

PREVENTING YOUTH OVERWEIGHT AND OBESITY: A POPULATION HEALTH PERSPECTIVE⁷

PRÉVENIR LA SURCHARGE PONDÉRALE ET L'OBÉSITÉ CHEZ LES JEUNES : UNE PERSPECTIVE DE SANTÉ DES POPULATIONS

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Abstract

Addressing dramatic increases in overweight and obesity among populations worldwide is a global challenge – causation is complex and remedy difficult. A focus on individual behaviour change, although an integral aspect of prevention and treatment, is only one of multiple strategies and actions that are needed, and not necessarily the most important. A population health perspective is critical to understanding and taking action on this serious health problem. This paper sets out the context for this epidemic as it affects youth, considering it from a population health perspective, and explores the potential contribution of two population health paradigms – sense of coherence and collective efficacy.

The paper concludes that sense of coherence and collective efficacy have both common and unique contributions to make to population health. It is proposed that an integrative population health intervention approach must focus on youth *health*, not weight alone. Used to guide the development of a comprehensive prevention strategy, this integrative approach should include collective efficacy and group-level aspects of sense of coherence. A comprehensive strategy and integrative approach will further understanding of the pathways through which these paradigms influence health of youth, and how the serious increases in overweight and obesity among children and adolescents can be remedied.

Résumé

S'attaquer à la question de l'augmentation dramatique des cas d'embonpoint et d'obésité dans la population mondiale représente un défi universel – Les causes sont complexes et les solutions difficiles. Mettre l'accent sur le changement comportemental individuel, bien qu'un aspect de la prévention et du traitement, n'est qu'une des multiples stratégies et actions requises et pas nécessairement la plus importante. La perspective de santé des populations est critique pour comprendre et agir sur ce sérieux problème de santé. Cet article relate le contexte de cette épidémie qui affecte la jeunesse en adoptant une perspective de santé des populations, et explore la contribution potentielle de deux paradigmes de santé : le sens de cohérence et l'efficacité collective.

Cet article conclut que le sens de cohérence et l'efficacité collective ont des contributions uniques et communes à apporter à la santé des populations. Il est proposé qu'une approche intégrée de santé des populations mette l'accent sur la santé des jeunes et non sur le poids seulement. Utilisée pour guider le développement d'une stratégie de prévention, l'approche intégrée devrait inclure l'efficacité collective ainsi que des aspects du sens de cohérence en ce qui concerne les groupes. Une stratégie compréhensive et une approche intégrée aideront à améliorer notre compréhension des voies par lesquelles ces paradigmes influencent la santé des jeunes et la façon dont l'augmentation sérieuse des cas d'embonpoint et d'obésité chez les enfants et les adolescents peut être remédiée.

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Introduction

The challenge of addressing dramatic increases in overweight and obesity among populations worldwide is not solely, as many suggest, “getting people to eat properly and get more exercise.” Causation is complex and remedy difficult. Current focus on individual behaviour change, although an integral aspect of prevention and treatment, is only one of multiple strategies and actions that are needed, and not necessarily the most important.

The premise of this paper is that a population health perspective is critical to understanding and taking action on this serious health problem. The paper will first set the context for this ‘epidemic,’ with a focus on children and adolescents, and consider it from a population health perspective. It will then explore the potential contribution of two specific population health paradigms – sense of coherence and collective efficacy.

Two conditions – overweight and obesity are the focus of this paper. Due to the broad nature of the paper, they are grouped together. To be clear that both conditions are being jointly referred to, the term ‘overweight and obesity’ is used predominantly. When either is used individually, it is to indicate that the specific condition is the subject of discussion. It is important to note, however, that overweight and obesity are conditions that occur at different points of weight gain, can have very different outcomes, and possibly different determinants and risk factors. The public health literature often makes little distinction between them from both causation and treatment perspectives. It should also be understood that when the term ‘youth’ is used, it is referring to children and adolescents.

Problem Overview

Overweight and obesity are chronic disorders that affect many millions of children, adolescents and adults

worldwide. These conditions represent a continuum of excess body fat (adiposity) that can lead to compromised health, and are most often defined by BMI (Body Mass Index), a weight to height ratio. They develop when energy intake exceeds energy expenditure over a long period of time. It may be that this imbalance is small but chronic, making it difficult to precisely identify and measure.^{1,2}

Adiposity is caused by a complex set of biological, behavioural, social and environmental factors, including genetics, metabolic rate, diet, physical activity levels, and societal factors including socioeconomic status, ethnicity and poverty. It is a significant risk factor for several serious and potentially life-threatening health problems, such as diabetes, coronary heart disease, high blood pressure, stroke and some types of cancers, as well as psychological disorders such as depression, eating disorders, low self esteem and body image problems. Gall bladder disease, sleep apnea, breathing problems, osteoarthritis, complications of pregnancy, birth defects and infertility can also result.³

