiatives in mental health populations includes reductions in hospitalization and symptom distress, as well as improvements in social support and quality of life[175]. There is a need for more sophisticated analyses of nutrition-related peer-led interventions that recognize the diversity of approaches (e.g., different style of peer leading) and their suitability in different situations. Generally speaking, results on social, psychological, and behavioural outcomes are positive[176]. Dietitians offer skills and knowledge that can be accessed by peer-led programs related to nutrition such as food skills training, breastfeeding support, community kitchens, and school-based nutrition education.

4.1.4 Early Psychosis Intervention

Psychotic episodes are most commonly associated with conditions such as schizophrenia, schizophreniform disorder, bipolar disorder, and major depression (with psychotic features). Such conditions often arise in late adolescence or early adulthood and can decrease quality of life, shorten life expectancy, increase risk of other mental and physical health conditions, and forestall opportunities for educational, vocational, and social advancement[177]. Many health regions throughout

Canada have developed Early Psychosis Intervention (EPI) programs whose goals are to recognize the early signs and symptoms of psychosis so that effective treatment can be started as soon as possible.

EPI programs provides services and education intended to promote wellness, reduce socially isolating behaviour, and restore previous levels of functioning. Clinical services are offered for those who are experiencing their first psychotic episode, have a suspected psychosis, have a family history of psychotic disorder, or are experiencing a recent deterioration in ability to function. Some EPI programs have specific standards and guidelines that recognize the need for Registered Dietitians who, along with other health care providers, conduct a comprehensive physical examination upon program admission, and periodically as new circumstances dictate. Furthermore, these guidelines indicate that all consumers should be engaged in positive lifestyle activities, including those related to diet, exercise, good sleep hygiene, and substance use reduction[177].

4.1.5 Chronic Condition Self Management

Chronic Condition Management (CCM) is an approach to health care that emphasizes helping individuals to maintain their independence and stay as healthy as possible through prevention, early detection, and management of chronic conditions. Chronic Condition Self-Management (CCSM) is the CCM process in which the consumer engages[178]. In a given year, the person with a chronic condition visits his family physician and specialist for 1 hour each, and allied health professionals (e.g., physiotherapist, occupational therapist, dietitian) for 10 hours, managing alone for the remaining 8,748 hours[179].

The three main models of CCSM[180] are the Stanford Model, the Expert Patients Programme, and the Flinders Model. The Stanford Model uses peer educators to build self-efficacy, which is beneficial to all people with mental health conditions. The model holds that people with chronic disease have similar concerns and, with specific skills and training, can effectively manage some aspects of their conditions (e.g., a Stanford Model program delivering a series of workshops where techniques are taught for dealing with various facets of chronic disease, such as exercise, medication use, improving communication with family and friends, nutrition, reducing stress, as well as ways to evaluate doctor-recommended treatments). The Expert Patients Programme promotes knowledge by teaching skills necessary for people to effectively manage their chronic conditions, with support from physician team members. The Flinders Model emphasizes the role that health professionals play in building self-efficacy and actively engages people by using principles of cognitive behavioural therapy (CBT) during interactions. In each approach, the person is empowered with the skills and confidence necessary to manage aspects of their mental health condition, in collaboration with their health care provider.

Bounce Back is a Canadian CCSM, evidence-based program of the Canadian Mental Health Association designed to help adults experiencing symptoms of mild to moderate depression, low mood, or stress, with or without anxiety. Bounce Back offers help through a DVD (available in English, Mandarin, and Cantonese) providing practical tips on how to recognize and deal with depressive symptoms and/or a workbook with telephone coaching (available in English and Cantonese). Community coaches with Bounce Back assist in teaching problem-solving and other skills to overcome difficulties such as inactivity, unhelpful thinking, and avoidance. CCSM programs such as these can include sound nutritional advice and coaching to help manage mental health symptoms.

4.2 Therapeutic Approaches in Nutrition Care

The goals of dietitians working in mental health are to positively affect the stress circuitry in the brain and to optimize nutritional health. The following approaches can be used by dietitians, highlighting their specialized knowledge and skills.

4.2.1 Transtheoretical Model of Change

The transtheoretical model (TM) or stages of change model has been used to alter addictive behaviours. TM describes behaviour change as a process in which the individual progresses through six distinct stages of change: precontemplation, contemplation, preparation, action, maintenance, and relapse[181]. TM is used to determine an individual's stage and apply appropriate change processes.

4.2.2 Mindful-Based Eating Awareness

Mindful eating has been incorporated into nutrition counselling as an alternative to prescriptive meal plans. Mindful eating is based on the premise that people who misuse food are not experiencing the sensual pleasure of food and do not understand hunger or satiety cues. As a result, a compulsive pattern of eating can occur. Mindful eating counselling comprises three elements: provide eating experiences, direct attention to the act of eating, and witness without judgment or goals the emotional and physical responses that resulted before, during, or after the eating experience[182]. Mindfulness-based eating awareness training[183] (MB-EAT) was developed to treat binge eating disorder and is based on the Mindfulness-Based Stress Reduction (MBSR) program[184]. It is conducted as a nine-session group intervention and includes several types of mindfulness and meditation exercises to promote awareness and acceptance of bodily sensations, including hunger and satiety cues. Other exercises involve mindful eating of foods that are typically included in binges (e.g., cookies), and focusing on eating behaviours, emotions, and the textures and tastes of the foods eaten. Mini-meditations, in which participants learn to stop for a few moments at key times during the day to practise nonjudgmental awareness of thoughts and feelings, are also taught. The efficacy of MB-EAT has been supported in an uncontrolled trial[183]. Mindfulness-based cognitive therapy (MBCT) derived from MBSR has been applied to binge eating[185]. Mindful eating may be of benefit to populations with mental health conditions (i.e., food may provide a means to deal with negative emotions, cravings, and aversions) and has been used in individual and group counselling for weight loss, disordered eating, and concurrent eating and substance use disorders. One case study of mindful eating to treat food restriction in anorexia showed a decline in restriction, BMI increase from 17.9 to 19.5, and increased daily caloric intake by about 1,500[186]. A randomized controlled trial with 46 women with substance use disorder compared mindful awareness in body-oriented therapy (MABT; combines manual and mind-body approaches; eight weekly sessions) with treatment as usual (TAU), showing improved eating disorder symptoms and bodily dissociation with MABT at the nine-month follow-up[187]. A systematic review of eight studies including mindfulness in eating disorder treatment also showed supportive evidence[188]. Following 16 weeks of group MABT, 38 individuals with concurrent binge eating and substance abuse disorders significantly improved in measures of binge-eating episodes, disordered eating, alcohol and drug addiction severity, and depression[189].

4.2.3 Motivational Interviewing

Motivational interviewing is a counselling method that focuses on exploring and resolving ambivalence about behaviour change, with techniques intended to increase intrinsic motivation so that consumers can express the rationale for making changes. Persuasion and support are key elements[190].

Motivational interviewing has been applied in nutritional interventions for mental health consumers and has been shown to support behaviour change[191-192]. Jones et al.[193] used motivational interviewing to enhance cognitive behavioural therapy for a group of people with bipolar disorder and found that the combination led to a decrease in substance use, sustained at the six-month follow-up. A systematic review and meta-analysis of 12 randomized control trials examining motivational interviewing and weight loss in people who were overweight or obese[194] concluded that motivational interviewing enhanced weight loss. Comparison of motivational interviewing and behavioural intervention with behavioural intervention alone was significant, compared with motivational interviewing versus minimal intervention. Motivational interviewing seems to increase adherence to behavioural intervention. Since many psychiatric medications have weight implications, further studies on weight-management programs using motivational interviewing are needed.

4.2.4 Cognitive Behaviour Therapy

As the name suggests, in cognitive behaviour therapy (CBT) the focus is on the way people think ("cognitive") and act ("behavioural"). The concept behind CBT is that thoughts about a situation affect how a person feels (emotionally and physically) and how they behave in that situation. Humans give meaning to events around them, and two people can apply two very different meanings to the same event.

CBT has been used for a variety of mental health problems, including depression and anxiety, and smoking cessation programs to prevent weight gain. It is also used for people with eating disorders, with the strongest evidence of its efficacy being for bulimia nervosa and binge eating disorders[195-199]. For example, Shelley-Ummenhofer and MacMillan[195] examined a dietitian-administered CBT program in a population of obese women who met the criteria for binge eating as defined by DSM-IV-TR. The results reported a statistically significant decrease in binge eating and depression and an overall improved body image among the participants. This study suggests that dietitians can be effective at facilitating change in binge-eating behaviours by using a CBT approach. A systematic review of interventions targeting post-smoking cessation weight gain found no evidence that CBT reduced post-cessation weight gain[200]. However, there was considerable heterogeneity which can impact findings of association.

4.2.5 Dialectical Behaviour Therapy

Dialectical behaviour therapy (DBT)[201] was designed to help people who considered or attempted suicide, and those with personality disorders. People with eating disorders often have personality disorders and suicidal thoughts, so DBT has been adapted for application to bulimia and binge eating disorder[202;203].

DBT is a form of CBT, aimed to help people learn how to change their behaviour. DBT includes both individual and group sessions where the person learns and practises new skills. For example, the therapist may show the person how to deal with conflict rather than avoiding it, and the client can practise the new skill by role-playing a difficult situation with another member of the group. Skills particularly important for nutritional management are emotion regulation and distress intolerance. DBT for

eating disorders consists of regular sessions in group and individual formats. Rationale for this approach is based on the emotion regulation model[204], which suggests that binge eating functions to reduce aversive emotional states, temporarily reducing distress and thus negatively reinforced. This version of DBT is designed to improve participants' abilities to manage negative affect adaptively and includes training in mindfulness, emotion regulation, distress tolerance, and behavioural chain analysis skills, all applied to binge-eating episodes. The mindfulness skills are taught to counteract the tendency to use binge eating to avoid awareness of negative emotional states. That is, participants learn to observe their emotions without trying to escape them and without self-criticism for having these experiences. This state of mindful awareness facilitates adaptive choices about emotion regulation and distress-tolerance skills for use in place of binge eating. Clinical trials provide strong support for this adaptation of DBT[203;205]. A feasibility study of group-based DBT for binge eating, conducted at an community clinic with women aged 24–49 with sub- or full-threshold binge eating disorder or bulimia nervosa, showed significant improvement in both binge eating and secondary outcomes with the Eating Disorder Inventory subscales of Bulimia, Ineffectiveness, Perfectionism, and Interpersonal Distrust[206].

4.2.8 Emotional Brain Training and Solution-Focused Therapy

Emotional brain training (EBT) was developed to treat emotional overeating. It is based on the premise that the drive to overeat and over-restrict food is promoted by stress, so the first step in overcoming eating disorders is to learn emotional processing tools so that the daily stress of life eases. The next step is to re-encode the circuits that trigger strong emotional drives to overeat or over-restrict food. The goal of EBT is to move up the brain's emotional set point to a state of balance and reward, which includes authenticity, vibrancy, integrity, intimacy, spirituality, and freedom[207]. Currently there is little empirical research about EBT's effectiveness; funded studies are in progress.

