Promoting and Sustaining a Healthy and Fit Force: A Background Paper

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Defence R&D Canada
Centre for Operational Research and Analysis

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The opinions expressed in this paper are those of the authors and should not be interpreted as the official position of the Canadian Forces, nor of the Department of National Defence.

Abstract

The physical fitness of military personnel is an essential and critical component of operational readiness – from both employability and deployability aspects - and as such, has been concentrated on since 2,500 B.C.. Military service can be physically demanding, and military personnel must maintain high levels of physical fitness to perform their duties efficiently in complex and stressful environments. However, operational readiness requires military personnel to not only be physically fit, but to also be healthy; that is, functionally well in physical, mental, emotional, social and spiritual aspects. For example, military personnel experiencing mental problems or interpersonal conflicts may not be able to optimally perform their duties, and military personnel experiencing health problems may become physically unfit. Thus, to achieve operational readiness, militaries have to go beyond physical fitness training and testing, and promote and sustain a healthy and fit force.

The intent of this paper is to discuss the historical and theoretical background of health promotion. This paper first reviews paradigm shifts in defining the concept of health, and then examines the development of various health promotion models. Finally, the theoretical limitations of CF health promotion are discussed, and future research is recommended.

Résumé

L'aptitude physique du personnel militaire est un aspect essentiel et critique de la préparation opérationnelle – tant pour l'emploi que pour le déploiement des militaires – qui est reconnu depuis le XXV^{e} siècle avant Jésus-Christ. Comme le service militaire peut être exigeant sur le plan physique, les militaires doivent maintenir une excellente forme physique pour exécuter leurs tâches de façon efficace dans des situations complexes et tendues. Cependant, pour la préparation opérationnelle, les militaires doivent non seulement présenter une bonne forme physique; ils doivent aussi être en bonne santé, c'est-à-dire bien se porter sur les plans physique, mental, émotionnel, social et spirituel. Par exemple, les militaires aux prises avec des troubles mentaux ou des conflits interpersonnels sont susceptibles d'être affectés par ceux-ci dans l'exercice de leurs fonctions, tout comme les militaires qui souffrent de problèmes de santé risquent de devenir physiquement inaptes à exécuter leurs tâches. Par conséquent, pour atteindre l'état de préparation opérationnelle, les militaires doivent aller au-delà de l'entraînement et des tests de conditionnement physique en favorisant et en maintenant à la fois leur santé et leur aptitude physique.

Le présent document vise à analyser le cadre historique et théorique de la promotion de la santé. On y passe d'abord en revue les changements de paradigme dans la définition du concept de la santé et, ensuite, l'évolution de différents modèles de promotion de la santé. Enfin, il expose les limites théoriques de la promotion de la santé dans les FC et propose des orientations de recherche futures.

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Executive summary

Promoting and Sustaining a Healthy and Fit Force: A Background Paper:

Zhigang Wang; DRDC CORA TM 2008-058; Defence R&D Canada – CORA; December 2008.

Background: The physical fitness of military personnel is an essential and critical component of operational readiness – from both employability and deployability aspects – and as such, has been concentrated on since 2,500 B.C.. Military service can be physically demanding, and military personnel must maintain high levels of physical fitness to perform their duties efficiently in complex and stressful environments. However, operational readiness requires military personnel to not only be physically fit, but to also be healthy; that is, functionally well in physical, mental, emotional, social and spiritual aspects. For example, military personnel experiencing mental problems or interpersonal conflicts may not be able to optimally perform their duties, and military personnel experiencing health problems may become physically unfit. Thus, to achieve operational readiness, militaries have to go beyond physical fitness training and testing, and promote and sustain a healthy and fit force.

Influenced by the health promotion and wellness movements in the 20th century, militaries have implemented various health promotion programs, in addition to their physical fitness training and testing programs. For example, since 1994 the Canadian Forces (CF) have implemented a health promotion program – *Strengthening the Forces (StF)* – to assist CF members in increasing control over and improving their overall health and well-being. However, little research has been undertaken concerning the theoretical foundation of the CF health promotion program.

The intent of this paper is to discuss the historical and theoretical backgrounds of health promotion. This paper first reviews paradigm shifts in defining the concept of health, and then examines the development of various health promotion models. Finally, the theoretical limitations of CF health promotion are discussed, and future research is recommended.

This paper is the first of three papers that aim to discuss how to promote and sustain a healthy and physically fit military force. The second paper will examine the recently released *CF Health and Physical Fitness Strategy* and propose a model of promoting health and physical fitness in the CF (see Wang & Dunn, 2009). The final paper will explore a cultural approach to promote and sustain a healthy and physically fit military force.

Summary:

The main findings of this paper are as follows:

a. Health is free of disease/illness, and is the result of an individual pursuing a high level of physical, mental, spiritual, and social well-being in his or her social, economic, cultural, and physical environments;

b. The history of the health promotion movement shows that Canada has taken a leading role worldwide. As with the other approaches, the Canadian approach has its own strengths and limitations; and,

c. The CF definition of health does not reflect the dynamic nature of health. The population health framework that guides CF health promotion practices has theoretical limitations, such as an inappropriate health paradigm and a weak argument for applying the population health framework to the CF. The outcome approach logic model used in CF health promotion evaluation practices also has its limitations and should be reconsidered.

Recommendations: The CF should consider adjusting its definition of health, its health promotion theoretical framework, and its health promotion evaluation framework. The next paper in this series, *Promoting and Sustaining a Healthy and Fit Force: A Holistic Model* (Wang & Dunn, 2009), proposes a conceptual model to guide CF efforts to integrate health and physical fitness.

Sommaire

Promoting and Sustaining a Healthy and Fit Force: A Background Paper:

Zhigang Wang; DRDC CORA TM 2008-058; R & D pour la défense Canada – CORA; Décembre 2008.

Renseignements généraux : L'aptitude physique du personnel militaire est un aspect essentiel et critique de la préparation opérationnelle – tant pour l'emploi que pour le déploiement des militaires – qui est reconnu depuis le XXV^{e} siècle avant Jésus-Christ. Comme le service militaire peut être exigeant sur le plan physique, les militaires doivent maintenir une excellente forme physique pour exécuter leurs tâches de façon efficace dans des situations complexes et tendues. Cependant, pour la préparation opérationnelle, les militaires doivent non seulement présenter une bonne forme physique; ils doivent aussi être en bonne santé, c'est-à-dire bien se porter sur les plans physique, mental, émotionnel, social et spirituel. Par exemple, les militaires aux prises avec des troubles mentaux ou des conflits interpersonnels sont susceptibles d'être affectés par ceux-ci dans l'exercice de leurs fonctions, tout comme les militaires qui souffrent de problèmes de santé risquent de devenir physiquement inaptes à exécuter leurs tâches. Par conséquent, pour atteindre l'état de préparation opérationnelle, les militaires doivent aller au-delà de l'entraînement et des tests de conditionnement physique en favorisant et en maintenant à la fois leur santé et leur aptitude physique.

Influencés par les mouvements de promotion de la santé et de mieux-être du XX^{e} siècle, les militaires ont mis en œuvre plusieurs programmes de promotion de la santé en plus de leurs propres programmes d'entraînement et d'évaluation du conditionnement physique. À titre d'exemple, depuis 1994, les Forces canadiennes (FC) ont instauré un programme de promotion de la santé, appelé *Énergiser les Forces* (ELF), pour aider leurs membres à mieux contrôler et à améliorer leur bien-être et leur santé en général. Cependant, il semble que peu de recherches ont été menées sur les fondements théoriques de ce programme.

Le présent document vise à analyser le cadre historique et théorique de la promotion de la santé. On y passe d'abord en revue les changements de paradigme dans la définition du concept de la santé et, ensuite, l'évolution de différents modèles de promotion de la santé. Enfin, il expose les limites théoriques de la promotion de la santé dans les FC et propose des orientations de recherche futures.

Le présent article est le premier d'une série de trois articles qui explorent la façon de favoriser et de maintenir la santé et l'aptitude physique d'une force militaire. Le deuxième article passera en revue le récent document intitulé *Stratégie sur la santé et la condition physique au sein des FC* et proposera un modèle de promotion de la santé et du conditionnement physique dans les FC (voir Wang et Dunn, 2009). Le troisième article portera sur une approche culturelle de promotion et de maintien de la santé et de l'aptitude physique d'une force militaire.

Grands points

Les principales observations du présent article sont les suivantes :

a. la santé correspond à l'absence de maladie et résulte des efforts déployés par un sujet pour atteindre un degré élevé de bien-être physique, mental, spirituel et social dans les sphères sociale, économique, culturelle et physique de son environnement;

b. l'histoire du mouvement de la promotion de la santé montre que le Canada joue un rôle déterminant dans la promotion de la santé à l'échelle mondiale; l'approche canadienne a cependant, comme dans d'autres domaines, ses points forts et ses points faibles;

c. la définition de la santé des FC ne traduit pas la nature dynamique de la santé. Le cadre de la santé de la population qui oriente les pratiques de promotion de la santé des FC présente des limites théoriques, dont un paradigme inadéquat de la santé et une absence de justification pour l'application du cadre de la santé de la population aux FC. Le modèle logique de l'approche fondée sur les résultats utilisé pour évaluer la promotion de la santé dans les FC présente des limites et doit être réévalué.

Recommandations

Les FC doivent envisager d'ajuster leur définition de la santé, leur cadre théorique de promotion de la santé et leur cadre d'évaluation de la promotion de la santé. Le prochain article de la présente série, *Promotion et maintien de la santé et de l'aptitude physique d'une force : modèle holistique* (Wang et Dunn, 2009), proposera un modèle conceptuel pour orienter les mesures des FC visant à intégrer la santé et la forme physique.

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Acknowledgements

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1 Introduction

1.1 Background

The physical fitness of military personnel is an essential and critical component of operational readiness – from both employability and deployability aspects - and as such, has been concentrated on since 2500 B.C. (Barrow & Brown, 1988; Grant, 1964; Wuest & Bucher, 1995). Military service can be physically demanding, and military personnel must maintain high levels of physical fitness to perform their duties efficiently in complex and stressful environments[1]. However, operational readiness requires military personnel to not only be physically fit, but to also be healthy; that is, functionally well in physical, mental, emotional, social, and spiritual aspects. For example, military personnel experiencing mental problems or interpersonal conflicts may not be able to optimally perform their duties, and military personnel experiencing health problems may become physically unfit. Thus, to achieve operational readiness, militaries have to go beyond physical fitness training and testing, and promote and sustain a healthy and fit force.

Influenced by the health promotion and wellness movements in the 20th century, militaries have implemented various health promotion programs[2], in addition to their physical fitness training and testing programs (Bibb, 2002; Collins & Custis, 1993). For example, since 1994 the Canadian Forces (CF) has implemented a health promotion program – *Strengthening the Forces* (*StF*) – to assist CF members in increasing control over and improving their overall health and well-being[3]. However, little research has been undertaken on the theoretical foundation of the CF health promotion program.

1.2 Aim

The intent of this paper is to discuss the historical and theoretical backgrounds of health promotion. This paper first reviews paradigm shifts in defining the concept of health, and then examines the development of various health promotion models. Finally, the theoretical limitations of CF health promotion are discussed, and future research is recommended.