Levels of overweight and obesity in much of the world have risen steadily over the past 20-30 years. The potential for premature death is predicted to increase as obesity continues to increase in most developed countries and increasingly in the developing world. Estimates indicate that, in 2002, more than 300 million people worldwide were obese and 1.1 billion people were overweight.^{4,5} Of these, 155 million school-age children and 22 million children under the age of 5 were overweight.³ Recent predictions suggest that current trends in increasing obesity threaten to negatively impact life expectancy, potentially leading to a decline for the first time in two centuries.⁶ Although these increases affect individuals of all ages and ethnicity, some of the largest increases are being seen among adolescents and minorities. Overweight and obesity are now considered a global health epidemic.^{7,8}

Recent conflicting findings concerning the number of premature deaths due to obesity in the US highlight the challenges of determining the magnitude of the impact of overweight and obesity on the health of populations. However, the severity of their present and future consequences cannot be dismissed. In 2001, obesity ranked 7th in risk factors leading to death among both developed and developing countries.³ Researchers estimate that between 1985 and 2000, overweight and obesity accounted for ~57,000 deaths in Canada.⁹

The social and economic consequences of overweight and obesity are also significant. The social burden of prejudice, ostracism, psychological stressors, and reduced educational and employment opportunities experienced by those who are overweight or obese significantly impacts quality of life and well being.¹⁰ Economic costs are also substantial and increasing. Worldwide, direct costs have been estimated to range from 2-7% of national health care budgets.^{10, 11} The health, social and economic costs of obesity in Canada and other countries world-wide are strong indicators of the important and urgent need for effective prevention and treatment of overweight and obesity.

Youth Overweight and Obesity

Over the past three decades, dramatic increases in overweight and obesity have occurred in all age groups, but children and adolescents are particularly vulnerable. At the 2005 European Congress on Obesity, Chairman Constantine Tsigos stressed that prevention efforts must focus on the young because excess weight in children is linked to health risks that increase the odds of developing diabetes, heart disease, and stroke.¹² Ten percent of the world's youth aged 5-17 are affected by overweight and obesity.³

Youth overweight and obesity are also extremely serious in the context of adult obesity and the link between the two.¹³⁻¹⁵ Olshansky and colleagues suggested that, because being overweight in childhood tracks into adulthood, the

negative effects on the health and longevity for today's youth will worsen in the future if they are left unchecked.⁶ In particular, cardiovascular disease (CVD) and type 2 diabetes risk factors develop early in life and are prevalent in overweight and obese children.^{16, 17} While genetic predisposition plays an important role, other known risk factors including poor diet and low physical activity levels are believed to be modifiable. Trends in behavioural determinants also confirm that these factors are becoming increasingly prevalent among children and adolescents. Overall, they are consuming more high-fat, high-sugar foods and beverages, fewer raw fruits and vegetables, and are getting less physical exercise.¹⁸ Sedentary behaviour may be related to obesity and a relationship has been found between television watching and risk of being overweight or obese.^{13, 19-21}

Furthermore, youth are challenged to practice healthful behaviours in what is often referred to as the "obesogenic" environment within which they live.^{7, 22} This environment routinely promotes empty calorie junk foods to youth and parents as quick, cheap and nutritious. In addition, entirely new sedentary communication pastimes on computers are becoming extremely popular among youth. As Lobstein and colleagues put it, "A child's genetic make-up 'loads the gun' while their environment 'pulls the trigger.'"^{22(p5)}

A Population Health Approach to Youth Overweight and Obesity

Population Health Defined

Health researchers and practitioners continue to refine definitions and conceptualizations of population health. The definition below, from the Federal, Provincial Territorial Advisory Committee on Population Health, is broad and comprehensive.

Population health refers to the health of a population as measured by health status indicators and as influenced by social, economic and physical environments, personal health practices, individual capacity and coping skills,

human biology, early childhood development, and health services.

As an approach, population health focuses on the interrelated conditions and factors that influence the health of populations over the life course, identifies systematic variations in their patterns of occurrence, and applies the resulting knowledge to develop and implement policies and actions to improve the health and well-being of those populations.^{23(p7)}

From this definition and others,^{24, 25} several important aspects of a population health approach are evident. The goals of a population health approach are to improve the health of populations and to decrease health status inequities. Based on these goals, the Public Health Agency of Canada has identified eight key elements of a population health approach.²⁶ These are to:

- Address the determinants of health, recognizing that they are complex and interrelated;
- Focus on the health of populations;
- Invest upstream;
- Base decisions on evidence;
- Apply multiple strategies to act on the determinants of health;
- Collaborate across levels and sectors;
- Employ mechanisms to engage citizens; and
- Increase accountability for health outcomes.