Solution-focused brief therapy (SFBT), also called solution-focused therapy and solution-building practice therapy, was developed in the late 1970s. SFBT is goal directed, and focuses on solutions rather than on the problems that prompted consumers to seek therapy. The SFBT approach assumes that all consumers have some knowledge of what would make their life better, even though they may need help describing the details of their better life. All therapy is a form of specialized conversations. With SFBT, the conversation is directed toward developing and achieving the person's vision of solutions. Techniques that help clarify those solutions and the means of achieving them include looking for previous solutions, exceptions (e.g., "What is different about the times when this is less of a problem?"), present- and future-focused questions, and compliments (e.g., validating what clients are already doing well). In the United Kingdom, Jacob[208] has written about the use of SFBT for eating disorders.

4.2.7 Cognitive Adaptive Training

Cognitive adaptive training (CAT) is a compensatory approach designed to work around cognitive deficits by creating external systems in the person's natural environment to support improved functioning. In recent years, the systematic use of compensatory strategies has been applied to individuals with schizophrenia. CAT is a treatment based on the principle that impairments in executive function (i.e., the ability to plan and carry out goal-directed activity) in schizophrenia lead to one of three behavioural styles: 1) apathy; 2) disinhibition; or 3) a combination

of apathy and disinhibition[209]. The mixed behavioural style is characterized by trouble both initiating behaviour and becoming easily distracted during task behaviour, thus undercutting completion of functionally relevant tasks (e.g., preparing meals). Apathy may be treated by providing individuals with cues in the environment that prompt them to begin each step in a sequenced task. For example, environmental supports may include placing signs and tools for daily activities directly in front of the person (e.g., placing a bowl and spoon on a table), checklists with tasks broken down into specific steps, and electronic devices to provide auditory prompts. People with disinhibited behaviour benefit from the removal of distracting stimuli and the reorganization of their environment. For example, rather than having a cupboard full of food choices, an intervention might include separating foods by types into bins labelled with each day of the week and removing foods that are not used. For people with mixed behaviour deficits, a combination of interventions that cue initiation and prevent distraction is offered (e.g., placing individual food bins on a kitchen counter). The use of CAT has been documented in a case study[210] of a woman with schizophrenia, poorly controlled Type I diabetes, and limited funds ("Ms.L"). Ms. L. attended an adult day treatment program where she received two nutritious meals and two snacks daily. Her food record showed that her diet consisted mostly of high-carbohydrate items. She received education about food choices using the nutritional guidelines for diabetes, including cultural consideration of Ms. L's Hispanic dietary preferences. Together, the therapist and Ms. L. developed nutritious meal plans, and practised shopping at her local grocery store using a shopping list. To supplement grocery purchases, monthly visits were made to a food bank and vegetables (e.g., tomatoes, green beans, squash) were planted in pots on her apartment balcony, with reminder signs to water the plants. The produce of these plants was harvested during weekly visits until Ms. L began to pick the produce on her own. Ms. L's grandmother, who typically prepared high-carbohydrate foods for visits, also received education regarding favourite foods. These interventions resulted in weight loss (15 lb) and one diabetes medication discontinued.

4.2.8 Acceptance and Commitment Therapy

While cognitive-behavioural therapy, interpersonal therapy, and dialectical behaviour therapy treatment approaches for eating disorders are effective, some do not respond to these interventions, suggesting that alternatives are needed. Acceptance and commitment therapy (ACT)[211] is based on an experiential avoidance model, which suggests that many forms of disordered behaviour are related to attempts to avoid or escape aversive internal experiences. ACT emphasizes nonjudgmental acceptance of thoughts and feelings while changing overt behaviour to work toward valued goals and life directions. A case study[212] and self-help manual[213] describe the application of ACT to anorexia nervosa. The intervention includes several mindfulness- and acceptance-based strategies for working with fat-related thoughts, images, and fears. For example, the thought parade is a mindfulness exercise in which the participant imagines that their thoughts are written on cards carried by marchers in the parade. Their task is to observe the parade of thoughts, such as "I'm a whale," as they come and go, without becoming absorbed in them, believing them, or acting on them. This exercise encourages the nonjudgmental observation of cognitions, rather than engaging in anorexic behaviours in reaction to such thoughts. This exercise encourages the ability to allow negative thoughts to be present without acting on them, and while maintaining movement in valued directions.

As adequate nutrition generally is required to maintain the energy to move in these directions (e.g., being a good friend or doing good work), an important feature of the intervention is the clarification of the person's most important values. A randomized controlled trial that compared standard CBT with ACT showed that the two treatments were differentially effective at reducing eating pathology. CBT produced modest decreases in eating pathology whereas ACT produced large decreases. In addition, ACT appeared to be more effective than CBT at increasing clinician-rated global functioning among those with eating pathology. These findings suggest that ACT is a useful treatment for disordered eating and potentially useful for clinical eating disorders[214].

4.2.9 Applied Behavioural Analysis

Applied behavioural analysis (ABA) is a general term that describes the extension of operant (focus on observable behaviour in individuals) methods to the modification of behaviour. There are several different behavioural treatments and the major differences between programs are based on specific behaviours targeted for intervention. Behavioural treatments focus on observable, measurable actions of the individual. It is assumed that behaviours are influenced by the environment and change is accomplished by manipulation of that environment. ABA principles are referred to as the ABC's: A = **A**ntecedents, events that happen before the behaviour occurs; B = **B**ehaviour, the specific way a person acts; and C = **C**onsequences, events that happen immediately following the behaviour. As part of the assessment, a functional equivalent of a problem behaviour or an alternative, acceptable behaviour is determined and intervention focuses on teaching the functional equivalent (appropriate skill) to replace the problem behaviour, changing the antecedents of the problem behaviour, and changing the consequences of the problem behaviour[215].

Techniques used in ABA include task analysis, in which a task is analyzed into its component parts so that those parts can be taught through the use of chaining. With chaining, the skill to be learned is broken down into the smallest units for easy learning (e.g., a child learning to brush their teeth independently may start with learning to unscrew the toothpaste cap; once learned, the next step may be squeezing the tube, and so on). Prompting, combined with chaining, provides assistance to encourage the desired response. Prompts can include verbal cues (e.g., "Take the toothpaste cap off, Bobby"), visual cues (e.g., point at the toothpaste), physical guidance (e.g., move the hands to unscrew the lid), and demonstration (e.g., take the cap off to show how it is done). Prompts are gradually faded out as the new behaviour is learned. Shaping involves gradually modifying the existing behaviour into the desired behaviour and may be paired with reinforcement. Difficult tasks may be reinforced heavily whereas easy tasks may be reinforced more lightly. Studies of ABA for feeding problems have mainly been done in individuals with autism and results suggest that this technique can be applied successfully, particularly when care providers are included[216;217].

4.3 Challenges of Nutrition and Mental Health Care

Throughout this section, different models of mental health care were outlined and the role of the dietitian within these services discussed. In addition, some of the specialized approaches used by dietitians in mental health care were highlighted. While there has been no formal review of dietitian services in mental health care, it is largely believed that current staffing levels are inadequate. Generally speaking, access to dietetics services by the community, individuals, and

groups varies widely across Canada due to two factors: inadequate numbers of Registered Dietitians for community needs and lack of population needs-based funding mechanisms to support access to nutrition services[171]. It is estimated that approximately 800 Dietitians of Canada members (16% of the total membership) work in a mental health care capacity. In one instance, the staff-to-consumer ratio was reported to be one full-time dietitian for 325 inpatients and nearly 1000 outpatients. Dietitians who work in community facilities report as little as four hours of work per month for 25 residents. Based on existing models of primary health care, it is believed that having one dietitian for every ten medical doctors, or fewer, would enable the dietitian to provide primarily clinical services, with follow-up of a person's status; complete some health promotion activities; and keep waiting lists to less than one month[218]. Dietitians also face the challenge of access to technology and health information on the Internet. Nutrition information may be questionable and inaccurate[219] but may be accepted by the individual who has a mental health condition and seeking answers. This further highlights the need to ensure that mental health consumers have access to credible and individualized dietetic services.

5. Moving Forward

"One of the principles enshrined in the Canadian Collaborative Mental Health Charter, endorsed by Dietitians of Canada, is 'All Canadians have the right to health services that promote a healthy, mind, body and spirit.' Dietitians of Canada has been front and centre, keeping us mindful of this important unity."

Scott Dudgeon, Former Executive Director, and
Dr. Nick Kates, Former Chair,
Canadian Collaborative Mental Health Initiative[220]

The intent of this document is to describe the intersections that exist between the nutrition and mental health care. This final section describes how the skills of Registered Dietitians are applied to mental heath care. In addition, the limitations that exist between mental health and dietetic practice are profiled and recommendations for promoting integration and collaboration among these disciplines are provided.

5.1 Registered Dietitians in Mental Health Care: Qualified and Cost-Effective

Registered Dietitians are licensed health professionals who have special training and practice in many areas of human nutrition. Their skills can be applied to all aspects of mental health, including health promotion, disease prevention, treatment, and rehabilitation. From their education in the science and management of nutrition, and practices based on evidence-based decision making and national

standards, the Registered Dietitian can assess clinical, biochemical, and anthropometric measures, dietary concerns, and feeding skills, as well as understand the varied determinants of health acting on intervention plans. In particular, Registered Dietitians are uniquely qualified to work within the multidisplinary framework of mental health as their training provides the requisite:

- knowledge about the intersections between nutrition and mental health
- skills to develop, implement, and evaluate mental health strategies
- ability to apply clinical knowledge in the nutrition assessment and treatment of the various mental disorders, comorbid conditions, concurrent disorders, and dual diagnoses
- skills needed to adapt psychotherapeutic approaches to achieve individualized nutritional goals
- cultural competence to work with mental health populations with diverse needs
- ability to advocate for and develop relevant policy and practice-based research initiatives

Complex interactions between genes, lifestyle, diet and environment are increasingly demanding that Registered Dietitians become members of multidisciplinary teams in mental health care. Nutrition interventions, ranging from nutrition counselling by a Registered Dietitian with high-risk groups to population-wide interventions targeting healthy eating behaviours, have been demonstrated to improve health outcomes and be cost-effective[221]. While various examples of successful approaches used by Registered Dietitians have been detailed in best practices documents[222], nutrition services in mental health care are clearly lacking.

5.2 Nutrition and Mental Health Practice: Focus on the Future

The information presented in this document demonstrates how the disciplines of dietetics and mental health are interrelated including:

- The diversity of mental health populations requires skilled professionals who can provide culturally competent nutritional care.
- Psychotherapeutic approaches adapted to nutritional interventions in mental health require the unique skills of Registered Dietitians.