This paper is the first of three papers that aim to discuss how to promote and sustain a healthy and physically fit military force. The second paper proposes a model for promoting health and physical fitness in the CF (see Wang & Dunn, 2009). The final paper will explore a cultural approach to promote and sustain a healthy and physically fit military force.

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1 Assessing Fitness for Military Enlistment: Physical, Medical, and Mental Health Standards (2006). Committee on Youth Population and Military Recruitment: Physical, Medical, and Mental Health Standards, National Research Council.

2 These programs, for example, include tobacco cessation, physical fitness, nutrition and weight control, stress management, suicide prevention, oral health fitness, spiritual fitness, injury prevention and so on.

3 See the program, *Strengthening the Forces (StF)*, at http://www.dnd.ca/health/services/engraph/health_promotion_home_e.asp?Lev1=1&Lev2=11.

2 Paradigm Shifts in Defining the Concept of Health

The implementation of health promotion programs in the military has been influenced by health promotion and wellness movements, which are aimed at enabling people to achieve a high level of well-being. One of the main reasons for the rise of the health promotion and wellness movements is the paradigm shift in defining the concept of health – from analyzing the causes of disease or illness (the so-called pathogenic paradigm[4]) to promoting health and wellness (the so-called salutogenic paradigm[5]). This chapter examines this paradigm shift in detail.

2.1 Definition of Health

The World Health Organization (WHO) initially defined health in 1948 as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity"[6]. Although widely accepted, it should be noted that this definition lacked theoretical support and has been widely criticized since it was first published.

Over the years, scholars have been encouraging the WHO to redefine the concept of health. Most of the criticisms relate to the words "complete" and "well-being". For example, Bok (2004) advised that the definition of health should not include the adjective word "complete" because most people believe that they are healthy, despite their potential awareness of a variety of minor health problems. Salomon and colleagues (2003) suggested that if health were broadly defined as "well-being", the health system, including health ministries, would have to be seen as responsible for all areas of human activity. Saracci (1997) argued that "a state of complete physical, mental, and social well-being" corresponds much more closely to happiness than to health. In turn, failing to distinguish health from happiness would mean that any disturbance to happiness would be seen as a health problem.

However, some scholars disagree with the above criticisms. They argue that (1) the definition of "a state of complete physical, mental, and social well-being" is incomplete, and that "spiritual well-being" should be included; and (2) health is a dynamic state rather than a static state. Nevertheless, the WHO has stood by the words of "a complete state of physical, mental, and social well-being" and has recently added the words "dynamic" and "spiritual" into the definition. The WHO's definition of health is now: "Health is a dynamic state of complete physical, mental, spiritual and social well-being and not merely the absence of disease and infirmity."[7] This definition of health is the most cited in the literature.

The original definition of health, criticisms about the definition and subsequent revision of the definition reflect paradigm shifts in defining the concept of health. Paradigm shifts have moved

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[4] See Section 2.2.3.

[5] See Section 2.3.2.

[6] The World Health Organization, 1948.

[7] Sein, Constitution of the World Health Organization and Its Evolution. Regional Health Forum: Regional Health Forum WHO South-East Asia Region; 6: (1) at http://www.searo.who.int/EN/Section1243/Section1310/Section1343/Section1344/Section1355_5310.htm.

the focus from disease to illness, and from analyzing the causes of disease/illness to promoting well-being. These paradigm shifts are discussed below.

2.2 Paradigm Shift – From Focusing on Disease to Focusing on Illness

2.2.1 Biomedical Model

Before the WHO provided its definition, health was essentially regarded as "what is left over" from the dominant biomedical model. From this perspective, health exists when a person is free of all disease (Woodhouse, 1997). The biomedical model sharply focuses on the causes of disease and reduces disease to natural biological processes such as the pathology, the biochemistry and the physiology of disease. The model reflects the materialistic and reductionistic orientation of medical thinking.

The biomedical model has been highly productive in the advancement of the medical sciences and health since the middle of the 19th century (Williams & Wood, 1986). Under the influence of the biomedical model, physicians were trained to primarily diagnose and eliminate symptoms of specific diseases. Physicians would typically ignore symptoms if they could not objectively verify and explain symptoms at the level of cellular and molecular processes. Thus, an individual could be seen as "healthy" by physicians even though he or she reported "symptoms". One the other hand, an individual could be seen as "unhealthy" by physicians even though he or she did not report symptoms when having a "real" disease (e.g., Culyer, 1983; Williams, 1993).

2.2.2 Biopsychosocial Model

George Engel (1977) criticized the excessively narrow focus of the biomedical model for leading physicians to ignore patients' subjective experiences. He believed that an individual may feel sick without having a "real" disease, perceiving symptoms without pathology. Engel brought a significant paradigm shift in the health domain by proposing a new medical model – the biopsychosocial model. He drew a distinction between the actual pathological processes that cause disease, and a patient's perception of his or her health and the effects on it, called the *illness*. He proposed that biological, psychological and social factors all play a significant rolen human functioning. The contribution of the biopsychosocial model of health has therefore been to bring the concept of multiple causations to the understanding of health. The biopsychosocial model, however, does not fundamentally change the concept of health: Health is still the absence of illness.

2.2.3 Pathogenic Paradigm

Antonovsky (1990)[8] argued that both the biomedical model and the biopsychosocial model follow the pathogenic paradigm. This paradigm focuses on how risk factors of individuals and their environment lead to ill health, including disease, objective disorders, subjective sickness,

[8] See http://www.angelfire.com/ok/soc/aberlim.html.

malfunctioning and impairment. Under the pathogenic paradigm, health is the absence of disease/illness. To achieve and maintain a healthy state, health prevention and protection activities, which aim at reducing health-related risk factors, have been introduced and implemented widely around the world.

2.3 Paradigm Shift – From Analyzing the Causes of Disease/Illness to Promoting Well-Being

Other researchers (e.g., Carruthers & Hood, 2004) believe that the absence of medical problems is fundamentally different from health (Shank & Coyle, 2002). Health and well-being must be intentionally cultivated (Hood & Carruthers, 2002) because a reduction of negative deficits does not automatically result in an increase in positive assets (Lykken, 2000). As Cowen (1991) stated, "allocations of our energies and resources must go increasingly toward building wellness rather than toward struggling, however compassionately, to contain troubles" (p. 404).

2.3.1 Wellness Model

The concepts of *well-being* and *wellness* have been used to describe health, suggesting another model of health – a wellness model. Health is defined in the wellness model as the strength and ability to overcome illness and is aimed at higher levels of well-being. The wellness model forces medicine to focus not only on the whole person but also on promoting the positive aspects of health. High-level wellness involves progress toward a higher level of functioning, an optimistic view of the future and one's potential (Goldsmith, 1972; Larson, 1999; Schroeder, 1983), as well as the "integration of the total individual—body, mind, and spirit—in the functioning process" (Neilson, 1988). Usually, well-being and quality of life are seen as descriptors of wellness[9]. One of the popular quotations of wellness is that health is the product of making healthy lifestyle choices.

2.3.1.1 Concept of Well-being

The WHO introduced the term *well-being* to the concept of health in 1948[10], but did not clearly define it at that time. In the literature, researchers have used two approaches to conceptualize the term: a hedonic approach and a eudaimonic approach (Ryan & Deci, 2001). The *hedonic* approach includes the typical characteristics associated with well-being, such as subjective happiness, pleasure, life satisfaction, and pain avoidance (Fava & Riuni, 2003). The *eudaimonic* approach describes well-being as fulfilling one's potential in a process of self-realization and includes characteristics, such as fully functioning person, meaningfulness, self-actualization, and vitality (Fava & Ruini, 2003). These two approaches have been adopted in definitions of health. In turn, definitions of health as well-being have provided the groundwork for the concept of *health promotion* (see Section 2.3.2).

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[9] See the United Sates Presidents' Council on Physical Fitness and Sports, *Research Digest, Series 3, No. 15*.

[10] See Section 2.1 Concept of Health.

2.3.1.2 Concept of Wellness

The WHO's definition of health is "in principle identical with" another concept, *wellness* (Miller, 2005). The concept of wellness, however, has a very complex past (Ardell, 1985; Cowen, 1991). The term *wellness* first appeared in 1654 as the antonym of illness. This meaning of the term continued to be accepted until the middle of the 20th century. In the 1950s, wellness was seen as a holistic concept of health combining physical, mental, spiritual and social well-being[11]. Halbert L. Dunn, one of the most important contributors to the concept of wellness, defined high-level wellness as "an integrated method of functioning which is oriented toward maximizing the potential of which the individual is capable" (1961, p. 4-5).

Miller (2005, p. 91-92) summarized the core elements of Dunn's work on the concept of wellness as follows:

a. Wellness is a continuum rather than a specific fixed state. All individuals, depending on their particular circumstances, are located somewhere along the continuum between death and wellness;

b. Wellness is a holistic approach to health, encompassing physical, mental, social, cultural and spiritual dimensions;

c. Mental wellness is the responsibility of the individual and cannot be delegated to someone else;

d. Wellness is about potential – it involves helping the individual move toward the highest state of well-being of which he or she is capable; and,

e. Self-knowledge and self-integration are key to progress toward high level wellness.

2.3.1.3 Spiritual Health/Wellness

Based on the research on wellness, a new component of health – spiritual health/wellness – was proposed (Hawks, 1994). The spiritual aspect of health is not frequently discussed because it is difficult to operationalize and seems to go beyond the actual health of the individual. However, it appears that religious and spiritual beliefs and practices have an impact on physical, mental, and social well-being (Greer, 1986; Levin, 1994). Furthermore, Larson (1996) argued that spirituality is not merely an influence, but is a part of health. He proposed that health is a state of physical, mental, spiritual, and social well-being.

2.3.1.4 Critics

Critics of the wellness model point out numerous difficulties in measuring subjective perceptions. One problem in this area, for example, is that perceptions of wellness vary according to age and cultural context. Another criticism is that wellness "expands the meaning of health to include happiness, quality of life, and other global matters" (Larson, 1991, p. 5). A

[11] But many of the ideas behind this definition of health go back to the 19th century American religious and cultural movement: Mind-Cure Movement or New Thought and Christian Science (Miller, 2005).

person may be perfectly healthy in terms of the medical model but be unhappy and have a low quality of life according to the wellness model.

2.3.2 Concept of Health Promotion

Many of the strategies used to promote health and prevent disease can be traced back to ancient civilizations[12]. However, the emergence of health promotion as a concept distinct from traditional public health practice or disease prevention took place in the 20th century. The earliest published reference to health promotion is Charles-Edward Amory Winslow (1877 – 1957) who described public health practice as "the art and science of preventing disease, prolonging life and promoting health and well-being through organized community effort for the sanitization of the environment, the control of communicable infections…the education of the individual in personal health and the development of a social machinery to ensure a standard of living adequate for the maintenance or improvement of health" (cited in Green, 1990, p. 4).

The concept of health promotion was further refined by Harry Sigerist, a British medical historian, who noted that "health is promoted by providing a decent standard of living, good labour conditions, education, physical culture, and means of rest and recreation" (Sigerist, 1946, p. 127-128). Many of Sigerist's ideas (e.g., his holistic concept of health and his call for action addressing the determinants of health) are very similar with the statements in another key document in the health promotion movement – the *Ottawa Charter for Health Promotion* (1986)[13] (see Section 3.2).