Other important facets of population health include complexity, emergence, and systems theory. Complexity suggests that population health must encompass new thinking about how complex systems actually operate, and emergence, an aspect of complexity, refers to the concept that entities are different from the sum of their parts. Populations take on characteristics that are unique and must be understood and approached differently than either individuals or aggregates. Systems theory builds on complexity by suggesting that the emergent characteristics of population health result from the interactions between its various components.

In addition, population health practitioners advocate a transdisciplinary team approach. Transdisciplinarity requires researchers and practitioners from all relevant disciplines to work together to find new and unique understanding and solutions to population health challenges. The critical difference between transdisciplinarity and other approaches to combined disciplinary study is that transdisciplinarity represents more than a melding of different perspectives. Its outcomes are important because they are unique and integrative.

The Importance of a Population Health Approach to Youth Overweight and Obesity

One of the important contributions of population health to advancing the study and practice of health and well-being is its insistence that responsibility for health be placed on the shoulders of societies as well as individuals. Focus is also placed upstream in the continuum of causation and intervention. “Moving upstream” means that understanding and change must take place at societal and policy levels of government and industry, as well as at points downstream – organizations, communities, neighbourhoods and individuals.²⁵

Population health provides an approach to health that is wide ranging, by including influences from all environments – cultural, social, physical and economic. When influences and determinants of youth overweight and obesity are examined, a population health perspective will consider factors related to the social and cultural environments. These include, for example, the family (e.g., family structure, employment patterns and eating and physical activity practices); the school (e.g., school policies, funding sources and practices related to food availability and activity levels); and the community (e.g., availability and affordability of programs and services within the community). It will also consider the economic environment and the potential impact of socioeconomic status (SES), ethnicity and poverty, all of

which have been shown to be associated with poor health status, and in some cases overweight and obesity.²⁷ It is important to note, however, that SES is a complex indicator and its relationship to overweight and obesity is variable. For example, in the Canadian Institute for Health Information review of overweight and obesity from a population health perspective, it was found that rates of overweight and obesity increased with increasing income levels among Canadian men, but decreased for higher income women.²⁵

A population health approach will also examine physical environment factors such as availability, accessibility and safety of recreational facilities and playgrounds, and urban planning and land use policies and design. Finally, important ecological influences including the media (e.g., TV and product advertising), industry (e.g., location of supermarkets, and types of foods available), transportation (e.g., access to public transit) and community characteristics (e.g., levels of violence, drug use, community cohesion, safety and mobility) will be considered.

A population health approach considers the interactive nature of these factors as they become compound threats to overweight and health, and acknowledges the complex nature of this interaction. Further, the study of causation and intervention should be carried out by transdisciplinary teams. The range of disciplines includes psychology, sociology, medicine, dietetics, nutrition, physical education, kinesiology, medicine, urban planning, public/population health, geography, epidemiology and education. This approach is relatively new and not without its challenges.²⁸ However, it holds significant promise for new approaches to problem solving and innovation in addressing the complex challenge of preventing youth overweight and obesity.

Population health strategies and interventions to prevent youth overweight and obesity include national level policies and legislation (e.g., national priority setting and research funding, low nutritional food taxation, healthy

food subsidization); food industry initiatives (e.g., labeling of ingredients and nutrient content, restaurant and school healthy food choices, advertising restrictions on low nutritional foods); healthcare participation (e.g., incentives for health promotion and lifestyle change intervention, health professionals' training, identification of high risk groups and individuals); and school and community initiatives (e.g., safer venues for physical activity, local education campaigns and events promoting physical activity, formation of prevention coalitions, healthy school food and activity programs).⁸

To summarize, bringing a population health perspective to youth overweight and obesity prevention leads to the integration of social and individual choices, it moves prevention away from unidimensional, single strategy and single discipline approaches, and it acknowledges the importance of social and environmental influences. This integrative approach leads to a strong emphasis on upstream and multi-level, multi-strategy prevention efforts, intersectoral and transdisciplinary collaborations, and longer term innovative interventions.

Applying Two Population Health Paradigms to Youth Overweight and Obesity Prevention

Overview

The population health approaches evident in the obesity intervention literature hold significant promise for mitigating the consequences of youth overweight and obesity. However, it must be recognized that the status quo, by focusing on individual responsibility, continues to stigmatize those who are overweight or obese. We must look beyond today's world to challenge existing conceptualization of the problem and its solutions. It is essential that population health initiatives focus on youth's *health*, rather than their weight. Furthermore, the impact of the social and physical environments must be carefully studied and addressed.

The remainder of the paper investigates the application of two population health paradigms to the prevention of

youth overweight and obesity – sense of coherence²⁹ and collective efficacy.³⁰ These paradigms represent important concepts that have received little attention in the main stream population health literature. However, they have much to contribute to the understanding of effective approaches to youth overweight and obesity prevention.