Various barriers currently limit the potential for dietitians to be fully integrated into collaborative mental health care. Despite the evidence that supports the need for dietitian services in mental health practice, the current supply of nutrition services does not meet the demand[610], largely due to a lack of appropriate financial resources. Other factors contributing to the inaccessibility of nutrition services include a lack of recognition of diet therapy in clinical practice guidelines for psychiatric care, limited mandates of home visiting programs that do not include mental health consumers, limited nutrition training and support being made available to paraprofessionals and peer workers by Registered Dietitians, and telehealth services that are not being used to their full potential.

5.3 Recommendations

Diet is a fundamental cornerstone of good mental health. Significant implications for dietetics practice include the understanding that an appropriate diet can augment healthy lifestyle interventions aimed at promoting mental health, a variety of medical nutrition interventions can be provided for those who have mental health conditions to optimize their quality of life, a need exists to develop more nutrition promotion and treatment services for key groups, and assurance is needed that primary and secondary care mental health services can routinely provide appropriate dietary intervention. From this knowledge, the following recommendations are made to guide enhanced integration of dietetics and mental health services:

1. Advocate for Nutrition and Mental Health in Practice

There is a need to advocate for nutritional interventions targeted at the requirements of mental health consumers using multiple approaches. Examples of strategies include food security initiatives, healthy-eating and weight-management education, food skills training (e.g., preparing, cooking, growing food), promoting nutrition literacy (e.g., develop easy-to-understand nutrition labelling of foods), and the development of nutrition and mental health–specific educational materials (e.g., diet strategies to prevent mental health problems, how to manage nutritional side effects of psychiatric medications, nutrition guidelines for specific conditions).

Support is needed to integrate dietitian services at all levels of mental health practice including treatment and rehabilitation. This can be facilitated by recognizing diet therapy as a cornerstone of mental health interventions in clinical practice guidelines and standards of care. Medical nutrition guidelines for mental health could include defining when a referral is needed to a Registered Dietitian such as weight issues, disordered eating behaviours, the presence of comorbid conditions that would benefit from a therapeutic diet, and suspected nutrient deficiencies. Adequate funding is needed to support nutrition programs and dietitian services. Monitoring and ongoing evaluation of nutrition services in mental health will ensure effectiveness and efficiency.

2. Developing Mental Health Competency and Training for Registered Dietitians

There is a need to develop and implement mental health content and/or field experience in undergraduate and graduate nutrition programs as well as in dietetic internships. In particular, training in adapted psychotherapeutic approaches (e.g., cognitive behaviour therapy, dialectical behaviour therapy, mindful eating approaches, motivational interviewing) and culturally competent care should be incorporated into dietetics education.

3. Program Planning and Collaboration

Mental health professionals and health care and human service providers are currently working with mental health consumers to improve their diet and could benefit from increased knowledge of nutrition related to mental health issues.

The participation of dietitians needs to be integrated into primary and specialty care teams and in vocation, education, and residential programs that serve this population throughout the life cycle. Rehabilitative services (e.g., prisons, group homes) should incorporate healthy eating/food policies so that residents and staff are encouraged to choose culturally diverse and appropriate meals, snacks, and drinks that promote mental and physical well-being.

Dietitians need to collaborate with other care providers to promote family-centred, interdisciplinary, coordinated care. Suggestions to facilitate this include having more community internships in

collaborative practice settings for dietitians-in-training and to include dietitians in multidisciplinary teams for mental health services. To enhance the accessibility of nutrition services, initiatives that include training of paraprofessionals and peer workers, availability of dietitian services in different sites such as drop-in centres, shelters, and transitional houses, and use of technology and telehealth need to be considered. Mental health service staff (e.g., mental health workers, psychiatric nurses) should have readily available access to Registered Dietitians for liaison and consultation.

4. Standards in Nutrition and Mental Health

Food and nutrition standards for mental health facilities and programs (e.g., community psychiatric homes, shelters, transitional houses, facilities for substance abuse recovery, food relief programs) and organizations that commission mental health services (e.g., non-profit associations) need to be established. Such standards need to define menu requirements and when referrals are needed for services of a Registered Dietitian. These standards should be incorporated into current performance assessment mechanisms to ensure their implementation.

5. Mental Health and Nutrition Research

More investigative work that examines the role of nutrition in mental health condition–based interventions is needed. Research that characterizes dietitians working in mental health (e.g., number of full-time equivalents per client base) would help determine and advocate for appropriate service levels. Cost-effectiveness studies that quantify how specific nutritional interventions in mental health practice are economically beneficial are also informative. Investigations using large population databases that can examine new research questions about the role of nutrition and mental health, particularly within the context of the health determinants, can help inform dietetics practice. Finally, the effectiveness of nutritional interventions for mental health consumers needs to be examined (e.g., lifestyle interventions that help manage weight for individuals taking atypical antipsychotics). In order for these investigations to move forward, adequate funds for nutrition and mental health research need to be provided to support investigation of the relationship between diet and mental health and facilitate ongoing, meaningful citizen and civil society involvement in planning nutrition and mental health research.

References

1. World Health Organization (WHO). Mental Health: A State of Well-Being. 2011. Geneva, WHO.
2. Lesage A, Vasiliadis HM, Gagné MA, Dudgeon S, Kasman N, and Hay C. Prevalence of Mental Illnesses and Related Service Utilization in Canada: An Analysis of the Canadian Community Health Survey. 2006. Mississauga, Canadian Collaborative Mental Health Initiative.
3. Canadian Mental Health Association, Ontario. Mental Health Promotion. 2006. Toronto, Canadian Mental Health Association.
4. Nazroo JY. Rethinking the relationship between ethnicity and mental health. Soc Psychiatry Psychiatr Epidemiol 1998;33(4):145-148.
5. Crawford MJ, de Jonge E, Freeman GK, Weaver T. Providing continuity of care for people with severe mental illness-a narrative review. Soc Psychiatry Psychiatr Epidemiol 2004;39:265-72.
6. Keown P, Mercer G, Scott J. Retrospective analysis of hospital episode statistics, involuntary admissions under the Mental Health Act 1983, and number of psychiatric beds in England 1996-2006. BMJ 2008;337:a1837.
7. Kendrick T, Burns T, Garland C, Greenwood N, Smith P. Are specialist mental health services being targeted on the most needy patients? The effects of setting up special services in general practice. Br J Gen Pract 2000;50:121-6.
8. O'Brien A, Fahmy R, Singh SP. Disengagement from mental health services A literature review. Soc Psychiatry Psychiatr Epidemiol 2009;44:558-68.
9. Goodman LA, Rosenberg SD, Mueser KT, Drake RE. Physical and sexual assault history in women with serious mental illness: prevalence, correlates, treatment, and future research directions. Schizophr Bull 1997;23:685-96.
10. Rosenberg SD, Lu W, Mueser KT, Jankowski MK, Cournos F. Correlates of adverse childhood events among adults with schizophrenia spectrum disorders. Psychiatr Serv 2007;58:245-53.
11. Saakvitne K, Gamble S, Pearlman S, Tabor Lev B. Risking connection: A training curriculum for working with survivors of childhood abuse. Brooklandville: Sidran Institute, 2000.
12. Substance Abuse & Mental Health Services Administration. Trauma-Informed Care and Trauma Services. Retrieved from: www.samhsa.gov/nctic/trauma.asp . 2012. SAMSA.
13. Rorty M, Yager J. Histories of childhood trauma and complex post-traumatic sequelae in women with eating disorders. Psychiatr Clin North Am 1996;19:773-91.
14. Wonderlich SA, Brewerton TD, Jocic Z, Dansky BS, Abbott DW. Relationship of childhood sexual abuse and eating disorders. J Am Acad Child Adol Psychiatry 1997;36:1107-15.
15. Rodriguez M, Perez V, Garcia Y. Impact of traumatic experiences and violent acts upon response to treatment of a sample of Colombian women with eating disorders. Int J Eat Dis 2005;37:299-306.
16. Herman J. Trauma and Recovery. New York: New York, 1997.
17. Tarasuk V. Discussion Paper on Household and Individual Food Security. 2001. Ottawa, Health Canada.
18. Hwang SW, Bugeja AL. Barriers to appropriate diabetes management among homeless people in Toronto. CMAJ 2000;163:161-5.
19. Che J, Chen J. Food insecurity in Canadian households. Health Reports, Health Statistics Division, Statistics Canada. 82-003-XPE, 11-22. 2001. Ottawa, Statistics Canada.
20. Cook JT. Clinical implications of food insecurity: definitions, monitoring and policy. Nutr Clin Care 2002;5:152-67.
21. Alaimo K. Food insecurity in the United States: An overview. Top Clin Nutr 2005;20:281-98.
22. Davison KM, Kaplan BJ. Food insecurity and psychological functioning in adults with mood disorders. (submitted). 2012.

23. Vozoris NT, Tarasuk VS. Household food insufficienty is associated with poorer health. J Nutr 2003;133:120-6.
24. Sorsdahl K, Slopen N, Siefert K, Seedat S, Stein DJ, Williams DR. Household food insufficiency and mental health in South Africa. J Epidemiol Community Health 2011;65:426-31.
25. Gsisaru N, Kaufman R, Mirsky J, Witztum E. Food insecurity and mental health: a pilot study of patients in a psychiatric emergency unit in Israel. Community Ment Health 2011;47:513-9.
26. Provincial Health Officer's Annual Report. Food, health and wellbeing in British Columbia. 2005. Victoria, British Columbia Ministry of Health, Office of the Provincial Health Officer.
27. Kirkpatrick S, Tarasuk V. The relationship between low income and household food expenditure patterns in Canada. J Nutr 2003;6:589-97.
28. Health Canada. Natural Health Products. Retrieved from: www.hc-sc.gc.ca/dhp-mps/prodnatur/index-eng.php. 2011. Health Canada.
29. Wahlstrom M, Sihvo S, Haukkala A, Kiviruusu O, Pirkola S, Isometsa E. Use of mental health services and complementary and alternative medicine in persons with common mental disorders. Acta Psychiatr Scand 2008;118:73-80.
30. Barnes PM, Powell-Griner E, MFann K, and Nahin RL. Complementary and alternative medicine use among adults: United States, 2002. Advance data from vital and health statistics 2004. 343. 2004. Hyattsville, Maryland, National Center for Health Statistics.
31. Unutzer J, Klap R, Sturm R, Young AS, Marmon T, Shatkin J. Mental disorders and the use of alternative medicine: results from a national survey. Am J Psychiatry 2000;157:1851-7.
32. Kessler RC, Soukup J, Davis RB, Foster DF, Wilkey SA, Van Rompay MI. The use of complementary and alternative therapies to treat anxiety and depression in the United States. Am J Psychiatry 2001;158:289-94.
33. Wang J, Patten S, Russell M. Alternative medicine use by individuals with major depression. Can J Psychiatry 2001;46:528-33.
34. Assion HJ, Zarouchas S, Multamaki J, Zolotova S, Schroder SG. Patients' use of alternative methods parallel to psychiatric therapy: does the migrational background matter. Acta Psychiatr Scand 2007;116:220-5.
35. Pellegrini N, Ruggeri M. The diffusion and the reason for the use of complementary and alternative medicine among users of mental health services: a systematic review of literature. Epidemiologia E Psichiatria Sociale 2007;16:35-49.
36. Lipowski ZJ. Somatization: the concept and its clinical applications. Am J Psychiatry 1988;145:1358-68.
37. Astin JA. Why patients use alternative medicine: results of a national study. JAMA 1998;279:1548-53.
38. Martin TG. Serotonin syndrome. Ann Emerg Med 1996;28:520-6.
39. Obach RS. Inhibition of human cytochrome P450 enzumes by constituents of St John's wort, an herbal preparation used in the treatment of depression. J Pharmacol Exp Ther 2000;68:88-95.
40. Markowitz JS, Carson WH, Jackson CW. Possible dihydroepiandrosterone-induced mania. Biol Psychiatry 1999;45:241-2.
41. Johnson MD, Bebb RA, Sirrs SM. Uses of DHEA in aging and other disease states. Ageing Research Reviews 2002;1:29-41.
42. Ulbricht C, Chao W, Costa D, Rusie-Seamon E, Weissner W, Woods J. Clinical evidence of herb-drug interactions: a systematic review by the Natural Standard Research Collaboration. Curr Drug Metab 2008;9:1063-120.
43. Lam RW. Sleep disturbances and depression: a challenge for antidepressants. Int Clin Psychopharmacol 2006;21:S25-S29.
44. Sonnenberg J, Luine VN, Krey LC, Christakos S. 1,25-Dihydroxyvitamin D_3 treatment results in increased choline acetyltransferase activity in specific brain nuclei. Endocrinology 1986;118:1433-9.