2.3.3 Health Promotion and Wellness Movements

Currently, health promotion programs, wellness programs, and some other health-related programs (e.g., health prevention programs, health education programs) are implemented widely around the world. All these programs were created during the health promotion and wellness movements but with different focuses.

2.3.3.1 Differences between Wellness and Other Movements

The wellness movement, defined as the pursuit of a healthy balance of the mind, body and spirit that results in an overall feeling of well-being (Dunn, 1961), spread from the United States (U.S.) to the rest of the world in the 1970s. The wellness movement, however, but it differed from other movements, such as holistic health, health prevention, health education, and health promotion. Ardell (2000) concluded that the differences among these movements were as follows[14]:

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[12] http://www.ohprs.ca/hp101/mod2/module2c.htm.

[13] http://www.ohprs.ca/hp101/mod2/module2c.htm.

[14] http://www.seekwellness.com/wellness/reports/2000-12-29.htm.

a. Holistic health is a treatment oriented approach practiced by healer-types;

b. Health prevention has a focus on not having something unpleasant happen;

c. Health education is about complying with doctor's "orders" or sound health/medical tips; and,

d. Health promotion is a broad tent in which everything from risk reduction to employee assistance programs are offered in institutional settings.

2.3.3.2 Link Between the Wellness Movement and Health Promotion Movement

The wellness and health promotion movements have different focuses, but they are not completely separated. The health promotion movement was actually developed on aspects of the wellness movement. Based on Dunn's work[15], researchers developed ways to measure people's state of wellness. For example, Travis (1975) developed a wellness inventory to assess an individual's state of wellness on a total of 12 dimensions, ranging from self-love to nutrition, exercise and social environment, among others. Another researcher, Bill Hettler, building partly on Travis' wellness inventory, created a *Lifestyle Assessment Questionnaire* (1976) that has been widely used to assess people's state of wellness.

Dunn also contributed to the health promotion movement in Canada. As a member of the Canadian Public Health Association, he presented his landmark paper on wellness before the association's annual meeting in 1959 (Dunn, 1959). Fifteen years later, a milestone document in the Canadian health promotion movement, *A New Perspective on the Health of Canadians* (the so-called *Lalonde Report*), was published and "gave the wellness concept much needed exposure" (Miller, 2005, p. 93). Much of the scientific research presented in the *Lalonde Report* was carried out by American health officials working for the Center for Disease Control in Atlanta (Hettler, 1998).

In the past two decades, the term "health promotion" has become more popular than the term "wellness", particularly in Canada. Health promotion programs include all the components of wellness programs: safety and use of medical resources; tobacco, alcohol, and drug usage; nutrition and weight control; exercise and physical fitness; stress and stress management; as well as human relations, self-development, and community involvement. Today, wellness programs are used more often by corporations than they are by public and health professionals. For example, an increasing number of companies recognize the value of workplace wellness programs in improving the health and well-being of their employees (Harris, 2003).

[15] Section 2.3.1.2 includes a discussion on the concept of wellness and the contributions of Halbert L Dunn to the concept of wellness. Halbert L. Dunn is known as the "father" of the wellness movement.

2.3.4 Salutogenic Paradigm

The shift from analyzing the causes of disease/illness to promoting well-being created a new paradigm of health, the salutogenic paradigm proposed by Antonovsky (1979; 1987; 1996). The salutogenic paradigm highlights the importance of self-care, social factors as facilitators of well-being, and the origins of health, coping and well-being (Levenstein, 1994).

Based on the following five questions, Antonovsky compared the pathogenic and salutogenic paradigms:

a. How are people classified in terms of their health status? A pathogenic orientation leads to a dichotomy: people are classified as being either healthy or sick. A salutogenic orientation, by contrast, adopts the approach of a continuum: total health and total illness are the extreme poles; no one is ever at either pole;

b. What is to be understood and treated? The pathogenic paradigm prefers a scientific diagnosis of the specific disease of the patient. However, the salutogenic paradigm assesses the overall state of health/illness of a person located at any point on the health-illness continuum. All aspects of a person's well-being must be assessed, both by "objective" signs as well as by "subjective" symptoms;

c. What are the important etiological factors? The pathogenic paradigm leads one to seek etiological risk factors for specific diseases. The salutogenic paradigm encourages one to seek the total "story" which can explain location on the continuum, including salutary and health-promoting resources;

d. How are stressors conceptualized? The pathogenic paradigm sees stressors as risk factors that could induce diseases. The salutogenic paradigm does not deny such a potentially pathogenic impact, but also sees stressors as potentially positive; and

e. How is suffering to be treated? The pathogenic paradigm implies wars against diseases, whereas the salutogenic paradigm focuses people's concentration on salutary factors that will strengthen coping resources.

2.4 Other Trends – From Focusing on Individuals to Focusing on the Interactions Between Individuals and their Environments

Scholars did not stop at the wellness model and continued to ponder the general concept of health. This led to other models of health, such as the environmental model (Larson, 1999) and the dynamic model (Bircher, 2005), being proposed.

Although these two models have their own name, both the environmental and dynamic models shift their focus from multiple causations of illness to the dynamic interaction between individuals and their environments. To describe the interaction between individuals and their environments, the environmental model uses the word *adaptation*, and the dynamic model uses the words *dynamic state*. Both these models insist that health is a dynamic state of an

individual pursuing physical, mental, spiritual, and social well-being in his or her social, economic, cultural, and physical environments.

2.4.1 Environmental Model

The environmental model of health proposed by James Larson (1999) states that health is an individual adaptation to his or her social, economic, cultural, and physical environments. There were also similar ideas before the environmental model. For example, Rosedale defined health as "the product of a harmonized relationship between man and his ecology" (cited from Navarro, 1977). Parsons (1972) defined health as "the state of optimum capacity of an individual for the effective performance of the roles and tasks for which he has been socialized" (p.117). Romano defined health as "the capacity of the organism to maintain a balance in which it may be reasonably free from undue pain, discomfort, disability or limitation of action including social capacity" (cited from Goldsmith, 1972). Abanobi (1986) believed that health exists when an organism works with its environment successfully and is able to grow, function, and thrive. Verbrugge and Jette (1994) defined illness in terms of lack of adaptation, which is a gap between one's ability and the demands of the environment. Greer (1986) proposed that health is "the ability and will of the individual to perform needed tasks, i.e., to produce and reproduce, in an environment over the span of a lifetime".

2.4.2 Dynamic Model

Bircher (2005) proposed a dynamic model of health and disease and suggested that "health is a dynamic state of well-being characterized by a physical, mental and social potential, which satisfies the demands of a life commensurate with age, culture, and personal responsibility. If the potential is insufficient to satisfy these demands, the state is disease." Prior to Bircher's dynamic model, Breslow (1989) provided a similar idea that health is not merely biological elements or social role performance but is a dynamic equilibrium with the environment and capacity to live physically, mentally, and socially.

2.5 Lessons Learned

Four key conclusions can be drawn from the paradigm shifts and models of health reviewed above:

a. *No Single Paradigm*. Antonovsky (1987) suggested that the acceptance of the salutogenic paradigm does not imply rejection or abandonment of the pathogenic view. "The value of a fresh approach is precisely that it comes with a different vantage point and another focus, seeing things in a new way, asking questions not asked before" (Strümpfer, 2002). Antonovsky (1993) emphasized that both pathogenesis and salutogenesis are important, and that a comprehensive view of coping necessitates the use of these two complementary approaches;

b. *Health = Free of Disease/Illness + Optimal Health*. What is health? Based on the pathogenic and salutogenic paradigms of health, health is free of disease/illness and includes optimal health;

c. *No Perfect Model*. There is not a perfect model of health that can be followed. Each of the above models emphasizes different aspects of health. For example, the dynamic model of health emphasizes the dynamic interaction between an individual and his or her social, economic, cultural, and physical environments. However, this model does not exclude what has been proposed by the biopsychosocial model and the wellness model (e.g., pursuing a higher level of physical, psychological, social, and spiritual well-being). Thus, these models need to be integrated; and,

d. *Multiple Causes & Dynamic Nature*. Engel's biopsychosocial model proposes that biological, psychological, and social factors can influence people's health. Further, the wellness model includes the spiritual factor, and the environment model and the dynamic model explore the dynamic nature of health. Thus, health is the result of an individual pursuing a high level of physical, mental, spiritual, and social well-being in his or her social, economic, cultural, and physical environments.

3 Development of Health Promotion Models

Having examined paradigm shifts in defining the health concept, this chapter maps the development of various health promotion models that have impacted health promotion programs in the military. The evolution of health promotion models can be divided into three main stages: the pre-Ottawa Charter stage, the Ottawa Charter stage, and the post-Ottawa Charter stage. At each stage, various models of health promotion have been proposed and implemented.

3.1 Pre-Ottawa Charter Stage – About Health-Related Risk Factors and Healthy Lifestyle

3.1.1 The Lalonde Report and Health Field Model

In 1974, the internationally acclaimed document *A New Perspective on the Health of Canadians*, more commonly known as the *Lalonde Report*[16], explored how factors other than health care contribute to the health of a population. The *Lalonde Report* introduced a *health field* concept, which viewed health as a product of human biology, environment, lifestyle, and health care systems. These four elements were identified through an examination of the causes and underlying factors of sickness and death in Canada, and from an assessment of the parts the elements play in affecting the level of health in Canada. Of these four elements, attention initially focused on the influence of lifestyle.

The *Lalonde Report* is a milestone in the history of the health promotion movement. Afterwards, many organizations implemented health promotion programs (e.g., health education programs, public awareness campaigns) to help people reduce health-related risk behaviours and adopt healthy lifestyles. Professionally based interventions and individual responsibility were the twin pillars of efforts in these health promotion programs (Robertson & Minkler, 1994).