The first concept, sense of coherence (SOC) originated in Antonovsky's salutogenic theory of coping resources and adaptation. This theory views health as a dynamic human condition that is located along a continuum of good health to poor health or disease.²⁹ The paradigm asks what is it that makes people healthy rather than what makes them sick. This is an important perspective to bring the study of youth overweight and obesity prevention efforts, as we shift away from placing responsibility on the individual and look to change in broader environments that is focused on health rather than weight.

As we look to broader environments within which to locate youth overweight and obesity prevention efforts, a critical environment is the community. The second concept, collective efficacy, developed by Bandura, is based in social cognitive theory (SCT).³⁰ Collective efficacy refers to a group's shared belief in its capability to organize and execute actions required to achieve certain goals.³⁰ In community-oriented terms, this means that community members are willing to look out for each other and intervene when necessary.³¹

These two concepts will be expanded upon next, and their relevance to population health and youth overweight and obesity prevention discussed. The paper concludes with comments on lessons to be learned from these paradigms, and the implications for youth interventions.

Salutogenesis and Sense of Coherence: "Health as a Movement"

Overview

Antonovsky's salutogenic theory of health is based on the premise that it is more important to focus on resources

and capacity to produce health, than to focus on ill health and disease.^{29, 32} The key elements of this model include a problem solving orientation and capacity to use available resources to effectively respond to stressful situations. This capacity, accompanied by an understanding of where one is located on the health ease/dis-ease continuum, is referred to as sense of coherence (SOC). The total population becomes the focus, not individual illnesses or disease, as do the social and cultural forces that shape behaviour and influence health. SOC is a "global orientation to one's inner and outer environments which is hypothesized to be a significant determinant of location and movement along the health ease/dis-ease continuum."^{33(p731)}

Generalized resistance resources are also critical to understanding how people move towards health. These resources are determined by life experiences as well as genetics and psychosocial influences. They include material resources, knowledge and intelligence, coping strategies that are flexible, rational and far-sighted, social supports and ties, commitment to a social group, cultural stability, and a preventive health orientation. Resistance resources provide life experiences with three characteristics – they are consistent (comprehensibility), there is a reasonable balance in demands (manageability), and they provide opportunities for participation in decision making (meaningfulness). In contrast, generalized resistance deficits such as low self esteem, isolation, socioeconomic disadvantage and cultural instability will move people towards the dis-ease end of the continuum.

It is the interaction between these deficits, environmental forces and resistance resources that determine location on the health ease/dis-ease continuum. Although the relationship between sense of coherence and health is indirect, SOC is thought to help mobilize generalized resistance resources, promote coping, and resolve tension. In this way, a strong SOC contributes to health. A weak

SOC, operating through generalized resistance deficits will threaten health.

Antonovsky also viewed SOC as a group property which could be applied at the social level.^{29, 32} He stated that he saw group SOC as an emergent group property, particularly for a primary group such as a family, small local community, and work or friendship group. A sense of group consciousness was needed. He suggested that group SOC might influence individual health, especially for children and adolescents, as well as influence collective stressors and coping mechanisms. The family has received attention as one important group within which SOC likely functions at the group level. Antonovsky concluded, “The role of “family personality” in coping with stressors and influencing health may well be at least as significant as individual personality and, possibly even more so.”^{32(p47)}

The SOC scale that operationalizes sense of coherence was initially a 29-item semantic differential questionnaire (SOC-29), based on Guttman’s facet theory. A shorter 13-item version (SOC-I3) has also been developed. Both scales ask respondents to rate themselves on a scale of 1-7 on statements related to the three factors that comprise the construct – comprehensibility, manageability and meaningfulness. In 1993, Antonovsky presented the predominantly positive evidence for the feasibility, reliability, validity (content, face and consensual, construct, criterion) and unidimensional factor structure of the SOC-29 and -I3 scales.³³ In a systematic review of the validity of both scales based on studies from 1992-2003, Eriksson and Lindstrom concluded that based on 124 studies using SOC-29, 127 studies using SOC-I3 and 60 studies using a modified SOC scale, the scale overall “psychometrically comparatively sound, ... being reliable, valid, feasible and cross-culturally applicable.”^{34(p463)} They commented, however, that the structure of the concept was not yet completely clear – that it is more likely multidimensional rather than unidimensional as Antonovsky initially believed. The

SOC instrument has been used repeatedly in its two forms and has also been adapted for family and school environments and for use with children.³⁵

Population Health Perspectives

Much of the research using the SOC life orientation questionnaire has investigated mental health conditions, consistently finding negative correlations with anxiety and depression, and positive correlations with optimism and self esteem.³⁵ However, Antonovsky suggested that SOC is also related to social class and to societal and historical conditions,^{29, 36} and studies have investigated the relationship between SOC and social factors that affect the health of populations. Geyer argued that high SOC should be typical for social groups with high education levels and jobs that regularly require decision making and mastery of environmental demands.³⁷ He also suggested that children and adolescents will learn these skills from parents who exhibit them. Conditions that promote the development of these patterns are less likely to be experienced by people in lower socioeconomic strata where the highest rates of mortality and morbidity are also found. Thus a potential connection between health and SOC is suggested.