45. Sarris J, Kavanagh DJ, Byrne G. Adjuvant use of nutritional and herbal medicines with antidepressants, mood stabilizers and benzodiazepines. J Psychi Res 2010;44:32-41.

46. Sarris J, Kavanagh DJ, Byrne G. Adjuvant use of nutritional herbal medicines with antidepressants, mood stabilizers and benzodiazepines. J Psychiatr Res 2010;44:32-41.

47. Sarris J, Mischoulon D, Schweitzer I. Adjunctive nutraceuticals with standard pharmacotherapies in bipolar disorder: a systematic review of clinical trials. Bipolar Disord 2011;13:454-65.

48. Kaplan BJ, Simpson JSA, Ferre RC, Gorman C, McMullen D, Crawford SG. Effective mood stabilization in bipolar disorders with a chelated mineral supplement. J Clin Psychiatry 2001;62:936-44.

49. Davison KM. Determinants of Food Intake in Individuals with Mood Disorders. January 2010. University of Calgary.

50. Angst J, Gamma A, Gastpar M, Lepine JP, Mendlewicz J, Tylee A. Gender differences in depression. Epidemiological findings from the European DEPRES I and II studies. Eur Arch Psychiatry Clin Neurosci 2002;252:201-9.

51. Bebbington PE, Dunn G, Jenkins R, Lewis G, Brugha T, Farrell M. The influence of age and sex on teh prevalence of depressive conditions: Report from the National Survey of Psychiatric Morbidity. Psychol Med 1998;28:9-19.

52. Kuehner C. Gender differences in unipolar depression: An update of epidemiological findings and possible explanations. Acta Psychiatr Scand 2003;108:163-74.

53. Romans SE, Tyas J, Cohen MM, Silverstone T. Gender differences in the symptoms of major depressive disorder. J Nerv Ment Dis 2007;195:905-11.

54. Eaton NR, Krueger RF, Keyes KM, Hasin DS, Balsis S, Skodol AE et al. An invariant dimensional liability model of gender differences in mental disorder prevalence: evidence from a national sample. J Abnorm Psychol 2011;121:282-8.

55. Dawson KA, Schneider MA, Fletcher PC, Bryden PJ. Examining gender differences in the health behaviors of Canadian university students. Perspect Public Health2007;127:38-44.

56. Denton M, Prus S, Walters V. Gender differences in health: a Canadian study of the psychosocial, structural and behavioural determinants of health. Soc Sci Med 2004;58:2585-600.

57. Bates CJ, Prentice A, Finch S. Gender differences in food and nutrient intakes and status indices from the National Diet and Nutrition Survey of people aged 65 years and over. Eur J Clin Nutr 1999;53:694-9.

58. Virani AS, Bezchlibnyk-Butler KZ, Jeffries JJ, Procyshyn RM. Clinical Handbook of Psychotropic Drugs 19th Revised Edition. Toronto: Hogrefe Publishing, 2012.

59. Kuhlmann J, Berger W, Podzuweit H, Schmidt U. The influence of valerian treatment on "reaction time, alertness, and concentration" in volunteers. Pharmacopsychiatry 1999;32:235-41.

60. Gerhard U, Linnenbrink N, Georghiadou C, Hobi V. Vigilanzmindernde Effekte zweier pfazlicher Schlafmittel (Effects of two plant-based sleep remedies on vigilance). Schweiz Rundsch Med Prax 1996;85:473-81.

61. Kohnen R, Oswald WD. The effects of valerian, propranolol, and their combination on activation, performance, and mood of healthy volunteers under social stress conditions. Pharmacopsychiatry 1988;21:447-8.

62. Leathwood PD, Chaufard F. Aqueous extract of valerian reduces latency to fall asleep in man. Planta Med 1985;2:144-8.

63. Gearhardt AN, Corbin WR, Brownell KD. Food addiction: An examination of the diagnostic criteria for dependence. J Addict Med 2009;3:1-7.

64. Gearhardt AN, Corbin WR, Brownell KD. Preliminary validation of the Yale Food Addiction Scale. Appetite 2009;52:430-6.

65. Hwang SW. Homelessness and health. CMAJ 2001;164:229-33.

66. Mental Health Commission of Canada. Toward Recovery and Well Being: A Framework for a Mental Health Strategy for Canada. 2009. Calgary, Mental Health Commission of Canada.

67. Waddell C, McEwan K, Hua J, and Shepherd CA. Child and youth mental health: Population health and clinical service considerations. 2002. Vancouver, Mheccu.

68. Adi Y. Systematic Review of the Effectiveness of Interventions to Promote Mental Wellbeing in Children in Primary Education: Report 1: Universal Approaches Which Do Not Focus on Violence or Bullying. 2007. London, National Institute of Health and Clinical Excellence.

69. Horowitz JL, Garber J. The Prevention of Depressive Symptoms in Children and Adolescents: A Meta-Analytic Review," . J Cons Clin Psychol 2006;74:401-15.

70. Peters RD. The Better Beginnings, Better Futures Project: A Universal, Comprehensive, Community-Based Prevention Approach for Primary School Children and Their Families. J Clin Child Adolesc Psychol 2003;32:215-27.

71. Waddell C. Preventing Mental Disorders in Children: A Systematic Review to Inform Policy-Making. Can J Public Health 2007;98:166-73.

72. Karoly LA. Working Paper: Toward Standardization of Benefit-Cost Analyses of Early Childhood Interventions. 2010. Santa Monica, RAND Corporation.

73. Jeste D, Alexopoulos G, Bartels S, Cummings J, Gallo J, Gottlieb J. Consensus statement on the upcoming crisis in geriatric mental health research agenda for the nest two decade. Arch Gen Psychiatry 1999;56:848-53.

74. Jeste DV, Caligiuri MP, Paulsen JS, Heaton RK, Lacro JP, Harris MJ et al. Risk of tardive dyskinesia in older patients. A prospective longitudinal study of 266 outpatients. Arch Gen Psychiatry 1995;52:756-65.

75. Casey DA, Rodriguez M, Northcott C, Vickar G, Shihabuddin L. Schizophrenia: medical illness, mortality, and aging. Int J Psychiatry Med 2011;41:245-51.

76. Keller HH, Haresign H, Brockest B. Process evaluation of bringing nutrition screening to seniors in Canada (BNSS). Can J Diet Pract Res 2007;68:86-91.

77. Romanow RJ. Building on values: the future of health care in Canada - Final Report. 2002. Ottawa, Health Canada.

78. Canadian Mental Health Association, Ontario. The relationship between mental health, mental illness and chronic physical conditions. 2008. Toronto, Canadian Mental Health Association.

79. Dixon L, Postrado L, Delahanty J, Fischer PJ, Lehman A. The association of medical comorbidity in schizophrenia with poor physical and mental health. J Nerv Ment Dis 1999;187:496-502.

80. National Center for Health Statistics. Fast stats A to Z. National Center for Health Statistics. 2004.

81. Lasser K, Boyd JW, Wollhandler S, Himmelstein DU, McCormick D, Bor DH. Smoking and mental illness: A population-based prevalence study. JAMA 2000;284:2606-10.

82. Rosenberg SD, Goodman LA, Osher FC, Swartz MS, Essock SM, Butterfield MI. Prevalence of HIV, hepatitis B, and hepatitis C in people with severe mental illness. Am J Public Health 2001;91:31-7.

83. Jones JM, Lawson ML, Daneman D, Olmsted MP, Rodin G. Eating disorders in adolescent females with and without type 1 diabetes: cross sectional study. BMJ 2001;320:1563-6.

84. Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes: a meta-analysis. Diabetes Care 2001;24:1069-78.

85. Lester H, Tritter JQ, Sorohan H. Managing crisis: the role of primary care for people with serious mental illness. Fam Med 2004;36:28-34.

86. Preston J, Johnson J. Clinical Psychopharmacology Made Ridiculously Simple. Miami: MedMaster Inc, 2000.

87. Voruganti LP,.Parker G. Diabetes and mental health: New frontiers, challenges and opportunities. Canadian Diabetes 2008;21:8-9.

88. McIntyre RS, Konarski JZ, Misener VL. Bipolar disorder and diabetes mellitus: epidemiology, etiology, and treatment implications. Ann Clin Psychiatry 2005;17:83-93.

89. Tang B, Byrne C, Friedlander R, McKibbin D, Riley M, Thibeault A. The other dual diagnosis: Developmental disability and mental health disorders. BCMJ 2008;50:319-24.

90. Byrne C, Hurley AD, and James R. Planning Guidelines for Mental Health and Addiction Services for Children, Youth, and Adults with Developmental Disability. 2007. Victoria, Ministry of Health.

91. Emerson E. Prevalence of psychiatric disorders in children and adolescents with and without disability. J Intellect Disabil Res 2003;47:51-8.

92. Smiley E. Epidemiology of mental health problems in adults with learning disability: An update. Advances in Psychiatric Treatment 2005;11:214-22.