3.1.2 Psychological Theories of Behaviour Change

Given that at the time of the *Lalonde Report* researchers focused on people's lifestyles, some psychological theories of behaviour change were brought into the field of health promotion. These psychological theories, for example, included the following:

a. The **Health Belief Model** was first developed in the 1950's by social psychologists (Hochbaum, Rosenstock and Kegels) working in the U.S. Public Health Services to explain people's participation in health screenings (Becker, 1974; Rosenstock, 1974). The model proposes that one's engagement in health-related behaviours depends on his or her perception of (1) the severity of a potential illness, (2) the susceptibility to that illness, (3) the benefits of taking a preventive action, and (4) the barriers to take that action. Later, "cues to action" (strategies to activate readiness) and "self-

[16] Named after then-Federal Minister of Health, Marc Lalonde, who commissioned the report.

efficacy" (confidence in one's ability to take action) were added to the model (Glanz, Marcus-Lewis, & Rimer, 1997);

b. The **Protection Motivation Theory (PMT)** was originally proposed to provide conceptual clarity to the understanding of how people respond to fear-arousing health threat communications or fear appeals (Rogers, 1975). A later revision of PMT (Rogers, 1983) described adaptive and maladaptive coping with a health threat as a result of two appraisal processes: threat appraisal and coping appraisal. Threat appraisal is the estimation of the chance of contracting a health threatened event such as a heart attack (*vulnerability*) and estimates of the seriousness of this health threatened event (*severity*). Coping appraisal consists of the efficacy of the recommended preventive behaviour (*response efficacy*) and the belief or confidence in one's ability to undertake the recommended preventive behaviour successfully (*self-efficacy*). The intention to protect one self (protection motivation) depends upon the perceived severity, vulnerability, response efficacy and self-efficacy;

c. The **Social Learning Model**, later renamed social cognitive theory, was originally proposed by Miller and Dollard (1941). Miller and Dollard argued that humans can learn through three forms of imitation: same behaviour, copying behaviour and matched-dependent behaviour (it occurs when there is more experienced model and a less experienced observer). Bandura and Walters (1963) broadened the model with the principles of observational learning and vicarious reinforcement. In 1977, Bandura coined the concept of self-efficacy, which is people's belief about their capabilities to attain goals. He suggested, "what people think, believe, and feel affects how they behave" (Bandura, 1986; p. 25);

d. The **Social Inoculation Theory** (McGuire, 1968; 1974) states that resistance to undesired persuasion can be built up by exposing people to arguments against their attitude position and giving them the counter arguments to refute the attacks. The theory can interpret the effect of social pressures to one's adaptation of unhealthy behaviour: young people lack the negotiating skills to resist unhealthy behaviour arising from peer pressure and other influences (Turner & Shepherd, 1997);

e. The **Theory of Reasoned Action** (Ajzen & Fishbein, 1980) suggests that people's behaviour is determined by their intention to perform the behaviour and that this intention is a function of their attitude toward the behaviour, their subjective norm and perceived behavioural control. After discovering that behaviour appeared not to be 100% voluntary or under control, Ajzen (1988, 1991) proposed the Theory of Planned Behaviour;

f. The **Theory of Planned Behaviour** (Fishbein & Ajzen, 1975) suggests that human action is guided by three kinds of considerations: (1) behavioural beliefs are about the likely consequences of the behaviour and produce a favourable or unfavourable attitude toward the behaviour; (2) normative beliefs are beliefs about the normative expectations of others and result in perceived social pressure or subjective norm; and (3) control beliefs are beliefs about the presence of factors that may facilitate or impede performance of the behaviour and give rise to perceived behavioural control. In combination, attitudes toward the behaviour, subjective norms, and perceptions of behavioural control lead to the formation of a behavioural intention. As a general rule, the more favourable the attitude and subjective norm and the greater the

perceived control, the stronger should be the person's intention to perform the behaviour in question;

g. The **Transtheoretical Model (or the Stages of Change Model)** (Prochaska & DiClemente, 1984) suggests that health behaviour change involves progress through six stages of change: pre-contemplation, contemplation, preparation, action, maintenance, and termination. Ten processes of change have been identified for producing progress along with decisional balance, self-efficacy, and temptations. The ten processes of change include: (1) five experiential processes of change: consciousness raising (increasing awareness), dramatic relief (emotional arousal), environmental re-evaluation (social reappraisal), social liberation (environmental opportunities), and self re-evaluation (self reappraisal); and (2) five behavioural processes of change: stimulus control (re-engineering), helping relationship (supporting), counter conditioning (substituting), reinforcement management (rewarding), and self liberation (committing);

h. The **Implementation Intentions Theory** (Gollwitzer, 1993, 1996, 1999; Gollwitzer, Bayer, & McCulloch, 2005) proposes that an implementation intention is a specific action plan concerning exactly how, when and where an intended goal-directed behaviour will be enacted. An implementation intention differs from a goal intention (e.g., "I intend to exercise"). Researchers (e.g., Gollwitzer & Oettingen, 2000) found that implementation intentions dramatically increase the likelihood of performing health behaviours; and,

i. The **Self-Regulation Theories** (Carver & Scheier, 1990; Leventhal, Diefenbach, & Leventhal, 1992; Leventhal, Zimmerman, & Gutmann, 1984; Scheier & Carver, 1988) suggest that human behaviour is goal-directed and that feedback control is exercised in order to minimize discrepancies between current actions and stated goals. The theories focus on the cognitive mechanisms involved in translating an intention to perform a particular behaviour, and discuss (1) the explicit consideration of goals, (2) the view of the person as an active agent in shaping his or her own behaviour, and (3) the emphasis on volitional processes in goal striving (Ridder & Wit, 2006). The major theoretical approaches include, for example, cybernetic control theory (e.g., Carver & Scheier, 1998), models of willpower and self-control resources (e.g., Baumeister, Heatherton, & Tice, 1994; Mischel, Cantor, & Feldman, 1996), and behavioural enaction theories (e.g., Gollwitzer, Fujita & Oettingen, 2004; Schwarzer, 2001).

Important to note, however, is that none of the psychological theories discussed above consider social and economic factors that may influence health behaviours. Thus, these psychological theories alone "cannot inform the development of intervention strategies that target changes beyond the individual level" (Elder, *et al.*, 2006, p.11).

3.1.3 Tannahill's Model

Promoting healthy lifestyles involves actions of health prevention and protection. How does health promotion relate to these actions? Among other attempts to promote health, Tannahill (1985, 1990) proposed in his model of health promotion that health should be promoted in three main areas: health education, health prevention, and health protection. Health education

is a "communication activity aimed at enhancing well-being and preventing or diminishing ill-health in individuals and groups, through favourably influencing the knowledge, beliefs, attitudes and behaviour of those with power and of the community at large" (Downie, Tannahill, & Tannahill, 1996). Health prevention aims at reducing the risk of occurrence of a disease process, illness, injury, disability, handicap or some other unwanted event or state (such as pregnancy) (Tannahill, 1985). Incorporating the positive dimension of health, Tannahill defined health protection as "legal or fiscal controls, other regulations or policies, or voluntary codes of practice aimed at the prevention of ill-health or the positive enhancement of well-being" (Tannahill, 1985, p. 167-168).

Tannahill believed that health promotion not only incorporates all three of the above described domains but also incorporates the overlapping areas of health education, health prevention, and health protection (e.g., preventive health education, preventive health protection) (Downie *et al.*, 1996). A major contribution of this model was to demonstrate the wide range of possibilities for health promotion.

3.2 Ottawa Charter Stage – About Social Determinants of Health and Action Strategies

3.2.1 The Epp Framework

Since the 1980s, a revolution has been occurring in the health promotion movement. Early efforts in health promotion have shifted from an emphasis on individual lifestyle toward other health determining factors, in particular, factors related to people's social, physical, economic and political environments. In 1986, the Canadian government published the discussion paper *A Framework for Health Promotion* (the so-called "*Epp Framework*") in preparation for the WHO First International Conference on Health Promotion. The paper emphasized the social determinants of health, such as poverty, unemployment, poor housing, and other social and economic inequities.

3.2.2 The Ottawa Charter

The ideas in the *Epp Framework* were reemphasized by the WHO First International Conference on Health Promotion hosted in Ottawa, Canada (1986). At the conference, the WHO released a key document, *The Ottawa Charter for Health Promotion*, which called attention to the underlying conditions within society that determine health. The *Ottawa Charter* redefined health promotion as "the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment. Health is, therefore, seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy life-styles to well-being" (WHO, 1986).

The *Ottawa Charter* led to a system approach to health promotion (Speller, Learmonth, & Harrison, 1997). It identified the prerequisites for health (or health determinants) as: peace, shelter, education, food, income, a stable eco-system, sustainable resources, social justice and

equity. Improvement in health requires a secure foundation in these basic prerequisites. The *Ottawa Charter* also identified the health promotion processes, including *advocating*, *enabling* and *mediating* (see Figure 1). Advocacy aims to create the environmental (e.g., political, economic, social, cultural) and personal (behavioural and biological) conditions necessary for health. Enabling aims to reduce inequalities in current health status and ensure equal opportunities and resources for all people to achieve their fullest health potential. Mediation between different interests is to ensure the collaboration needed among sectors, communities, and health professionals to coordinate action and policy efforts.

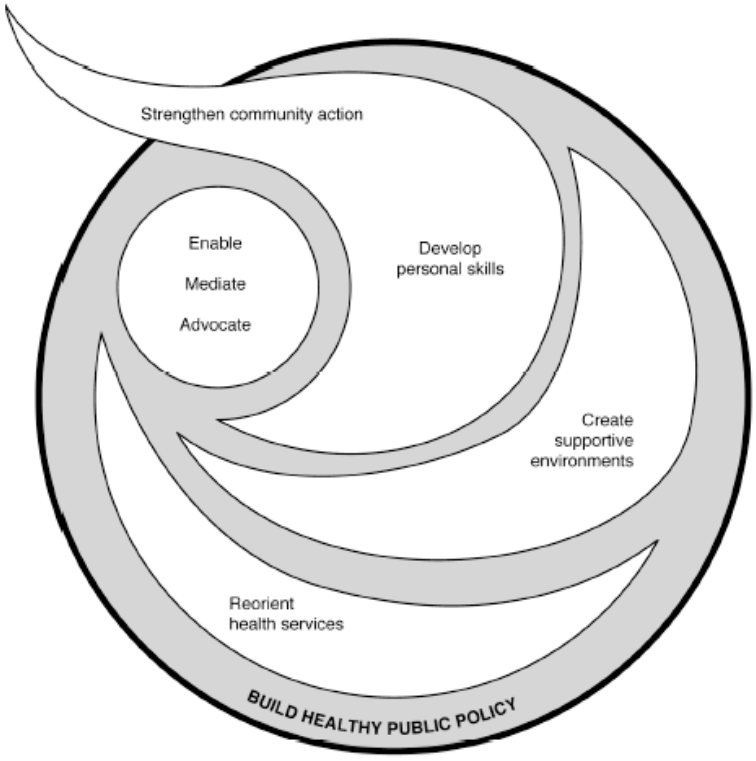

Figure 1 : Ottawa Charter for Health Promotion (WHO, 1986)

The most significant contribution of the *Ottawa Charter* to the health promotion movement was the following five fundamental action strategies and approaches:

a. **Build Public Policy.** Health promotion policy combines diverse but complementary approaches, including legislation, fiscal measures, taxation and organizational change. Health promotion policy requires the identification of obstacles to the adoption of healthy public policies in non-health sectors and ways to remove them;

b. **Create Supportive Environments.** The overall guiding principle for the world, nations, regions and communities alike, is the need to encourage reciprocal maintenance - to take care of each other, the community and the natural environment. The protection of the natural and built environments and the conservation of natural resources must be addressed in any health promotion strategy;

c. **Strengthen Community Actions.** At the heart of health promotion processes is the empowerment of communities - their ownership and control of their own endeavours and destinies. Community development draws on existing human and material resources to enhance self-help and social support, and to develop flexible systems for strengthening public participation in, and direction of, health matters. This requires full and continuous access to information and learning opportunities for health, as well as funding support;

d. **Develop Personal Skills.** By providing information, education for health, and enhancing life skills, health promotion increases the options available to people to exercise more control over their own health and over their environments, and to make choices conducive to health; and,

e. **Reorient Health Services.** The role of the health sector must move increasingly in a health promotion direction, beyond its responsibility for providing clinical and curative services. Reorienting health services also requires stronger attention to health research, as well as changes in professional education and training. This must lead to a change of attitude and organization of health services, which refocuses on the total needs of the individual as a whole person.