Geyer also reviewed studies that investigated the association between SOC and health (primarily mental health conditions such as anxiety, depression and stress) concluding that although significant associations were found, the predominantly cross-sectional studies made it difficult to determine the direction of the effect.³⁷ Is it SOC that influences health? Or does health determine SOC? Antonovsky argued the former, maintaining that causality is much stronger in the direction of SOC to health.³² He viewed health as a generalized resistance resource or deficit, and only one of many variables that influence SOC. Antonovsky’s explanation of how SOC contributes to health included three possible pathways: 1) a direct physiological linkage (drawing on the field of psychoneuroimmunology); 2) the selection of health-promoting behaviours, subject to “sociocultural and

situational” factors; and 3) the most important channel, successful coping with stressors. In their systematic review of SOC, Eriksson and Lindstrom found that SOC had strong positive correlations with perceived health, mental health and quality of life, and that it increased during the life span.³⁴

Lundberg investigated sense of coherence, childhood conditions, social class and adult ill health, and tentatively concluded that SOC may be a factor which influences class disparities in health.³⁸ Kaplan also suggested that SOC may be distributed across as well as within groups.³⁹ In making his case for broadly-based population health approaches focused on the upstream determinants of health, Kaplan cited a list of factors associated with low income in the Alameda County Study. Obesity, being sedentary, no decision making power and social isolation were included. In another example of the clustering of critical risk factors (from the Kuopio Ischemic Heart Disease Risk Factor Study), Kaplan reported that sense of coherence was found to increase with increasing income, again suggesting that SOC may apply to groups of people as well as individuals.³⁹

A recent Canadian cross-sectional study investigated the role of SOC as an intervening and moderator variable in the relationship between the socioeconomic status (SES) and health of Canadian women aged 20-64.⁴⁰ Ing and Reutter confirmed the finding from other studies that income was positively associated with self-reported health. Using the SOC-I3 scale, they also found that SOC was positively related to health and that there was a small but positive association between SOC and income. Their analysis supported the role of SOC as an intervening variable between SES and health, but not as a moderator or buffer. They concluded that SOC, as one of several related intervening psychosocial variables (including sense of control, stress and social ties) provides a greater understanding of how SES influences health.

In addition to the collective and health-related properties of salutogenesis, other aspects of the paradigm also fit well into a population health perspective. It is not intended to be limited by discipline – it is an approach that aims to bring disciplines together to seek commonalities and connections. It also places the person in his/her environment and seeks to understand how the interaction between groups of people and their social structures affects health. Thus it fits well within the population health paradigm of transdisciplinarity and upstream influences. Salutogenesis does not abandon the pathogenic view but sees the two paradigms as complementary, each bringing unique perspectives. However, as the underdog, salutogenesis needs to be heavily promoted.

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. Antonovsky (1987) was, for instance, adamant about asking questions about deviant cases, those that do not fit the traditional answers and explanations.^{41(p16)}

Salutogenesis is a dynamic and flexible paradigm, focused on the ability and capacity to manage. This paradigm provides a unique and compelling framework within which to understand youth overweight and obesity prevention as an important health issue, not a weight and body image problem. It also provides the conceptual structure within which to construct a population health understanding of what causes overweight and obesity and how best to prevent its serious negative impacts on the health of children and adolescents. As Antonovsky acknowledged, “[Sense of coherence] offers no easy answers, particularly because it raises issues relating to the basic social structures and value systems of Western societies. ... It does, however, give us a fresh way of thinking about the problems of behavioral health.”^{42(p128)}

Collective Efficacy: A Community Focus

Overview

Social cognitive theory (SCT) was developed by Bandura to explain the cognitive component of social learning theory.^{43,44} The theory states that behaviour is uniquely determined by personal factors, environmental influences and the behaviour itself. All three factors interact in a dynamic and reciprocal manner in which each may affect or be affected by either of the other two. One of the core concepts of SCT is self-reflection – the ability to analyze experiences and alter one’s thinking accordingly. Self-efficacy is one of the most important types of self-reflection. It is this concept that has become the central focus of Bandura’s own research and that of many other researchers in fields including psychology, public health and health promotion.

Self-efficacy reflects how people perceive their capability to perform a behaviour. These perceptions guide behaviour by determining what a person tries to achieve, how much effort is exerted, and how much the outcome is valued. Self-efficacy develops as a result of mastery experiences, vicarious experiences provided by others’ successes and failures, social persuasion, and one’s own stress reactions.