93. Dykens EM. Measuring behavioral phenotypes: provocations from the "new genetics". Am J Ment Retard 1995;99:522-32.

94. Nyhan WL. Behavioral phenotypes in organic genetic disease. Pedr Res 1972;6:1-9.

95. DeLong R. Children with autistic spectrum disorder and a family history of affective disorder. Dev Med Child Neurol 1994;36:674-88.

96. Lainhard JE, Folstein SE. Affective disorders in people with autism; A review of published cases. J Autism Dev Disord 1994;24:587-601.

97. Streissguth A, Kanter J. The challenge of Fetal Alcohol Syndrome: Overcoming secondary disabilities. 1997. Seattle, WA, University of Washington Press.

98. Dykens EM, Rosener BA. Refining behavioral phenotypes: personality-motivation in Williams and Prader-Willi syndromes. Am J Ment Retard 1999;104:158-69.

99. Pary RJ, Levitas AS, Hurley AD. Diagnosis of bipolar disorder in persons with developmental disabilities. Mental Health Aspects of Developmental Disabilities 1999;2:37-49.

100. Charlot LR, Fox S, Friedlander R. Obsessional slowness in Down syndrome. J Intellect Disabil Res 2002;46:517-24.

101. Hagerman RJ. Neurodevelopmental Disorders, Diagnosis and Treatment. 1999. Oxford, Oxford University Press.

102. Amaraia RN, Lacey LB, Hagerman R. Medication use in Fragile X syndrome. Mental Health Aspects of Developmental Disabilities 2001;4:143-7.

103. Traci MA, Seekins T, Szalda-Petree A, Ravesloot C. Assessing secondary conditions among adults with developmental disabilities: a preliminary study. Ment Retard 2002;40:119-31.

104. Humphries K, Traci MA, Seekins T. Nutrition and adults with intellectual or developmental disabilities: systematic literature review results. Intellect Dev Disabil 2009;47:163-85.

105. Fleming RK, Stokes EA, Curtin C, Bandini LG, Gleason J, Scampini R. Behavioral health in developmental disabilities: a comprehensive program of nutrition, exercise, and weight reduction. Int J Behav Consult Ther 2008;4:287-96.

106. Dahl M, Sundelin C. Early feeding problems in an affluent society. 1. Categories and clinical signs. Acta Paediatric Scandinavia 1986;75:370-9.

107. Gardner WI. Aggression and other disruptive behavior challenges: Biomedical and psychosocial assessment and treatment. 2002. Kingston, NADD Press.

108. Williams KE, Field DG, Seiverling L. Food refusal in children: A review of the literature. Research in Developmental Disabilities 2010;31:625-33.

109. Hogan SE, Evers SE. A nutritional rehabilitation program for persons with severe physical and developmental disabilities. J Am Diet Assoc 1997;97:162-6.

110. Haring TG, Breen CG, Weiner J, Kennedy CH, Bednersh F. Using videotape modeling to facilitate generalized purchasing skills. J Behav Educ 1995;5:29-53.

111. Arnold-Reid GS, Schloss PJ, Alper S. Teaching meal planning to youth with mental retardation in a natural settings. Remedial Spec Educ 1997;18:166-73.

112. Lancioni GE, O'Reilly MF. Teaching food preparation skills to people with intellectual disabilities: a literature overview. J Appl Res Intellect 2002;15:236-53.

113. Sullivan WF, Berg JM, Bradley E, Cheetham T, Denton R, Heng J. Primary care of adults with developmental disabilities: Canadian consensus guidelines. Can Fam Physician 2011;57:541-53.

114. Bhaumik S, Watson JM, Thorp CF, Tyrer F, Mcgrother CW. Body mass index in adults with intellectual disability: distribution, associations and service implications: a population-based prevalence study. J Intellect Disabil Res 2008;52:287-98.

115. Heller T, Hsieh K, Rimmer JH. Attitudinal and psychosocial outcomes of a fitness and health education program on adults with Down syndrome. Am J Met Retard 2004;109:175-85.

116. Marks B, Sisirak J, Heller T. Health matters: the exercise, nutrition, and health education curriculum for people with developmental disabilities. Baltimore: Paul H. Brookes Publishing Co, 2010.

117. Hamilton S, Hankey CR, Miller S, Boyle S, Melville CA. A review of weight loss interventions for adults with intellectual disabilities. Obes Rev 2007;8:339-45.

118. Henderson CM, Robinson LM, Davidson PW, Haveman M, Janicki MP, Albertini G. Overweight status, obesity, and risk factors for coronary heart disease in adults with intellectual disability. J Policy Pract Intell Disabil 2008;5:174-7.

119. Canadian Institute for Health Information. Improving the Health of Canadians: Mental Health and Homelessness. Retrieved from: http://secure.cihi.ca/cihiweb/products/mental_health_report_aug22_2007_e.pdf. 2007. Canadian Institute for Health Information.

120. Gaetz S, Tarasuk V, Dackner N, Kirkpatrick S. "Managing" homeless youth in Toronto: Mismanaging food access and nutritional well-being. Can Rev Soc Policy 2006;58:1-19.

121. Cornell TA, Kuyper LM, Shoveller J, Hoggs RS, Li K, Spittal PM et al. Unstable housing, associated risk behaviour, and increased risk of HIV infection among injection drug users. Health Place 2006;12:79-85.

122. Lee BA, Greif MJ. Homelessness and Hunger. J Health Soc Behav 2008;49:3-19.

123. Tse C, Tarasuk V. Nutritional assessment of charitable meal programmes serving homeless people in Toronto. Public Health Nutrition 2008;11:1296-305.

124. Dematteo D, Major C, Block B, Coates R, Fearon M, Goldberg E et al. Toronto street youth and HIVAIDS: prevalence, demographics and risks. J.Adolesc.Health 1999;25:358-66.

125. Langnase K, Muller MJ. Nutrition and health in an adult urban homeless population in Germany. Public Health Nutrition 2001;4:805-11.

126. Gelberg L, Stein JA, Neumann CG. Determinants of undernutrition among homeless adults. Public Health Reports 1995;110:448-54.

127. Johnson LJ, McCool AC. Dietary intake and nutritional status of older adult homeless women: a pilot study. J Nutr Elder 2003;23:1-21.

128. Silliman K, Yamanoha MM, Morrissey AE. Evidence of nutritional risk in a population of homeless adults in rural Northern California. J Am Diet Assoc 1998;98:908-10.

129. Starkey LJ, Kuhnlein HV, Gray-Donald K. Food bank users: sociodemographic and nutritional characteristics. CMAJ 1998;158:1143.

130. Tarasuk V. Health implications of food insecurity. In Raphael D, ed. Social Determinants of Health: Canadian Perspectives, 2nd Edition, Toronto: Canadian Scholars' Press Inc, 2009.

131. Royal Commission on Aboriginal Peoples. Report of the Royal Commission on Aboriginal Peoples. Volume 3 - Gathering Strength. 1996. Ottawa, Minister of Supply & Services.

132. Royal Commission on Aboriginal Peoples. Volume 3: Gathering Strength. 1996. Ottawa, Minister of Supply and Services.

133. Government of Canada. Aboriginal mental health and well--being. In the human face of mental health and mental illness in Canada (Chapter12). 2006. Ottawa, Minister of Public Works and Government Services Canada.

134. Elton-Marshall T, Leatherdale ST, Burkhalter R. Tobacco, alcohol and illicit drug use among Aboriginal youth living off-reserve: results from the Youth Smoking Survey. CMAJ 2011;183:E480-E486.

135. Power EM. Conceptualizing food security for Aboriginal people in Canada. Can J Public Health 2008;99:95-7.

136. Statistics Canada. Canadian Community Health Survey - Nutrition (CCHS) - Cycle 2.2 (2004). www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=5049&lang=en&db=imdb&adm=8&dis=2. 3-3-2009. Statistics Canada.

137. Indigenous Food Systems Network. Indigenous Food Sovereignty. Retrieved from: www.indigenousfoodsystems.org/food-sovereignty. 2012.

138. Ontario Resource Group on Gambling, Ethnicity and Culture. A Guide for Counsellors Working with Problem Gambling Clients from Ethno-cultural Communities. 2010. Toronto, Ontario Resource Group on Gambling,Ethnicity and Culture.

139. Mental Health Commission of Canada. Improving mental health services for immigrant, refugee, ethno-cultural and racialized groups: Issues and options for service improvement. 2009. Calgary, Mental Health Commission of Canada.

140. Buscher L. Culturally Responsive Practice - Considerations for Dietitians. Dietitians of Canada Current Issues Newsletter September 2007.

141. Agic B. Health Promotion Programs on Mental Health/Illness and Addiction Issues in Ethno-racial/Cultural Communities: A Literature Review. 2003. Toronto, Centre for Addiction and Mental Health.

142. Institute of Medicine. The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding. 2011. Washington, The National Academies Press, 2011.

143. Meyer IH. Prejudice, social stress and mental health in lesbian, gay and bisexual populations: conceptual issues and research evidence. Psychol Bull 2003;129:674-97.

144. British Columbia Vital Statistics Agency. Selected vital statistics and health statusindicators 135th annual report 2006. Retrieved from: www.vs.gov.bc.ca/stats/annual/2006/index.html. 2006.

145. Vancouver Coastal Health. Fit or Fat Phobic? Trans people, weight and health. 2006. Vancouver, Vancouver Coastal Health.

146. Rainbow Health Ontario. LGBT Mental Health. 2011. Toronto, Rainbow Health Ontario.

147. Rothman EF, Exner D, Baughman A. The prevalence of sexual assault against people who identify as Gay, Lesbian or Bisexual in the United States: A systematic review. Trauma Violence Abuse 2012;12:55-66.

148. Kasten G. Food Choices Amongst Gay Men. 2009. University of British Columbia.

149. Elgar F, Pickett W. Substance use and risky behaviour. The Health of Canada's Young People: a mental health focus, Ottawa: Public Health Agency of Canada, 2012.

150. College of Physicians and Surgeons of Ontario (CPSO). Methadone Maintenance Guidelines. Retrieved from: www.cpso.on.ca/ uploadedFiles/ policies/ guidelines/ methadone/ Meth%20Guidelines%20_Oct07.pdf. 2005.

151. Health Canada. Best Practices Methadone Maintenance Treatment. www.hc-sc.gc.ca/ hc-ps/ alt_formats/ hecs-sesc/ pdf/ pubs/ adp-apd/ methadone-bp-mp/ methadone-bp-mp-eng.pdf. 2002.

152. Strega S, Casey L, Rutman D. Sex workers addressing treatment. Women's Health and Urban Life 2009;8:42-53.

153. Chandler R. Best Practices for British Columbia's Harm Reduction Supply Distribution Program. 2008. Vancouver, BC's Regional Health Authorities, BC Centre for Disease Control and Provincial Health Services Authority, the BC Ministry of Healthy Living and Sport, and First Nations and Inuit Health.