3.2.3 Empowerment and Community Participation

Following the *Ottawa Charter*, two terms became popular: *empowerment* and *community participation* (or *public participation*). The term *empowerment* does not mean "power over" but means "power to" or "power with". It occurs "not when power is given, but when power is taken by individuals and communities to enable themselves to set and achieve their own agendas" (Robertson & Minkler, 1994, p. 301). Empowerment leads the change of the relationship between health professionals and individuals or communities from a provider-client relationship to a partner relationship. Health professionals have to behave as "consultant, advocate, mediator and supporter, rather than the master of the situation" (Green & Raeburn, 1988, p. 157).

The term *community participation* is clearly defined in the *Alma Ata Declaration* (WHO, 1978) as "the process by which individuals and families assume responsibility for their own health and welfare and for those of the community, and develop the capacity to contribute to their and the community's development". Community participation is not simply asking for people's opinions of project proposals that have already been developed, or for their contribution to the implementation of projects imposed from outside. It means that people are involved from the earliest stages of the development process (e.g., analysis, decision-making, planning) to program implementation, without the involvement of external agencies.

3.2.4 Other Models of Health Promotion

Other models of health promotion, such as Beattie's Model and the Health Action Model, share similarities with the concepts of empowerment and community participation:

a. The **Beattie Model** (Beattie, 1991) maps out different health promotion strategies into four quadrants, ranging from authoritative to negotiated and individual to collective: health persuasion, legislative action, personal counselling, and community

development. Each quadrant conveys the means by which professionals may promote health. The manner of delivery can be top down or negotiated and bottom up. Health persuasion and legislative action are top down approaches aimed at redirecting unhealthy behaviours. Personal counselling and community development are bottom up approaches aimed at increasing individual and community empowerment. The Beattie Model allows the health professional to question what actions are really useful in delivering change and where a particular initiative fits into the overall strategy. It also shows that a coordinated approach is needed to achieve health gains; and,

b. The **Health Action Model** (Tones, 1987; 1995) is concerned with the ways in which the interaction between cognitive factors (knowledge and beliefs), a motivation system (consisting of values, attitudes and drives) and the pressures from social norms and significant others may combine to affect an individual's intention to act. It indicates how "healthy" public policy may be an essential prerequisite in making the healthy choice the easy choice.

3.3 Post-Ottawa Charter Stage – Various Approaches

3.3.1 Global Action Strategies

Five international conferences on health promotion have followed the *Ottawa Charter* since 1986. Each of these conferences emphasized a single *Ottawa Charter* strategy and made recommendations for action. The new concept of "healthy" public policy was clarified and illustrated in the *Adelaide Recommendations* in 1988. The concept of supportive environments conducive to health and the links with sustainable development were established in the *Sundsvall Statement* in 1991. The *Jakarta Declaration* (1997) became an important document for engaging developing countries in health promotion. High-level political commitment to health promotion was confirmed by more than 80 WHO Member States in 2000. The 6th Conference on Health Promotion (2005) proposed that "the world changes faster and the stage is set for health promotion to bring about better partnerships and effective actions for health promotion at a national as well as a global level."

3.3.2 Canadian Approach – About Population Health and Health Determinants

3.3.2.1 Population Health Framework

In 1990, Canadian Institute for Advanced Research (CIAR) economists Robert Evan and Greg Stoddart proposed a new approach for promoting health, *population health*, and tried to answer a critical question: Why are some people healthy and others are not? (Evans, Barer, & Marmor, 1994). The population health approach emphasizes the interaction between factors such as social, economic, cultural and physical environments, individual behaviour, genetics, health, well-being and prosperity in understanding the determinants of disease and use of health care services (Evan & Stoddart, 1990, 2003; Kindig & Stoddart, 2003).

Evans and Stoddard (1990) proposed a model to illustrate feedback loops for human well-being and economic costs. Based on their model, a diagram of a population health framework was presented in the report, *Strategies for Population Health: Investing in the Health of Canadians* (1994)[17]. The population health approach was officially endorsed by the Canadian government, and the population health framework has been frequently cited in the literature of health promotion. According to this framework, key determinants of population health include the following[18]:

a. **Income and Social Status.** It is not the amount of wealth but its relative distribution which is the key factor that determines health status. Likewise, social status affects health by determining the degree of control people have over life circumstances and, hence, their capacity to take action;

b. **Social Support Networks**. Support from families, friends and communities is important in helping people deal with difficult situations and maintaining a sense of mastery over life circumstances;

c. **Education**. Education, that is meaningful and relevant, equips people with knowledge and skills for daily living, enables them to participate in their community, and increases opportunities for employment;

d. **Employment and Working Conditions**. Meaningful employment, economic stability, and a healthy work environment are associated with good health;

e. **Physical Environment.** Factors such as air and water quality, the type of housing and the safety of communities have a major impact on health;

f. **Biology and Genetic Endowment.** Recent research in the biological sciences has shed new light on "physiological make-up" as an important health determinant;

g. **Personal Health Practices and Coping Skills**. Personal health practices are key in preventing diseases and promoting self-care. Just as important, are peoples' coping skills. Effective coping skills enable people to be self-reliant, solve problems and make choices that enhance health;

h. **Healthy Child Development**. Positive prenatal and early childhood experiences have a significant effect on subsequent health; and

i. **Health Services**. There is a relationship between the availability of preventive and primary care services and improved health (e.g., well baby and immunization clinics, education programs about healthy choices).

The framework of population health is shown below (see Figure 2) by categorizing the above determinants of population health into the following five main categories: personal health practices, individual capacity and coping skills, social and economic environment, physical environment, and health services.

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[17] See http://www.phac-aspc.gc.ca/ph-sp/phdd/docs/common/appendix_b.html.

[18] See http://www.phac-aspc.gc.ca/ph-sp/phdd/determinants/index.html#key_determinants.

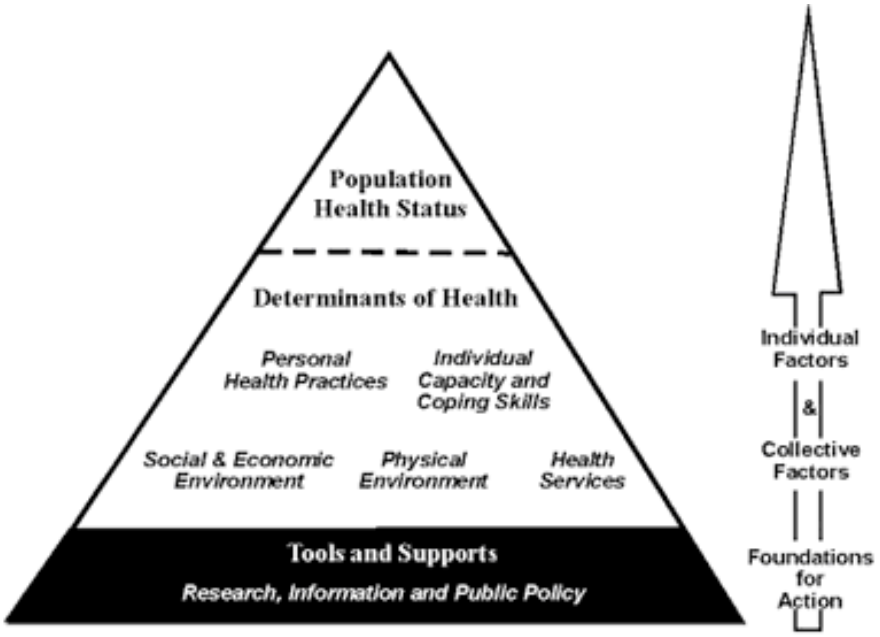

Figure 2: Framework for Population Health (cited from Hamilton & Bhatti, 1996)

3.3.2.2 Debate Between Health Promotion and Population Health

There are on-going debates among health promoters (who follow the *Ottawa Charter*) and population health advocates (Raphael & Bryant, 2002). For example, Vollman, Anderson, and McFarlane (2004) argue that, like health promotion, population health "focuses on the larger scope than the individual" (p. 14) and recognizes the key role of social and economic determinants of health; "unlike health promotion, however, population health is not rooted in empowerment, community development, qualitative research, social justice, or political advocacy" (p. 14-15). Researchers criticized the population health approach and argued that (1) population health is an approach to study health and originates from epidemiologic principles, statistical measures, and economic conservatism (e.g., Coburn, Denny, Mykhalovskiy, McDonough, Robertson, & Love, 2003; Poland, Coburn, Robertson, & Eakin, 1998; Raphael & Bryant, 2002); (2) population health provides the data that underscore the importance of factors other than the health care system in determining or influencing the health of large populations; and (3) the concept of population health is based on the absence of disease as the definition of health (Vollman *et al.*, 2004).

3.3.2.3 Population Health Promotion Model

Instead of engaging in the debate on health promotion and population health, Canadian researchers Hamilton and Bhatti (1996) offered a *population health promotion model* (see Figure 3). The model tries to answer three critical questions: On WHAT should we take action? HOW should we take action? With WHOM should we act? The key documents on health promotion and population health discussed above helped answer these questions. Hamilton and Bhatti believed that (1) the WHAT question can be answered by the *Strategies for Population Health: Investing in the Health of Canadians*, which lists the actions that must be taken on the full range of health determinants (income and social status, social support network, education, working conditions, physical environments, biology and genetics, personal health and practices and coping skills, healthy child development, and health services); (2) the HOW question can be answered by the *Ottawa Charter for Health Promotion*, which calls for a comprehensive set of action strategies to bring about the necessary change (strengthen community action, build healthy public policy, create supportive environments, develop personal skills, and reorient health services); and (3) the WHOM question can be answered by these two documents which affirm that, in order for change to be accomplished, action must be taken at various levels within society (e.g., individual level, family level, community level, sector/system level, and society level).

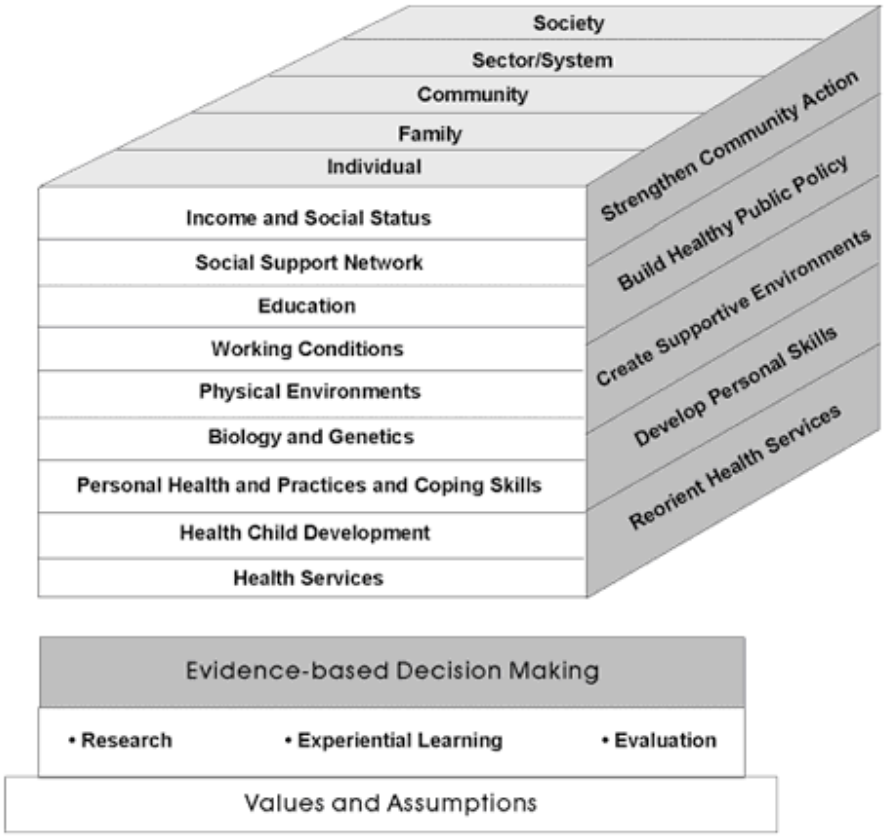

Figure 3: Population Health Promotion Model (Hamilton & Bhatti, 1996)

The population health promotion model has been accepted and employed in Canada. For example, Saskatchewan Health initiated a key document, *A Population Health Promotion Framework For Saskatchewan Regional Health Authorities*[19], to promote the health of Saskatchewan residents. Other researchers have further recognized culture and gender as determinants of health. These determinants of health are not listed in Hamilton and Bhatti' population health promotion model.