Collective efficacy, also developed by Bandura, does not exist in isolation. It complements and builds on the concept of self-efficacy.³⁰ As Bandura explained,

But people do not live in social isolation, nor can they exercise control over major aspects of their lives entirely on their own. Many of the challenges of life center on common problems that require people to work together with a collective voice to change their lives for the better. The strength of families, communities, organizations, social institutions, and even nations lies partly in people’s sense of collective efficacy that they can solve the problems they face and improve their lives through unified effort.^{30(p477)}

Bandura describes this “enhancement of human agency” in terms of enablement, a process which equips people with the belief and means to produce effects through

their collective action. Group functioning creates emergent and synergistic effects, and although collective efficacy is rooted in self-efficacy, it exists as a group attribute. Examples of the impact of collective efficacy include academic achievement, group performance in brainstorming sessions and political efficacy.³⁰

With respect to measurement of collective efficacy, the dimensions suggested by Bandura to measure self-efficacy; magnitude (level of performance), strength (amount of confidence in achievements) and generality (perceptions of skills generalized across tasks) can be used to measure collective efficacy, but adapted to reflect the focus on the collective.⁴⁵ When taken together, these measures should indicate respondents’ perceptions of how well the group can work together and succeed in its goals. The method of aggregation is one of the most important aspects of measurement of the construct. Goddard, Hoy and Hoy identify four measurement approaches: 1) aggregation of individual measures of self-efficacy; 2) aggregation of individual measures of group capability; 3) a measure of group consensus; and 4) a measure of group agreement across individual perceptions. They state the evidence to date indicates that the second approach, aggregation of individual perceptions of group capability, is the most effective measure of perceived collective efficacy.⁴⁶

Unlike the predominantly standardized SOC-29/-13 questionnaires developed to measure sense of coherence with very different groups of people, collective efficacy is most often measured using a uniquely developed questionnaire for each study. For example, in Sampson’s work, discussed next, a 5-item, 5-point Likert scale was developed to measure informal social control, asking about the likelihood that neighbours could be counted on to intervene with children in the neighbourhood.⁴⁷ A similar scale was developed to measure social cohesion and trust. Responses were aggregated at the neighbourhood level and combined to create a collective efficacy measure. In investigating the relationship between

collective efficacy and obesity, Cohen and colleagues based their measures on the Sampson et al. research,⁴⁷ and also used on neighbourhood informal social control and social cohesion to define and measure collective efficacy,³¹ as did Burdette and colleagues in their study of neighbourhood safety, collective efficacy and obesity in women with young children.⁴⁸

Population Health Perspectives

One area of study of collective efficacy that has led to significant demonstration of its utility as a population health paradigm is the health and well-being of neighbourhoods, with particular attention to violent crime levels. Sampson and colleagues have investigated the relationship between collective efficacy and health-related problems of communities and neighbourhoods.⁴⁷ ⁴⁹ Their premise is that community contexts need to be treated as “important units of analysis in their own right,” and that new theoretical frameworks and measurement strategies are needed which do not understand neighbourhoods based solely on individuals’ traits.

The impetus for this research was the recognition that communities can be characterized by systematic socioeconomic differences. Stratification by wealth, occupational status, family structure, educational achievement, and ethnic composition is most prevalent at the neighbourhood level. Health disparities also vary systematically, often in line with socioeconomic characteristics. Similar to the Alameda County Study findings, Sampson found that there were “geographic hotspots for unhealthy outcomes” in the city of Chicago.⁴⁹ He concluded that there appear to be consistent findings that direct health risk factors (e.g., violence, low birth weight, infant mortality, child maltreatment and risk of premature death among adults) can be linked to environmental characteristics of communities such as poverty, racial and ethnic segregation, family disruption, residential instability and

poor quality housing. When individual risk factors were controlled, these relationships remained.

Thus, it is important to think about why communities are important to population health, and in particular, to youth overweight and obesity. What are the mechanisms that operate at the community level? Social and collective concepts such as social cohesion, informal social control, and support networks become important to study, and a transdisciplinary approach to problem solving and intervention important to implement. Collective efficacy has been studied by teams that represent a variety of disciplines including sociology, psychology, social epidemiology, education and public health. This relatively unique conceptualization of community collectivity and its effects on health may be an example of a transdisciplinary approach.

In their research, Sampson and colleagues have identified a common feature among neighbourhood residents – collective efficacy.⁴⁷ ⁴⁹ Included in the definition of collective efficacy are two concepts: 1) informal social control, that is residents’ willingness to intervene when trouble arises, especially on behalf of the community’s youth; and 2) social cohesion and trust; residents’ willingness to participate in collective action for the common good, for example, to help neighbours, establish local trust, and share values. Collective efficacy is “embedded in structural contexts and a wider political economy that stratifies place of residence by key social characteristics.”^{47(p919)} These researchers investigated the effects of residential stability and concentrated disadvantage on collective efficacy, primarily in the context of neighbourhood violence rates. They hypothesized that concentrated disadvantage decreases and residential stability increases collective efficacy, and that the effects of neighbourhood stratification are mediated by collective efficacy.