154. British Columbia Harm Reduction Strategies and Services. Harm Reduction Training Manual: A Manual for Frontline Staff Involved with Harm Reduction Strategies and Services. 2011. Vancouver, British Columbia Harm Reduction Strategies and Services.

155. Spencer C. Seeking solutions project: Best practices in harm reduction. 2004. Vancouver, Simon Fraser University, Gerontology Research Centre.

156. Samra J, Monk L. Working With the Client Who is Suicidal: A Tool for Adult Mental Health and Addiction Services. 2007. Vancouver, Simon Fraser University, Centre for Applied Research in Mental Health and Addiction.

157. Lewis MD, Hibbeln JR, Johnson JE, Lin YH, Hyun DY, Loewke JD. Suicide deaths of active-duty US military and omega-3 fatty-acid status: a case-control comparison. J Clin Psychiatry 2011;72:1585-90.

158. Zukier Z, Solomon JA, Hamadeh MJ. The Role of Nutrition in Mental Health. 2011. Toronto, Canadian Mental Health Association.

159. Corrections Services of Canada. Information on federal corrections came from a report titled Corrections and Conditional Release Statistical Overview - 2008. Retrieved from: www.securitepublique.gc.ca/res/cor/rep/2008-04-ccrso-eng.aspx#b6. 2008.

160. Somers JM, Cartar L, and Russo J. Corrections, Health and Human Services: Evidence Based Planning and Evaluation. 2008. Burnaby, Simon Fraser University, Faculty of Health Sciences.

161. Freudenberg N. Jails, prisons, and the health of urban populations: A review of the impact of the correctional system on community health. Journal of Urban Health 2001;78:214-35.

162. Sadler C, Huff M, Harrigan A. Faculty practice and health promotion in a community correctional facility. Holist Nurs Pract 2000;14:38-47.

163. Hammett TM. Making the case for health interventions in correctional facilities. J Urban Health 2001;78:236-40.

164. Shantz L, Kilty JM, Frigon S. Echoes of imprisonment: Women's experiences of "successful (re)integration". Can J Law Soc 2009;24:85-106.

165. Shaw M. The Release Study: Survey of Federally Sentenced Women in the Community. 1991. Ottawa, Supply and Service Canada.

166. Canadian Association of Occupational Therapists. CAOT Position Statement: Occupational therapy and Cultural Safety. 2011. Ottawa, Canadian Association of Occupational Therapists.

167. Casagrande SS, Dalcin A, McCarron P, Appel LJ, Gayles D, Hayes J. A nutritional intervention to reduce the calorie content of meals served at psychiatric rehabilitation programs. Community Ment Health J 2011;47:711-5.

168. Canadian Mental Health Association. Assertive Community Treatment. Retrieved from: www.ontario.cmha.ca/services_and_supports.asp?cID=23071. 2012.

169. Canadian Medical Association and Canadian Nurses Association. Working together: a joint CNA/CMA collaborative practice project, HIV-AIDS example [background paper]. 1996. Ottawa, Canadian Medical Association.

170. Vancouver Mental Health Services. Family Support and Involvement Plan for the Adult Mental Health Program in Vancouver. 2004. Vancouver, Vancouver Coastal Health.

171. Dietitians of Canada. The Role of the Registered Dietitian in Primary Health Care. 2001. Toronto, Dietitians of Canada.

172. American Dietetic Association. Cost-effectiveness of Medical Nutrition Therapy - Position of the American Dietetic Association. J Am Diet Assoc 1995;95:88-91.

173. O'Hagan M, Cyr D, McKee H, and Priest R. Making the Case for Peer Support: Report to the Peer Support Project Committee of the Mental Health Commission of Canada. 2010. Calgary, Mental Health Comission of Canada.

174. Canadian Mental Health Association. Peer Support. Retrieved from: www.diabetesandmentalhealth.ca/peer-support. 2011.

175. Canadian Mental Health Association, Ontario, Centre for Addiction and Mental Health, Ontario Federation of Community Mental Health and Addiction Programs, and Ontario Peer Development Initiative. Consumer/Survivor Initiatives: Impact, outcome, and effectiveness. 2005. Toronto, Federation of Community Mental Health and Addiction Programs.

176. Gibson S on behalf of the Food Standards Agency. Peer-led approaches to dietary change: report of the Food Standards Agency seminar held on 19 July 2006. Public Health Nutr 2007;10:980-8.

177. Ministry of Health Services. Standards and Guidelines for Early Psychosis Intervention (EPI) Programs. 2010. Victoria, Province of British Columbia.

178. Vancouver Coastal Health, Fraser Health, University of British Columbia, and BC Academic Health Council. Chronic Disease Self-Management Support: A Practical Approach to Working with People with Chronic Disease - Facilitator Guide. 2008. Vancouver, Vancouver Coastal Health.

179. Barlow J. Patient Contact with Health Professionals. 2003. London, Interdisciplinary Research Centre in Health, School of Health & Social Sciences, Coventry University.

180. Johnston S, Liddy C, Ives SM, Soto E. Literature Review on Chronic Disease Self-Management. 2008. Ottawa, The Champlain Local Health Integration Network.

181. Prochaska JO, DiClemente CC. Transtheoretical therapy: toward a more integrative model of change. Psychother Theory Res Pract 1982;20:161.

182. Bays JC. Mindful Eating: A Guide to Rediscovering a Healthy and Joyful Relationship with Food. Boston: Shambhala, 2009.

183. Kristeller JL, Hallett CB. An exploratory study of a meditation-based intervention for binge eating disorder. J Health Psychol 1999;4:357-63.

184. Kabat-Zinn J. Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness. New York: Delacorte, 1990.

185. Baer RA, Fischer S, Huss DB. Mindfulness-based cognitive therapy applied to binge eating: A case study. Cogn Behav Pract 2005;12:351-8.

186. Albers S. Using mindful eating to treat food restriction: a case study. Eat Disord 2011;19:97-107.

187. Price CJ, Wells EA, Donovan DM, Rue T. Mindful awareness in body-oriented therapy as an adjunct to women's substance use disorder treatment: A pilot feasibility study. J Subst Abuse Treat 2011.

188. Wanden-Berghe RG, Sanz-Valero J, Wanden-Berghe C. The application of mindfulness to eating disorders treatment: a systematic review. Eat Disord 2011;19:34-48.

189. Courbasson CM, Nishikawa Y., Shapira LB. Mindfulness-Action Based Cognitive Behavioral Therapy for concurrent Binge Eating Disorder and Substance Use Disorders. Eat Disord 2011;19:17-33.

190. Miller W, Rollnick S. Motivational Interviewing: Preparing People for Change. New York: Guildord Press, 2002.

191. Armstrong MJ, Mottershead TS, Sigal RJ, Campbell TS, Hemmelgarn BR. Motivational interviewing to improve weight loss in overweight and/or obese patients: a systematic review and meta-analysis of randomized controlled trails. Obes Rev 2011;12:709-23.

192. Methapatara W, Srisurapanont M. Pedometer walking plus motivational interviewing program for thai schizophrenic patients with obesity or overweight: A 12-week, randomized, controlled trial. Psych Clin Neurosci 2011;65:374-80.

193. Jones S, Barrowclough C, Allott R, Day C, Earnshaw P, Wilson I. Intergrated motivational interviewing and cognitive-behavioural therapy for bipolar disorder with comorbid substance use. Clin Psychol Psychother 2011;18:426-426.

194. Mitchell JA, Agras S, Crow S, Halmi K, Fairburn CG, Bryson S. Stepped care and cognitive-behavioral therapy for bulimia nervosa: randomised trail. Br J Psychiatry 2011;198:391-7.

195. Shelley-Ummenhofer J, MacMillian PD. Cognitive-behavioural treatment for women who binge eat. Can J Diet Pract Res 2007;68:139-42.

196. National Institute for Clinical Excellence (NICE). Eating disorders-core interventions in the treatment and management of anorexia nervosa, bulimia nervosa and related eating disorders. NICE Clinical Guidance No. 9. 2009. London, National Institute for Clinical Excellence.

197. Wilfley DE, Welch RR, Stein RI, Spurrell EB, Cohen LR, Saelens BE et al. A randomized comparison of group cognitive-behavioral therapy and group interpersonal psychotherapy for the treatment of overweight individuals with binge-eating disorder. Arch Gen Psychiatry 2002;9:713-21.

198. Wilson GT, Wilfley DE, Agras WS, Bryson SW. Pyschological treatment of binge eating disorder. Arch Gen Psychiatry 2010;67:94-101.

199. Linehan MM. Cognitive-behavioral treatment of borderline personality disorder. New York: Guilford Press, 1993.

200. Farley AC, Hajek P, Lycett D, Aveyard P. Interventions for preventing weight gain after smoking cessation. Cochrane Database Syst Rev 2012;1.

201. Safer DL, Telch CF, Agras WS. Dialectical behavior therapy adapted for bulimia: A case report. Int J Eat Diss 2001;30:101-6.

202. Telch CF, Agras WS, Linehan MM. Dialectical behavior therapy for binge eating disorder. J Consult Clin Psychol 2001;69:1061-5.

203. Wiser S, Telch CF. Dialectical behavior therapy for binge eating disorder. J Clin Psychol 1999;55:755-68.

204. Safer DL, Telch CF, Agras WS. Dialectical behavior therapy for bulimia nervosa. Am J Psychiatry 2001;158:632-4.

205. Klein AS, Skinner JB, Hawley KM. Adapted Group-Based Dialectical Behaviour Therapy for Binge Eating in a Practicing Clinic: Clinical Outcomes and Attrition. Eur Eat Disord Rev. 2012;in press.

206. Institute for Health Solutions. Emotional Brain Training. Retrieved from: www.ebt.org. 2012.

207. Jacob F. Solution-Focused Recovery from Eating Distress. London: BT Press, 2001.

208. Velligan DI, Diamond PM, Mintz J, Maples N, Li X, Zeber J. The use of individually tailored environmental supports to improve medication adherence and outcomes in schizophrenia. Schizophr Bull 2008;34:483-93.

209. Draper ML, Stutes DS, Maples NJ, Velligan DI. Cognitive Adaptation Training for Outpatients With Schizophrenia. J Clin Psychol: In Session 2009;65:842-53.

210. Hayes SC, Strosahl KD, Wilson KG. Acceptance and commitment therapy: An experiential approach to behavior change. New York: Guilford, 1999.

211. Heffner M, Sperry J, Eifert GH, Detweiler M. Acceptance and commitment therapy in the treatment of an adolescent female with anorexia nervosa: A case example. Cogn Behav Pract 2002;9:232-6.

212. Heffner M, Eifert GH. The anorexia workbook: How to accept yourself, heal your suffering, and reclaim your life. Oakland: New Harbinger, 2004.