3.3.3 European Approach – About Health Determinants/Indicators

To improve European citizens' health status, health promotion experts from the European Union (EU) countries[20] developed a European Health Promotion Monitoring System. It includes a set of health promotion indicators and theoretical models, such as the European Union Health Promotion Indicator Development (EUHPID) Model (so called the EUHPID Health Development Model) and the EUHPID Health Promotion Model[21]. These models endorsed the *Lalonde Report*[22], the health field concept (Bauer, Davies, & Pelikan, 2006), as well as the *Ottawa Charter* (Davies, Hall, & Linwood, 2004; Davies, Sanchez, Tzimoula, & Linwood, 2002).

3.3.3.1 EUHPID Health Promotion Model

Health promotion experts conducted an in-depth review of existing health promotion models for health promotion indicator development (Davies *et al.*, 2002), but found that the reviewed models did not sufficiently meet the three major objectives of the EUHPID Health Promotion Model (Bauer *et al.*, 2006): (1) to provide a clear rationale for selecting, organizing and interpreting health promotion indicators (classification system); (2) to communicate the unique health promotion approach to the larger public health community (advocacy tool); and (3) to develop a common frame of reference for the fields of health promotion and public health which shows their interrelationship (dialogue tool). The experts decided to develop their own model, and the latest version of the EUHPID Health Promotion Model is illustrated in Figure 4.

Figure 4 depicts health promotion intervention on the left-hand side as a planned, intentional intervention (health promotion process indicators) to support ongoing health development (health promotion outcome indicators) on the right-hand side. Health promotion intervention (left-hand side) includes health promotion actions, health promotion approaches, and health promotion principles. The five health promotion actions, including social-ecological context

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[19] http://www.health.gov.sk.ca/ic_pub_3793_skhlthframewk.pdf.

[20] The experts are from Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. These experts also worked with a representative from the International Union for Health Promotion & Education.

[21] Davies et al (2004) believe that health development is an ongoing process of human life, and health promotion is one particular intentional intervention aimed at sustainable change in the health development process of individuals and their environments. The EUHPID Health Development Model underlies the EUHPID Health Promotion Model and is offered as a major contribution to the public health.

[22] See Section 3.1.1.

development, policy development, organizational/network development, community development, and competency building/health education, are based on the five areas of the *Ottawa Charter*. The three health promotion approaches are also the same as the three approaches in the *Ottawa Charter* (advocate, enable, and mediate). In addition, the EUHPID Health Promotion Model is underpinned by seven principles (empowering, participatory, holistic, intersectoral, equitable, sustainable, and multistrategy; as defined by Rootman *et al.*, 2001) which provide an internationally accepted underlying value basis for health promotion practice. Health development at the right-hand side of Figure 4 is the EUHPID Health Development Model and will be discussed in the following section.

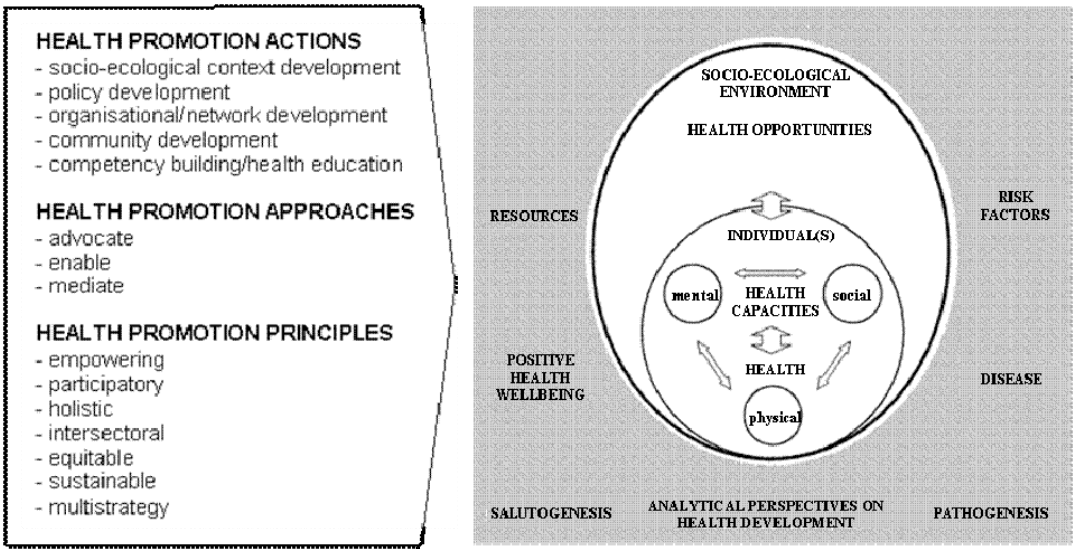

Figure 4: EUHPID Health Promotion Model (Davies et al., 2006, page 33)

The EUHPID Health Promotion Model covers the following more explicitly (Bauer *et al.*, 2006, p. 154):

a. Following the WHO definition, health includes three dimensions of physical, mental and social health[23];

b. Health develops by an ongoing interaction between the individual and his/her environment;

c. Ongoing health development can be analysed from salutogenic (health resources and positive health) or pathogenic perspectives (risk factors and disease);

d. Ongoing health development should be distinguished from intentional and specific interventions into this process to maintain and improve health; and,

[23] It should be noted that this model has not integrated the spiritual component of health yet.

e. For health promotion interventions, the *Ottawa Charter* (World Health Organization, 1986) action areas specify both health promotion actions and health promoting areas to be targeted by these actions.

3.3.3.2 EUHPID Health Development Model

The EUHPID Health Development Model (see Figure 5) underlies the EUHPID Health Promotion Model and is offered as a major contribution to public health. The model proposes that the health of individual(s) results from "an on-going, close interaction with their relevant social-ecological-economic environment" (Bauer *et al.*, 2006, p. 155). The individual determinants of health are the physical (e.g., bodily fitness), mental (e.g., sense of coherence) and social dimensions (e.g., accessing social support). The sub-dimensions of the environmental determinants of health include: social (e.g., density of social networks and cultural diversity), ecological (e.g., ergonomic workplaces) and economic sustainability (e.g., equal income distribution).

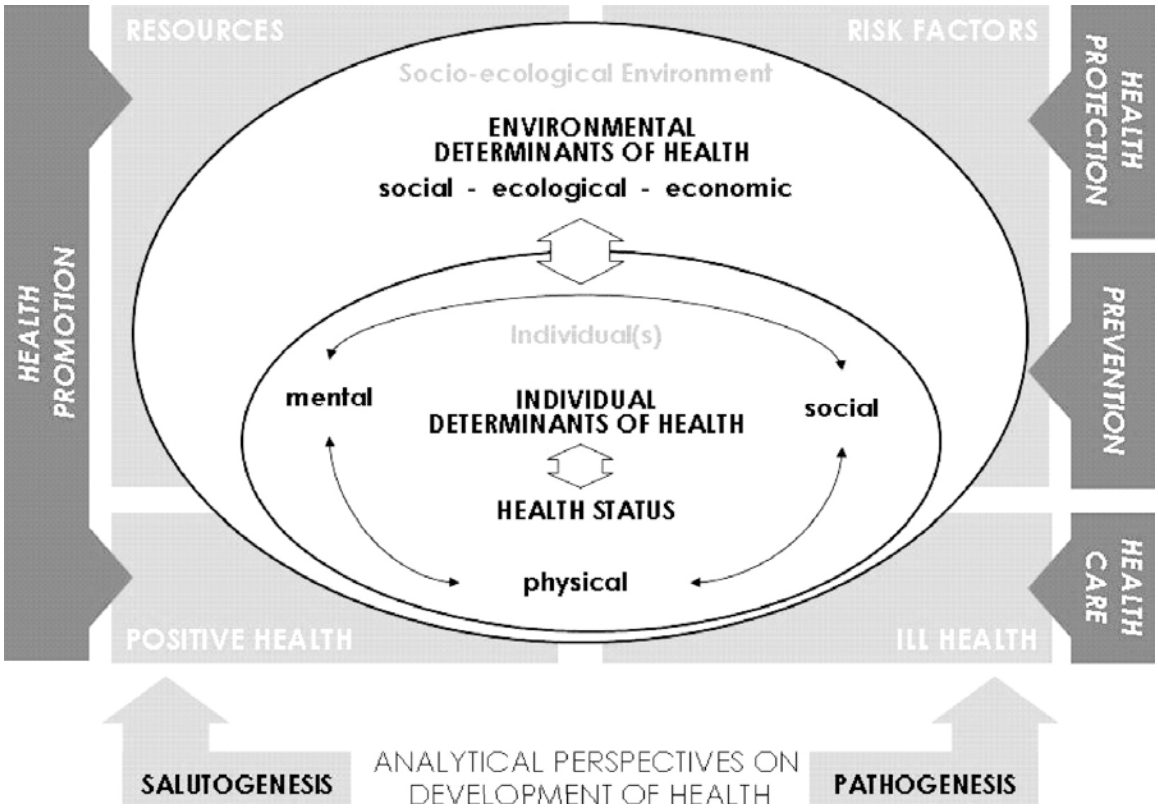

Figure 5: EUHPID Health Development Model (Bauer, Davies, & Pelikan, 2006, page 156)

The EUHPID Health Development Model insists that the ongoing processes of health development can be observed, analysed and intentionally influenced from two different but complementary paradigms: the pathogenic paradigm (see Section 2.2.3) and the salutogenic paradigm (see Section 2.3.4). Pathogenesis analyzes how risk factors of individuals and their environment lead to ill health, including disease, objective disorders, subjective sickness, malfunctioning and impairment. Salutogenesis examines how resources in human life support development towards positive health, including objective fitness, subjective wellbeing, optimal

functioning, meaningful life and positive quality of life. Bauer *et al.* also proposed that salutogenesis and pathogenesis are simultaneous, complementary and interacting real life processes: risk factors, such as high environmental noise levels, can impede salutogenic processes; resources, such as social support, can minimize the health impact of risk factors or help recovery from disease; the relative weight of salutogenic and pathogenic structures and processes will vary over the life cycle.