This research found effects of collective efficacy for both individuals and neighbourhoods. At the individual level, effects of personal background – high SES, home

ownership and age were found to be associated with “elevated” levels of collective efficacy, while high levels of mobility were negatively associated. Independent of collective efficacy, some personal factors were found to be related to neighbourhood violence; marital status (being divorced or separated), ethnicity (being white or black as opposed to Latino), age (being younger) and length of neighbourhood tenure (living in neighbourhood longer). SES, gender, home ownership and mobility were not significantly associated with neighbourhood violence. SES and collective efficacy appear to function via different pathways with respect to their effects on neighbourhood crime rates.

At the neighbourhood level, controlling for these individual effects, concentrated disadvantage and immigration concentration were significantly associated with low collective efficacy and residential stability with high collective efficacy. Of several neighbourhood level variables, collective efficacy was the largest predictor of violent crime rates. The authors concluded that collective efficacy was strongly associated with lower rates of violence, and concentrated disadvantage and residential instability were associated with lower levels of collective efficacy.⁴⁷

While Sampson et al. presented compelling evidence that collective efficacy is a mediator between neighbourhood social composition and levels of crime, they also acknowledged that collective neighbourhood agency is not the “whole picture,” as socioeconomic and housing factors related to the broader political economy also shape neighbourhoods. They point to the importance of spatial proximity of neighbourhoods to other neighbourhoods that may be either high or low in collective efficacy, having found that one of the strongest predictors of lower homicide rates in neighbourhoods is a high level of collective efficacy in adjacent neighbourhoods, regardless of their own socioeconomic resources and levels of collective efficacy.^{49, 50}

The potential relationship between collective efficacy and youth overweight and obesity has recently been investigated by Cohen et al.³¹ This study built on the studies of Sampson et al.⁴⁷ and others,^{49, 51, 52} which found that social characteristics of neighbourhoods can influence health, and that collective efficacy and neighbourhood clustering of health outcomes were associated. Cohen and colleagues looked specifically at the potential association between collective efficacy and BMI in adolescents. The fact that certain groups (low income, and racial and ethnic minorities) are affected disproportionately by the dramatic increases in overweight and obesity led these researchers to conclude that social factors likely play an important role.

They hypothesized that collective efficacy potentially works through pathways such as social interaction and collective conformity, and collective political power. They suggested that while collective efficacy does not directly relate to the two important influences of BMI, diet and physical activity, it may indirectly affect obesity-related factors that are also related to social control and influence. It may be that allostatic load and its health consequence, stress, play a role. Stress is associated with cortisol production and excess weight gain. If people in low collective efficacy neighbourhoods experience more stress, they may also be more susceptible to overweight and obesity. The findings of the Alameda County Study, where people with fewer social ties were more likely to be obese and have higher rates of premature death, may support this explanation.

Another pathway through which collective efficacy may be related to BMI is through physical activity. Low collective efficacy neighbourhoods may also have low “walkability,” due to conditions that impede regular physical activity. Associations have been found between physical environment factors (e.g., poor sidewalks, street design, and land use that limits walking to access services), and physical activity and BMI.⁵³ Cohen et al. hypothesized that collective neighbourhood resources

may be responsible for several aspects of community life that facilitate healthy environments such as walkability, safety, accessibility to recreational facilities, and restrictions on fast-food outlets and advertising.³¹ Informal social control mechanisms in high collective efficacy neighbourhoods could lead to active community organizations that promote healthy eating and physical activities.

The Cohen et al. study found a significant association between collective efficacy and overweight and obesity in adolescents, concluding that the BMI of youth in a neighbourhood may be mediated by group-level social factors within that neighbourhood. The authors suggested that these findings support the need to include group-level factors such as collective efficacy in the study of overweight and obesity among adolescents.³¹

These recent findings of a relationship between collective efficacy, community social factors and adolescent BMI are important indicators of the importance of looking upstream for explanations for and interventions to address youth health issues related to overweight and obesity.

Commonalities, Differences and the Bottom Line: Making a Difference

Although sense of coherence and collective efficacy bring different and unique theoretical perspectives to population health, they share an interest in explaining how the health of groups of people is determined. The study of Antonovsky's theory of salutogenesis has investigated the SOC continuum among groups of people who have certain life experiences in common such as retirement and occupational burnout. However, research has yet to conclusively demonstrate the existence of emergent group-level properties of SOC. In contrast, collective efficacy has been investigated in a modest but solid body of research that has found a strong association with violent crime in communities, and most recently an association with BMI in adolescents. More research is

again required to both validate these findings and further explore the underlying mechanisms through which collective efficacy may influence health indicators such as BMI.