213. Juarascio AS, Forman EM, Herbert JD. Acceptance and commitment therapy versus cognitive therapy for the treatment of comorbid eating pathology. Behav Modif 2010;34 :175-90.

214. Morris BK. Introduction to Applied Behavior Analysis. Retrieved from: www.autism-help.org/intervention-applied-behavioral-analysis.htm. 2008.

215. Gale GM, Eikeseth S, Rudrud E. Functional assessment and behavioural intervention for eating difficulties in children with autism: A study conducted in the natural environment using parents and ABA tutors as therapists. J Autism Dev Disord 2010;DOI 10.1007/s10803-010-1167-8.

216. Vaz PCM, Piazza CC. Behavioural approaches to the management of paediatric feeding disorders. In: Southall A, Martin C, eds. Feeding Problems in Children, Milton Keynes: Radcliffe Publishing, 2010.

217. The Primary Health Care Action Group, Central and Southern Ontario Dietitians of Canada. Family Health Teams: Backgrounder for Dietitians Preparing Submissions in Ontario. 2005. Toronto, Dietitians of Canada.

218. Davison K, Guan S. The quality of dietary information on the World Wide Web. Clinical Performance and Quality Healthcare 1997;5:64-6.

219. Dietitians of Canada. The role of dietitians in collaborative primary health care mental health programs. 2006. Toronto, Dietitians of Canada.

220. Urbanski P, Wolf A, Herman WH. Cost-effectiveness of diabetes education. J Am Diet Assoc 2008;108:S6-S11.

221. Dietitians of Canada. A systematic review of the effectiveness of nutrition counselling interventions by Dietitians in oupatient and in workplace settings. 2009. Toronto, Dietitians of Canada.

Appendix A: Search Strategy

Search Strategy for Peer-Reviewed Literature

Terms for Special Considerations and Populations	+	*Mental Health Terms*	+	*Nutrition Terms*	in	*Databases and Search Limits*
Aboriginal peoples Children Adolescents Ethnocultural (ethnoracial) Rural (remote, isolated) Seniors Marginalized Populations Lesbian, Gay, Bisexual, and Transgender Gender (men, women) Violence (trauma) Food insecurity Natural health products Complementary and alternative therapies Comorbidities (diabetes, heart disease, hypertension, AIDS, HIV) Suicide Food addictions Homelessness Transitional housing Marginally housed Trauma		Mental health Mental disorder Mental illness Mental wellness Mental well-being Behaviour Stress Depression Coping Mental crisis Anxiety Resilience Cognition Mood Sleep		Diet Food Vitamins Minerals Eating		Databases: Medline Embase PsychInfo CINAHL Pubmed Science Citation Index HealthSTAR EBM Reviews Biological Abstracts Search Limits: English Human Time: 1980 to present (to capture DSM-III and ICD-9 as cut-offs)

Search Strategy for Grey Literature

Psychiatric associations, First Nations associations, Canadian Mental Health Association, Centre for Applied Research in Mental Health and Addiction (CARMHA), Centre for Addiction and Mental Health, Web of Science

Search Strategy Results

Section of Paper for Searches	*Total Resources Retrieved*	*Duplicated* or Non-Relevant Resources*	*Total Resources Used*
Section 2: Diversity in Practice	391	230	161
Section 3: Nutrition Care for Mental Health	143	92	51

*Includes resources that were the same or had very similar content

Appendix B: Nutrition and Mental Health Resources

Aboriginal

Registered Dietitians in Aboriginal Communities: Feeding Mind, Body and Spirit. Role Paper of the Dietitians of Canada Aboriginal Nutrition Network, 2012. www.dietitians.ca/aboriginalnutrition

Healthy Food Guidelines For First Nations Communities. First Nations Health Council (2009). www.fnhc.ca

Indigenous Food Sovereignty. www.indigenousfoodsystems.org/food-sovereignty

Northwest Territories Food Guide. Government of the Northwest Territories.
www.hlthss.gov.nt.ca/pdf/brochures_and_fact_sheets/healthy_eating_and_active_living/2005/english/nwt_food_guide.pdf

Northwest Territories Healthy Foods in Facilities. Food and Beverage Guidelines for Health and Social Services. http://pubs.aina.ucalgary.ca/health/62202.pdf

Food-based dietary guidelines in circumpolar regions. 2011. http://ijch.fi/CHS/CHS_2011(8).pdf

Addictions

Dekker T (2000). Nutrition and Recovery: A Professional Resource for Healthy Eating during Recovery from Substance Abuse by Trisha Dekker (200). Available through the Centre for Addiction and Mental Health (CAMH).
www.camh.net

Hatcher AS (2008). Nutrition and Addictions - A Guide for Professionals. Includes information about the effects of each substance of abuse on nutritional health and nutritional needs during withdrawal and recovery, and patient education handouts. The resource can be ordered through the Behavioural Health Nutrition Dietetic Practice Group.
www.bhndpg.org/publications/index.asp

Yale Food Addiction Scale.
www.yaleruddcenter.org/resources/upload/docs/what/addiction/FoodAddictionScale09.pdf

Alternative and Complementary Therapies

Canadian Complementary Medicine Association. www.ccmadoctors.ca
The Canadian Complementary Medicine Association is a network of physicians, residents and medical students who are dedicated to bringing together conventional and alternative medicine.
US version: www.nccam.nih.gov

Attention Deficit Hyperactivity Disorder

The Role of Nutrition in Mental Health: Attention Deficit Hyperactivity Disorder (ADHD).
www.mindingourbodies.ca/about_the_project/literature_reviews/adhd_and_nutrition

Behaviour and Food

Food and Behaviour Research. www.fabresearch.org
Provides updates on nutrition and its role in the prevention and management of many kinds of difficulties in behaviour, learning and mood.

Body Size Acceptance

Health At Every Size (HAES). www.haescommunity.org

Budgeting

Healthy eating CHEAP AND EASY. www.health.gov.bc.ca/cpa/publications/HealthyEatingdoc.pdf
A nutrition education tool by the BC Ministry of Health Planning.

Cognitive Behaviour Therapy

Cognitive Behavior Therapy and Eating Disorders by Christopher G Fairburn. New York (NY): Guilford Press; 2008. 324 p.

Concurrent Disorders

Concurrent Disorders Treatment: Models for Treating Varied Populations by Jennifer Puddicombe, Research Coordinator, Brian Rush, Senior Scientist, Christine Bois, Concurrent Disorders Knowledge Exchange Manager Program Models Project 2003–04.
www.camh.net/about_addiction_mental_health/concurrent_disorders/cd_treatment_models04.pdf

Culturally Competent Care

Goody CM, Drago L. Cultural Food Practices. Includes a chapter on culturally competent nutrition counselling. Book can be ordered from the Academy of Nutrition and Dietetics. www.eatright.org

Depression

Canadian Mental Health Association. The Role of Nutrition in Mental Health: Depression.
www.mindingourbodies.ca/about_the_project/literature_reviews/depression_and_nutrition

Developmental Disability

Montana Disability and Health Program: Nutrition resources for individuals with disabilities. mtdh.ruralinstitute.umt.edu/Directory/Nutrition.htm

National Center for Physical Activity and Disability: Information and guidelines on exercise and activity for individuals with all types of disabilities. www.ncpad.org

The Adult with Intellectual and Developmental Disabilities - A Resource Tool for Nutrition Professionals. Provides an overview of nutrition in individuals with intellectual and developmental disabilities. The resource guide is contained on a CD-ROM. To order go to: https://www.bhndpg.org/publications/index.asp

Diabetes

A Collaborative Approach to Diabetes and Mental Illness
A collaborative health care model was developed by diabetes, healthy heart, and mental health clinicians to treat clients with serious and persistent mental disorders and metabolic syndrome. The model is documented in a paper and two videos: a peer education video (Donah's story); and a second video for mental heath and diabetes professionals. For information contact the Interior Health Authority, Mental Health, Penticton, BC at: Penticton Mental Health, 740 Carmi Avenue, Penticton, BC V2A-8P9, Phone: 250-770-3555.

Eating Disorders

Eating disorders in adolescents: Principles of diagnosis and treatment by the Canadian Paediatric Society. www.cps.ca/english/statements/AM/am96-04.htm

Practice Paper of the American Dietetic Association: Nutrition Intervention in the Treatment of Eating Disorders. http://bhndpg.org/documents/Practice_Paper_Nutrition_Intervention.pdf

Position of the American Dietetic Association: Nutrition Intervention in the Treatment of Eating Disorders. http://bhndpg.org/documents/Position_Paper_Nutrition_Intervention.pdf

Ethnoracial Resources

Mian S, Brauer P and CDA Committee. South Asian Materials for Educators. Toronto: Canadian Diabetes Association, 2008. www.diabetes.ca/for-professionals/resources/nutrition/tools/

Food Security

BC Food Security Gateway. www.health.gov.bc.ca/healthyeating/foodsecurity.html

Food Secure Canada. http://foodsecurecanada.org

Harm Reduction

British Columbia Harm Reduction Strategies and Services. Harm Reduction Training Manual. www.bccdc.ca/NR/rdonlyres/C8829750-9DEC-4AE9-8D00-84DCD0DF0716/0/CompleteHRTRAININGMANUALJanuary282011.pdf

Healthy Eating and Living Resources

Gates LM. Making the Case for Integrating Healthy Eating into Mental Health Service. www.mindingourbodies.ca

Provincial Health Services Authority, BC Mental Health and Addiction Services, BC Children's Hospital. Healthy Living, Healthy Minds: A Toolkit for Health Professionals. Government of British Columbia. www.keltymentalhealth.ca

Learning Disability

Professional Consensus Statement: The Nutritional Care of Adults with a Learning Disability in Care Settings. www.bda.uk.com/publications/statements/AdultsLearningDisabilityStatement0804.pdf

Mental Health Resources

Anxiety Disorder Association of Canada. www.anxietycanada.ca

Autism Canada Foundation. www.autismcanada.org

Autism Society Canada. www.autismsocietycanada.ca

Canadian Collaborative Mental Health Initiative. www.ccmhi.ca

Canadian Mental Health Association. www.cmha.ca (bilingual)

Centre for Addiction and Mental Health. www.camh.net
Offers numerous fact sheets on mental disorders and addiction – most have been translated into many languages. Has online catalogue of resources. Also have series of webinars, CAMH Mental Health and Addiction 101 Series

Mental Health Commission of Canada. www.mentalhealthcommission.ca
Provides quarterly newsletters; subscription free.