Bauer and colleagues (2006) also believed, "Health promotion primarily supports salutogenic health development by increasing resources, which allow better maintenance and enhancement of positive health. Prevention of ill health, health protection and health care start from elements of pathogenic risk factors of health development. Health care, including cure and rehabilitation, is triggered by disease and aims at restoring previously held health status, or at least reducing negative health effects in the case of palliative care. Certainly, any healing process supported by health care builds on health resources and thus has to support salutogenic elements as well" (p. 156). Thus, this model integrates both the pathogenic paradigm and the salutogenic paradigm.

3.3.4 Other Theoretical Attempts

3.3.4.1 Social-Ecological Model – About Social Determinants of Health

Researchers have proposed the social-ecological model, which concentrates on how social processes (e.g., formal and informal social networks) and agencies influence an individual's selection of health behaviours (Breslow, 1989; Green, Richard, & Potvin, 1996; Dennis, Draper, Holland, Shipster, Speller, & Sunter, 1982; Richard, Povtin, Kishchuk, Prlic, & Green, 1996; Sallis & Owen, 1999; Stokols, 1996; Walcott-McQuigg *et al.*, 2001). The model suggests that health behaviour does not occur in a vacuum, and should be considered within the social context – the social spaces and the larger environment within which individuals are embedded. This model also proposes that to change individuals' health-related behaviour, multi-level strategies of interventions, such as individual-, community-, and policy-level interventions, are needed (Steckler, Allegrante, Altman, Brown, Burdine, Goodman, & Jorgensen, 1995). The social-ecological model supports the ideas of health promotion (e.g., the *Ottawa Charter*), population health, and population health promotion.

3.3.4.2 Structural Perspective – About Complex Relationships Among Risk Factors

Rutten (1995) proposed a structural perspective of health promotion, which adopts a theory of complexity and structure to look at the true interrelationships of relevant elements (e.g. behavioural risk factors and health-related lifestyles) in the concept of health promotion. Figure 6 illustrates the ideas of the structural model in viewing the complex relationships among behaviour risk factors and disease.

Model 1 of Figure 6 describes bivariate relationships between each behaviour risk factor and disease. Anti-smoking campaigns are an example of applying Model 1 – a simple cause-and effect logic. However, Rutten believed that Model 1 excludes the complex interrelationships among behaviour risk factors and disease. Model 2 of Figure 6 presents a "linear, additive and recursive" logic, but Rutten argued that the complex interrelationships

among behaviour risk factors may not follow a linear logic. Rutten believed that Model 3 of Figure 6 illustrates the "complex forms of interaction that constitute patterns of behavioural risk, and associate these patterns with specific disease. Following Model 3, a health risk is not viewed as an isolated behavioural tendency, but rather as a component of a durable constellation of risks that take shape as lifestyle. Then, it is the lifestyle pattern that is evaluated on a continuum from poor to healthy to ideal health" (Rutten, p. 1630).

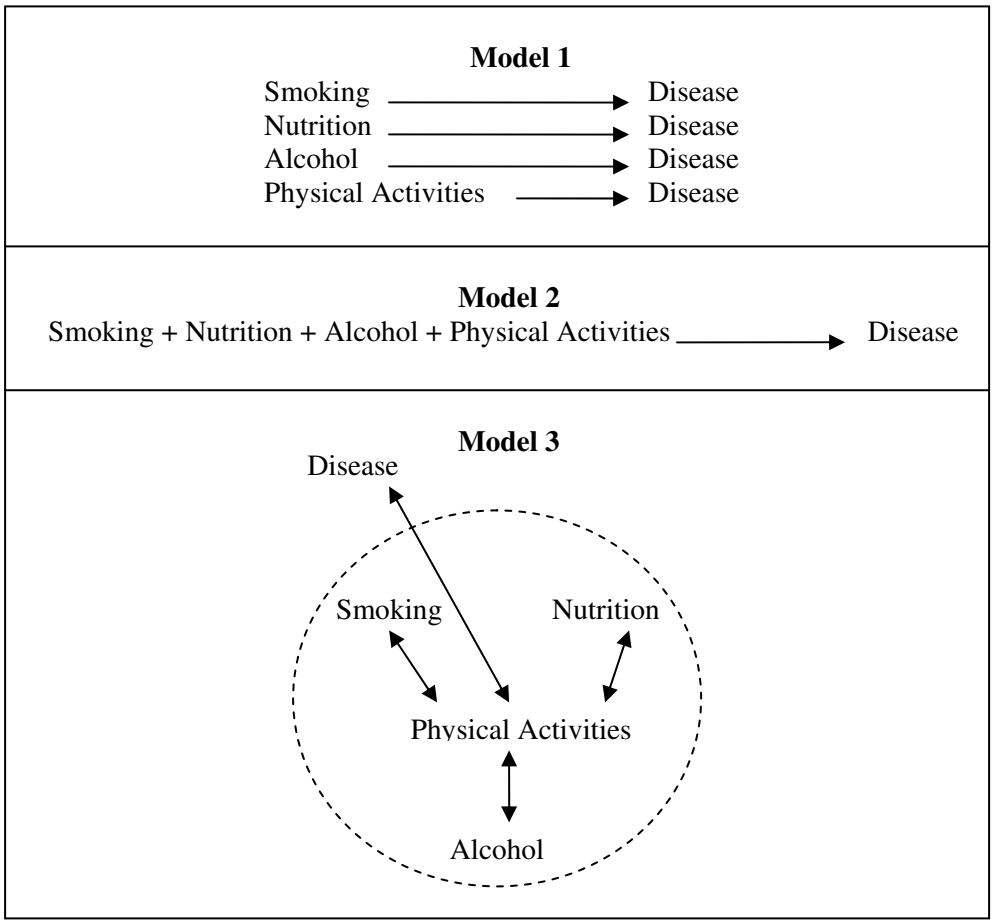

Figure 6: Different Models on the Relation of Behaviour Risk Factors and Disease (Rutten, 1995, p. 1629)

3.3.4.3 Economic Framework – About Individual Subjective Factors

Cawley (2004) proposed an economic framework for health promotion. He suggested that people are involved in the production of their own health; people may make their decisions to allocate their limited time and money to maximize their lifetime happiness. For example, "When deciding whether to eat large amounts of saturated fat, skip vegetables, be sedentary, smoke tobacco, take narcotics, or engage in other risky behaviour, individuals weigh the utility benefits of the behaviour (e.g., taste, relaxation) against the welfare losses of the behaviour (e.g., higher risk of morbidity and mortality)" (Cawley, 2004, p. 118).

Based on the economic framework, researchers (Pratt, Macera, Sallis, O'Donnell, & Frank, 2004) identified economic factors that have a strong influence, but have long been ignored or underestimated, on the physical activity-related choices made with sleep, leisure, occupation, transportation, and home.

3.3.4.4 Humanistic Approach – About Individual Subjective Factors

In 2000, David Buchanan published his book, *An Ethic for Health Promotion*, in which he suggested a complete paradigm shift in health promotion. Buchanan believed that, currently, most researchers and health professionals follow a scientific approach, which sees human behaviour as the product of antecedent factors that cause people to act in predictable ways. He also believed that human behaviour can be modified by manipulating these precursor social and psychological variables. Health professionals, thus, look for discrete risk factors for various diseases and, as a result of this endeavour, design programs for effectively promoting a new lifestyle for the population.

As an alternative, Buchanan suggested the humanistic approach. Following the humanistic approach, researchers and health professionals see human beings as endowed with a free will that allows them to choose between different courses of action. In this view, human action is guided by reason, which enables people to act or to actively refrain from acting on felt desires based on values and principles that they hold to be important (Frankfurt, 1971; cited from Buchanan, 2006). Instead of focusing on risk factors for various diseases, Buchanan suggested that health professionals may be concerned with the following questions: "What is a good way of life for people? What are important values to live by? Is it, for instance, better to remain sexually abstinent, or to be sexually active while protected by contraceptive devices?" (Nordenfelt, 2000, p. 318).

Researchers (e.g., Bellah, 1983) have suggested that, instead of focusing on behaviour change, health professionals could consider the possibility of helping people to develop their own capacity for exercising autonomy and responsibility. "At an individual level, humanistic criteria for evaluating health promotion programs might focus on evidence of informed decision-making; for example, (1) awareness of alternative courses of action; (2) the ability to enumerate the advantages and disadvantages of the major alternatives; (3) greater self-understanding of one's reasons for choosing one course of action over another; (4) greater satisfaction with one's decision; and (5) greater reassurance that one's decision better advances one's own life projects" (Buchanan, 2006, p. 2722).

Altman and Sevick (2002) criticized Buchanan's ideas and argued that "protecting personal decision-making autonomy may actually be harmful if we unquestionably honour people's preferences …… he fails to consider the fact that many (maybe most) public policies require a balancing act in which we have to determine how much autonomy we are willing to trade in order to achieve fairness or better health for our citizens" (p. 136-137). Facing these criticisms, Buchanan (2006) further clarified his theory and stated that it is better to understand the scientific approach and the humanistic approach as complementary rather than as competitive. Buchanan believed that the humanistic approach is more consistent with the goals of health promotion – improving quality of life.

3.4 Lessons Learned

The above models, theories, approaches, frameworks, and perspectives on health promotion, which aim at enhancing human well-being, can be broken down into four categories:

a. action strategies (e.g., the *Epp* framework, the *Ottawa Charter* and the global attempts following the *Ottawa Charter*);

b. health determinants (e.g., the health field model, population health, the population health promotion model, the EUHPID models);

c. individual factors (e.g., the economic framework, the humanistic approach); and,

d. relationships among health determinants (e.g., the structural perspective, the social-ecological model).

By tracing the history of the health promotion movement, it becomes clear that Canada took a leading role in the health promotion movement. Nevertheless, the Canadian approach is not the only approach to health promotion. As with the other approaches, the Canadian approach has its own strengths and limitations.

4 Theoretical Limitations of CF Health Promotion

Having discussed the paradigm shifts in defining the concept of health and the development of health promotion models, this chapter examines the CF approach to health promotion in terms of its definition of health, its framework and evaluation model, and then discusses some of the theoretical limitations.

4.1 CF Definition of Health

On 29 March 2005, the CF issued a key document on health promotion: *ADM(HR-Mil) Instruction 03/05: Health Promotion*. The document stated that health is "A state of physical, mental, spiritual and social well-being, and not merely the absence of disease or infirmity. Health is a positive resource for meeting the challenges of daily living (not the objective of living). Health is a positive concept emphasizing social and personal resources, as well as physical capacities." This definition of health reflects the paradigm shifts in defining health – from focusing on disease to focusing on illness and from analyzing the causes of disease/illness to promoting well-being. However, this definition does not reflect the dynamic nature of health – health is the result of an individual pursuing a high level of physical, mental, spiritual, and social well-being in his or her social, economic, cultural, and physical environments. Thus, it is suggested that the CF need to update their definition of health.

4.2 CF Population Health Promotion Framework

The CF health promotion program – *Strengthening the Forces* (*StF*)[24] – is designed to assist CF members in increasing control over and improving their overall health and well-being. The core programs of the *StF* include: addiction awareness and prevention (alcohol, drugs, gambling, tobacco); injury prevention and active living; nutritional wellness (healthy eating, weight wellness); and social wellness (suicide prevention, anger management, stress management, health relationships, and family violence)[25].