The most important contribution that salutogenesis brings to a population health approach to youth overweight and obesity is its insistence that we look at health rather than disease. This impetus is needed to reorient our thinking away from the problem of weight gain in children and adolescents, and to focus on how to improve their health through positive and non-discriminatory approaches. As discussed at the outset, this does not eliminate the need to intervene differently with high-risk groups such as the morbidly obese. Salutogenesis also acknowledges the importance of social, physical and economic environments to health, and fits well into public health efforts that are directed towards prevention rather than treatment and cure.³⁷

Complementing this approach, collective efficacy focuses our efforts on community level effects and similarly suggests the importance of external environments and upstream interventions to youth health. This construct provides insight into the role collective agency may play in influencing social factors and health outcomes. Both paradigms present us with new and important ways to think about youth overweight and obesity. They also suggest directions for interventions.

Sense of coherence research has yet to apply the theory to obesity interventions. SOC has been used in a small and diverse set of interventions including clinical supervision of nurses, ethical discussion groups, environmental illness group programs, and nursing interventions with cancer patients. Results indicate a short term effect on SOC. A salutogenic approach is also being used in the treatment of youth at risk for mental illness.³⁵ However, important questions remain unanswered. Wagenfeld asks "How feasible is it to design salutogenic interventions?" and "How can SOC be incorporated into policy to improve

the health of populations?”^{54(p2)} Both questions direct our attention to important next steps.

Ing and Reutter pointed to the need for interventions that target socioeconomic conditions and promote the development of a strong sense of coherence.⁴⁰ Their examples included the development of early intervention programs to assist families and young children in crisis; public health advocacy for adequate income and working conditions that allow meaningful participation in community activities; and community development programs to encourage participation in socially valued decision making. Although the salutogenesis research has not yet turned its attention to youth overweight and obesity interventions, the foundations exist for integration of salutogenic concepts and population health promotion interventions aimed at this group.

Collective efficacy also suggests that the community and its influence on the health of populations is an important focus for interventions targeted at youth overweight and obesity. Cohen and colleagues suggested that, if collective efficacy is related to obesity, interventions should address the social environment at the community level. Fostering more satisfying relationships rather than getting people to eat less is an example. The authors concluded that “... this study supports the need to re-conceptualize the obesity epidemic to include group-level phenomena in addition to factors related to individual choice and free will.”^{31(p777)}

Other studies of collective efficacy suggest that community-based interventions should include multidisciplinary partnerships to help neighbourhoods advocate for changes in their social and physical environments,⁵³ the development and support of local organizations and clubs that may foster collective efficacy,⁵¹ and integrated community prevention efforts that focus on changing environments rather than people.⁴⁹ It has also been suggested that mediating influences of health inequities should be further studied to help identify causal pathways and more effective

interventions.⁴⁷ Of course, this is true for the entire field of population health, not only that of youth overweight and obesity.

A final perspective is the consideration of integrating the study of sense of coherence and collective efficacy in an attempt to gain a more complete understanding of youth health behaviours and the influence of the community. Nash used a framework based on ecological-developmental and social disorganization theories to investigate the relationship among neighbourhood collective efficacy, students' sense of school coherence, and educational behavior.^{55,56} He suggested that adolescents from high collective efficacy neighbourhoods may be more likely to see their neighbourhoods as comprehensible and manageable environments, and as a result, may be more likely to have a strong sense of coherence that they bring to school as well as other settings.

The study found that neighbourhood informal social control, an aspect of collective efficacy, was the most important variable associated with sense of school coherence for at risk middle and high school students. As a result, Nash recommended that broader interventions that assess and target neighbourhood characteristics be used in efforts to promote school success.⁵⁵ Neighbourhood collective efficacy, by developing assets that foster and support youth development, is seen to indirectly influence school performance through its direct effect on sense of school coherence.^{55, 56} Thus this study found a link between the two paradigms discussed in this paper. This is an important finding, and perhaps, not completely unexpected. It lends credence to the possibility that an integrated investigation of collective efficacy and sense of coherence in the context of youth health might produce new and fruitful insights for a population health approach to youth overweight and obesity.

Conclusion

This paper has examined the potential contribution of two population health paradigms to the prevention of overweight and obesity among children and adolescents. It has concluded that sense of coherence and collective efficacy have both common and unique contributions to make. It is proposed that an integrative population health intervention approach which focuses on youth health instead of weight, and uses a framework which includes

collective efficacy and group-level aspects of sense of coherence could provide guidance to the development of a more comprehensive prevention strategy addressed to the alarming increases in youth overweight and obesity. This approach could further understanding of the pathways through which these paradigms influence health of youth, and how the serious increases in overweight and obesity among children and adolescents can be halted.

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