Mood Disorders Society of Canada. www.mooddisorderscanada.ca

Schizophrenia Society of Canada. www.schizophrenia.ca (bilingual)

Seniors' Psychosocial Interest Group. www.seniorsmentalhealth.ca

The Alzheimer's Society of Canada. www.alzheimer.ca

Mental Health Promotion

Canadian Mental Health Association. Making the Case for Integrating Healthy Eating into Mental Health Service Provision. www.mindingourbodies.ca/sites/mindingourbodies.ca/files/Making_the_Case_for_Healthy_Eating.pdf

Canadian Mental Health Association. Eating Well for Mental Health - Final Evaluation Report. www.mindingourbodies.ca/about_the_project/evaluation/eating_well_for_mental_health_final_evaluation_report

Metabolic Monitoring

Monitoring Worksheet for Patients on Second-Generation Antipsychotics. www.thenationalcouncil.org/galleries/business-practice files/3) Monitoring Sheets 10-18 (active).pdf

Changing Diets, Changing Minds: how food affects mental well being and behaviour. http://www.mentalhealth.org.uk/content/assets/PDF/publications/changing_diets.pdf?view=Standard

Mindful Eating

Altman D. Meal-by-Meal: 365 Daily Meditations for Finding Balance Through Mindful Eating. Inner Ocean Publishing (April, 2004)

David M. The Slow Down Diet: Eating for Pleasure, Energy, and Weight Loss Healing. Arts Press (2005)

Koening K. The Rules of "Normal" Eating: A Commonsense Approach for Dieters, Overeaters, Undereaters, Emotional Eaters, and Everyone in Between! Gürze Books (2005)

Motivational Interviewing

Dr. Bill Miller's Motivational Interviewing Homepage. www.motivationalinterview.org

MI Training for New Trainers (TNT) Workbook. www.motivationalinterview.org/training/tnt2004.pdf

Molly Kellogg Resources. www.mollykellogg.com

Manual for the Motivational Interviewing Skills Code (MISC). http://casaa.unm.edu/download/misc.pdf

Brief coding form to assess motivational interviewing practice. www1.od.nih.gov/behaviorchange/measures/mi.htm

Behaviour Change Counselling Index (BECCI) – A tool for assessing MI Practice in Clinicians (Scale and coding). www.cardiff.ac.uk/medicine/general_practice/csu

Physical Activity

The Physical Activity Resource Centre
A website managed by the Ontario Physical and Health Education Association. Provides educators and healthcare promoters with an online networking space. Available at: www.ophea.net/parc

Primary Health Care

Davidson B, Schneider T, Northmore D, West D, West E, Brauer P, Dietrich L (2007). Tips and Tools for Registered Dietitians Working in Interdisciplinary Primary Care. Dietitians of Canada. Link: www.dietitians.ca

Professional Resources

Emerson M, Kerr P, Del Carmen Sole M, Anderson Girard T, Hoffinger R, Pritchett E, Otto M (2006). American Dietetic Association: Standards of Practice and Standards of Professional Performance for Registered Dietitians (Generalist, Specialty, and Advanced) in Behavioral Health Care. Journal of the American Dietetic Association, 109(8), pages 608-613.

American Dietetic Association: Standards of Practice and Standards of Professional Performance for Registered Dietitians (Competent, Proficient, and Expert) in Disordered Eating and Eating Disorders (DE and ED).
http://bhndpg.org/documents/SOPSOPPED2011.pdf

Sullivan WF, Berg JM, Bradley E, Cheetham T, Denton R, Heng J, Hennen B, Joyce D, Kelly M, Korossy M, Lunsky Y, McMillan S (2011). Primary care of adults with developmental disabilities: Canadian consensus guidelines by. Canadian Family Physician, 57, pages 541 to 553. http://www.cfp.ca/content/57/5/541.abstract

Kennedy S, Lam R, Parikh S, Patten S, Ravindran A. Canadian Network for Mood and Anxiety Treatments (CANMAT) Clinical guidelines for the management of major depressive disorder in adults.
www.canmat.org/resources/CANMAT%20Depression%20Guidelines%202009.pdf

Canadian Network for Mood and Anxiety Treatments (CANMAT) and International Society for Bipolar Disorders (ISBD) collaborative update of CANMAT guidelines for the management of patients with bipolar disorder: update 2009.
www.canmat.org/resources/CANMAT%20Bipolar%20Disorder%20Guidelines%20-2009%20Update.pdf

Clinical Practice Guidelines for the Treatment of Schizophrenia by Canadian Psychiatric Association Working Group Members.
ww1.cpa-apc.org:8080/publications/clinical_guidelines/schizophrenia/november2005/cjp-cpg-suppl1-05_full_spread.pdf

Psycho-Education Programs

Craving Change© Psycho-Educational Program
For more information about resources and training workshops go to: www.cravingchange.ca

Seniors

The Canadian Coalition for Seniors Mental Health (CCSMH) National Guidelines. Full text guidelines are available at www.ccsmh.ca/en/natlGuidelines/natlGuidelinesInit.cfm.

Special Populations in Mental Health Care

Calgary Urban Project Society. Shared Mental Health Care Project for the Homeless: Final project team report. 2003. Calgary Urban Project Society, Calgary, Alberta.

Puddicombe J, Rush B and C Bois. Concurrent Disorders Treatment: Models for treating varied populations. 2004. Centre for Addiction and Mental Health, Toronto, ON.

Rainbow Health Ontario. www.rainbowhealthontario.ca/home.cfm
Website provides LGBT health information and resources for LGBT people and health care providers.

Addressing Health Inequities for Racialized Communities: A Resource Guide by Health Nexus, 2011.
www.healthnexus.ca/projects/building_capacity/Final_resource_guide_English.pdf
This resource guide provides information for those who are working with racialized groups in promoting health and reducing health inequities.

Recovery through the lens of cultural diversity by Nora Jacobson, Deqa Farah, and the Toronto Recovery and Cultural Diversity Community of Practice, 2010.
www.wellesleyinstitute.com/wp-content/uploads/2010/07/RTLCD-report-jul0410.pdf

Suicide

The Role of Nutrition in Mental Health: Suicide. Canadian Mental Health Association.
www.mindingourbodies.ca/about_the_project/literature_reviews/suicide_and_nutrition

Appendix C: Case Examples

In Canada, there are examples of mental health initiatives that effectively implement nutrition components. The following outlines specific programs that are examples of collaboration in mental health and nutrition.

The Hamilton Health Services Organization Mental Health Nutrition Program

The program includes three components:

Mental health component: Each practice has a permanent counselor. A psychiatrist visits each practice for half a day every one to four weeks depending on practice size and need. Counselors and psychiatrists see patients referred by the family physicians and manage an array of pediatric and adult mental health problems. They also act as a resource to physicians.

Nutrition component: Each practice also has a Registered Dietitian (RD) who visits the practice for three hours to three days a week, depending on practice size. A RD can work in one to eight practices over the course of a week, although attempts are made to assign RDs to practices in the same geographic area to reduce traveling time.

The RDs assess consumers referred to them by the family physicians and initiate treatments or education programs according to need. The most common reasons for referral are dyslipidemias, Type II diabetes, and weight reduction related to medical problems. Weight management groups are run three to four times a year. Initial lipid classes are run in the majority of practices to reduce waiting times. Health promotion activities are currently focusing on pediatric, geriatric and prenatal populations. The RDs also serve as educational resources for the multidisciplinary team through case discussions, lunch and learns and presenting at grand rounds.

Central management team: Activities in individual practices are coordinated by a central management team. Some of their responsibilities include (re)allocating resources to practices, setting program standards, circulating educational materials, linking practices with local mental health and nutrition systems, and advocating on behalf of the program.

Specific benefits of the program have included increased access to timely and cost-effective services; distribution of up-to-date information on local mental health and nutrition services; guidelines, protocols, and standards for clinical activities; assisting practices in resolving problems; developing and organizing the program's evaluation; and representing and advocating for the program with other health service providers and the program's funding source.

The Cool Aid Community Health Centre, Victoria, BC

The Cool Aid Community Health Centre (CHC) was established as a clinic in 1970 and provides medical care and dental care for people who do not have health coverage, or who live in the downtown core, many of whom have psychiatric-related illnesses and/or other chronic health problems. In 2001, the CHC received provincial funding to develop the clinic into a comprehensive community health centre.

The centre endeavours to create an environment of trust and mutual respect between the staff and the clients it serves. Through an innovative team-based approach, the CHC provides primary health care, both acute and long term. Services at the CHC are designed to reduce the significant barriers facing the downtown population from accessing health services. Integral to the CHC is its location in the downtown core and the expanded hours of operations to include weekends.

A highlight of the unique service delivery at the CHC is the coordination of multiple entry points. For example, nurse practitioners, physicians, mental health and addictions counselors, dietitian, acupuncturist, pharmacist and pharmacist technician, dental clinic providing a full range of care, visiting specialists, such as psychiatrists, are all possible points of entry into accessing comprehensive health care.

Integrated with the primary health care function, the centre offers education to nursing and medical students, as well as family practice residents and physicians interested in inner-city medicine. The centre also has an outreach component that effectively integrates a holistic approach; the CHC takes its services to where the people are located, whether on the streets, in the drop-in centres, food banks, shelters or their homes. The outreach services also provide a full range of assessment, counselling and referral services for those with mental disorders, chemical dependence, as well as the homeless and those at risk of becoming homeless. This contact outside the CHC builds the necessary trust for consumers to then utilize the centre and the services offered. A Registered Dietitian is available for 2.5 days per week to provide nutrition education and counselling to a variety of people including those with mental health conditions.

Food is Mood Program

Northern Initiative for Social Action (NISA), Sudbury, Ontario

Run by and for consumers of mental health services, NISA is a consumer/survivor initiative in Sudbury Ontario. NISA's mission is to "develop occupational skills, nurture self-confidence and provide resources for recovery, by creating opportunities for participants to contribute to their own well-being and that of their community (NISA, 2009)."

Food is Mood Program was funded by Minding Our Bodies project through the Healthy Community Fund from the Ontario Ministry of Health Promotion and Sport. This three-month pilot program aimed to increase healthy eating amongst mental health consumers. Program components include food safety, cooking classes, and shopping on a budget, cookbook development through sharing of recipes.

The program partnered with Registered Dietitians and Community Food Advisors from the Sudbury and District Health Unit and Sudbury Regional Hospital. Dietitians delivered education sessions and supported development of a cookbook. The program also worked with The N'Swakamok Native Friendship Centre to establish new relationships and learn Aboriginal recipes (CMHA ON, 2012).

The program was able to increase social inclusion among participants and create partnerships with local agencies that are involved in nutrition promotion. Participants showed increased self-confidence in cooking and food safety practices and they indicated the need for this type of program (CMHA ON, 2011).

References

Northern Initiative for Social Action. (n.d.). *About NISA*. Retrieved March 16, 2012 from http://nisa.on.ca/
Canadian Mental Health Association, Ontario. (2012). *Food is Mood*. Retrieved March 16, 2012 from http://www.mindingourbodies.ca/program_directory/food_is_mood

Canadian Mental Health Association, Ontario. (2011). Northern Initiative for Social Action: Food is Mood Case Study Report. Retrieved March 16, 2012 from http://www.mindingourbodies.ca/sites/default/files/MOB_Case_Study_NISA.pdf

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