According to one of the key documents of CF health promotion, *An Evaluation Framework for* "*Strengthening the Forces*" (*StF*) (2005), the CF have adopted the population health framework to guide their health promotion practices. However, by adopting the population health framework, the CF encounter several theoretical problems. For example, the underlying paradigm of the population health framework – health is the absence of disease – is contradictory to the CF definition of health, which is "a state of physical, mental, spiritual and social well-being, and not merely the absence of disease or infirmity."[26]

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[24] See http://www.forces.gc.ca/health/Services/Engraph/health_promotion_home_e.asp.

[25] See the programs at http://www.forces.gc.ca/health/services/health_promotion/engraph/Programs_toc_e.asp?Lev1=1&Lev2=11&Lev3=2.

[26] ADM(HR-Mil) Instruction 03/05 Health Promotion. http://www.forces.gc.ca/hr/instructions/engraph/0305_admhrmil_e.asp.

In addition, the CF have made a weak argument while applying the population health framework. The CF argue that, while not all of the key health determinants within the population health framework[27] are individually relevant to the health promotion mandate in the military, the population health framework is useful to military health promotion initiatives, particularly if "population" is interpreted to be military personnel as a whole[28]. However, picking up some health determinants and ignoring others diverts from the population health framework, which emphasizes interactions among all health determinants.

Furthermore, the population health framework that the CF have adopted has since evolved to the population health promotion model, which overcomes the theoretical weaknesses of the population health framework[29]. Other theoretical frameworks of health promotion also provide additional insights. For example, the humanistic approach and the economic framework indicate the impact of an individual's values and allocations of time and money on undertaking healthy behaviours; the EUHPID model highlights free of diseases and optimal health simultaneously; the structural perspective further discloses the complex interrelationships among behavioural risk factors and health-related lifestyles. Thus, it is recommended that the CF update their theoretical framework on health promotion.

4.3 CF Health Promotion Evaluation Model

The CF have typically used logic models in their health promotion evaluation practices[30]. Logic models are diagrams which show the major components of a program with arrows linking these components to reflect the sequence of events necessary for the program to be effective (Israel, n.d.). There are three basic types of logic models: outcomes approach[31], activities approach, and theory approach logic models[32].

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[27] Key determinants of population health include: Income and Social Status, Social Support Networks, Education, Employment and Working Conditions, Physical Environment, Biology and Genetic Endowment, Personal Health Practices and Coping Skills, Healthy Child Development, and Health Services (see Section 3.3.2.1).

[28] See *An Evaluation Framework for "Strengthening the Forces" (StF) (2005).*

[29] See Section 3.3.2.3.

[30] The StF Health Promotion Program Evaluation Logic Models include evaluation logic models of: Overall Evaluation; Addition Awareness & Prevention: Alcohol & Drugs; Awareness & Prevention: Tobacco & Gambling; Injure Prevention & Active Living; Nutritional Wellness; Social Wellness: Suicide & Anger Mgmt; Social Wellness: Stress, Healthy Families & Family Violence.

[31] They are also called as outcome sequence model (Hatry, 1999) or impact theory model (Rossi, Freeman & Lipsey, 1999).

[32] See *Using Logic Models to Bring Together Planning, Evaluation, and Action: Logic Model Development Guide*. W.K. Kellogg Foundation, at http://www.wkkf.org/Pubs/Tools/Evaluation/Pub3669.pdf.

The outcomes approach logic model is widely used in health promotion evaluation practices in Canada, and has been adopted by the CF (see Figure 7). The focus of this type of logic model is on describing outcomes which are caused by the programs, and is often used as a basis for identifying a program's performance measures. This model often subdivides outcomes and impacts over time to describe short-term (1 to 3 years), long-term (4 to 6 years), and impact (7 to 10 years) that may result from the program[33]. However, the outcomes approach logic model has limitations that the CF have to consider:

a. The outcomes approach logic model only diagrams expected outcomes but excludes unexpected outcomes. The assumptions of this type of logic model are omnipotent: "because we have a plan, we will succeed in implementing it" (Cooksy, Gill, & Kelly, 2004);

b. The outcomes approach logic model does not account for the effects of feedback or the issues of participation within the programs; and,

c. The outcomes approach logic model is shown in a linear fashion, but programs address multiple contributing factors and may contribute to multiple outcomes and impacts. Thus, the relationships among the boxes are expected to be non-linear.

The CF have not used the other two basic types of logic models: the activities approach logic model or the theory approach logic model. The activities approach logic model pays the most attention to the process of program implementation, and the theory approach logic model links theoretical constructs together to explain the underlying assumptions of a program. These two types of logic models are particularly appropriate for complex, multi-faceted initiatives, which involve many layers of activities and inter-institutional partnerships, aimed at impacting multiple target populations. Because the health promotion and physical fitness programs in the CF are complex initiatives, subsequent research should explore the possibility of using these two types of logic models or other evaluation models.

[33] See *Using Logic Models to Bring Together Planning, Evaluation, and Action: Logic Model Development Guide*. W.K. Kellogg Foundation, at http://www.wkkf.org/Pubs/Tools/Evaluation/Pub3669.pdf.

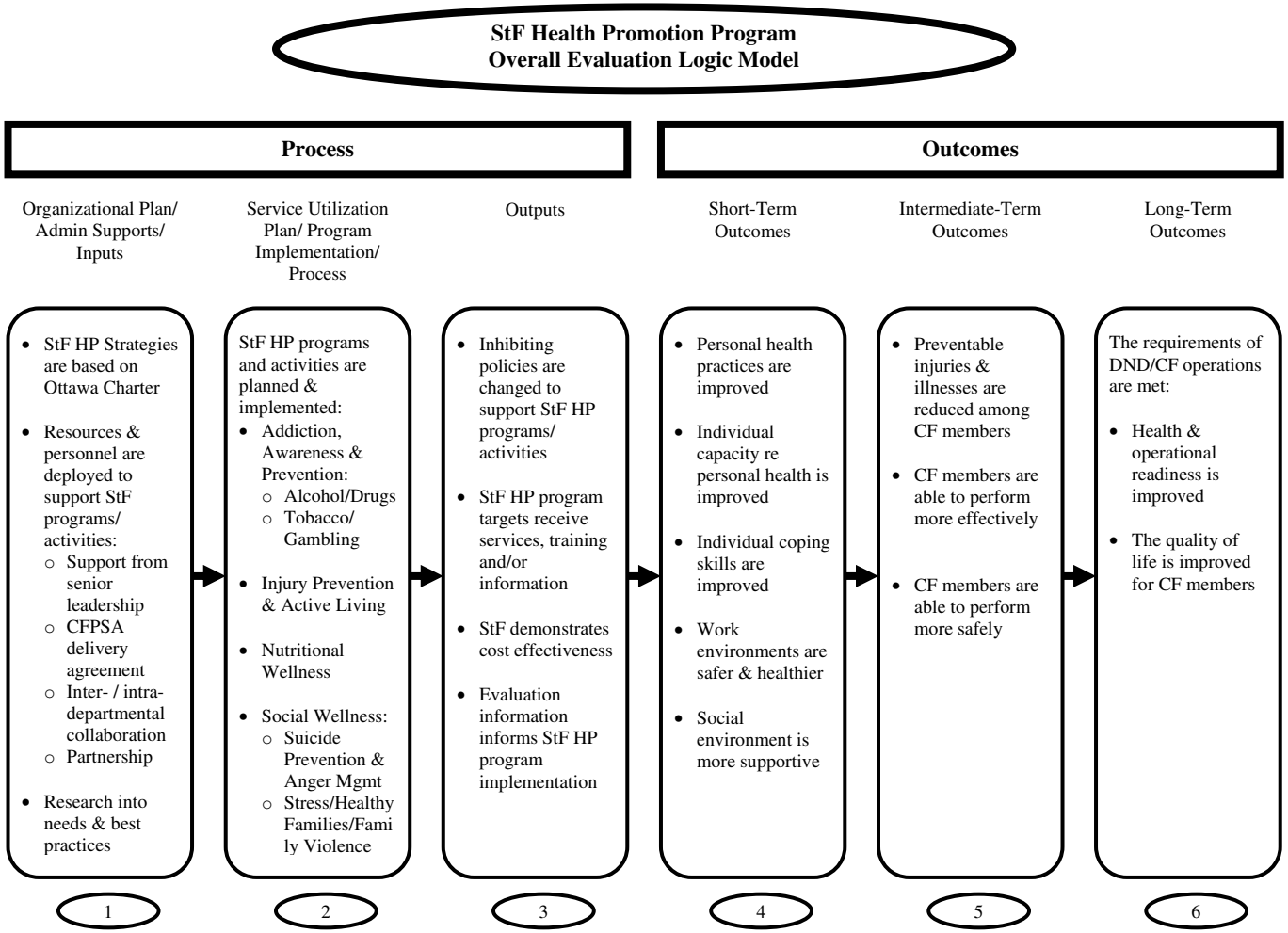

Figure 7 : StF Health Promotion Program Overall Evaluation Logic Models (An Evaluation Frameworkfor "Strengthening the Forces" (StF))

5 Summary and Recommendations

5.1 Summary

The main findings of this paper are as follows:

a. Health is free of disease/illness, and is the result of an individual pursuing a high level of physical, mental, spiritual, and social well-being in his or her social, economic, cultural, and physical environments.

b. The history of the health promotion movement shows that Canada has taken a leading role worldwide. As with the other approaches, the Canadian approach has its own strengths and limitations.

c. The CF definition of health does not reflect the dynamic nature of health. The population health framework that guides CF health promotion has theoretical limitations, such as an inappropriate health paradigm and a weak argument for applying the population health framework to the CF. The outcome approach logic model used in CF health promotion evaluation practices also has its limitations and should be reconsidered.

5.2 Recommendations

The CF should consider adjusting its definition of health, its health promotion theoretical framework, and its health promotion evaluation framework. The next paper in this series, *Promoting and Sustaining a Healthy and Fit Force: A Holistic Model* (Wang & Dunn, 2009), proposes a conceptual model to guide the CF efforts to integrate health and physical fitness.

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List of symbols/abbreviations/acronyms/initialisms

CF	Canadian Forces
CIAR	Canadian Institute for Advanced Research
EU	European Union
EUHPID	European Community Health Promotion Indicator Development
PMT	Protection Motivation Theory
StF	Strengthening the Forces
U.S.	United States
WHO	World Health Organization

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The physical fitness of military personnel is an essential and critical component of operational readiness – from both employability and deployability aspects - and as such, has been concentrated on since 2,500 B.C.. Military service can be physically demanding, and military personnel must maintain high levels of physical fitness to perform their duties efficiently in complex and stressful environments. However, operational readiness requires military personnel to not only be physically fit, but to also be healthy; that is, functionally well in physical, mental, emotional, social and spiritual aspects. For example, military personnel experiencing mental problems or interpersonal conflicts may not be able to optimally perform their duties, and military personnel experiencing health problems may become physically unfit. Thus, to achieve operational readiness, militaries have to go beyond physical fitness training and testing, and promote and sustain a healthy and fit force.

The intent of this paper is to discuss the historical and theoretical background of health promotion. This paper first reviews paradigm shifts in defining the concept of health, and then examines the development of various health promotion models. Finally, the theoretical limitations of CF health promotion are discussed, and future research is recommended.

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