

Session IV :

Interventions to Tackle
the Obesity Epidemic

Public health strategies to prevent obesity : school settings

Public health focuses on populations, rather than individuals. Population level impact depends not just on effectiveness (i.e., extent of change on an individual) but also on reach (size of the population affected by an intervention). Policy makers choose public or population health interventions based on effectiveness and reach, but also cost. Therefore, an intervention that may not result in much individual change, but reaches a lot of people at a low cost could still have considerable impact.

Setting based interventions (e.g., schools) recognise the influence of environment on the health of the population. Ecological approaches underscore the interplay of environment with individual factors and the multiple influences on health outcomes. In school settings, Comprehensive School Health models (also referred to as Health Promoting or Healthy Schools) define four components as affecting student health: teaching and learning; healthy physical environment; supportive social environment and community partnerships. The last component points to the school as a focal point to engage the community and spread intervention, not just a place to “use” for interventions.

Several systematic reviews have examined the effectiveness of interventions for obesity prevention in the school setting. The website health-evidence.ca has rated the methodological strength of these reviews, and produced a summary. Highly rated reviews tend to conclude that we cannot draw strong conclusions as to the efficacy of school-based obesity prevention programs: too few published studies, existing studies have methodological concerns, including under-powered designs and there are no long-term sustained results (maintaining effect over years). It is apparent that any intervention will need to be tailored for different populations (e.g., gender, SES, cultural context).



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Research needs:

Research needs to benefit from natural experiments – learning as we go. The size of trials required to randomize state/provincial jurisdictions often makes them too costly to fund. Small controlled trials have generally not “scaled” well to population levels. Policy makers will move forward, with or without evidence. Researchers need to assist policy makers to learn from their experience. Several examples of such trials exist in Canada

1. What role can physical education classes and its specialists play in the overall activity levels of children and youth?
2. How do simple, yet novel approaches to increasing physical activity and healthy eating in schools work?
3. What value is there linking to Comprehensive School Health initiatives? Do inter-sectoral partnerships foster support for active living / healthy eating in schools?
4. How do we integrate implementation of policy (to create school environments that support healthy eating, physical activity and discourage sedentary behaviours)?
5. How do we adapt interventions to fit the local context?
6. How can we mobilize local resources to address obesity prevention?
7. How do we create capacity to learn from experience?

Suggested reading:

1. Kropski, Keckley & Jensen (2008). School-based Obesity Prevention Programs: An Evidence-based Review, *Obesity* 16, 1009–1018
2. Stice et al (2006). A Meta-Analytic Review of Obesity Prevention Programs for Children and Adolescents: The Skinny on Interventions That Work. *Psychological Bulletin*, 132, 5, 667–691

Interventions to tackle the obesity epidemic at school level

There is unequivocal evidence that school-based obesity prevention interventions are effective among children. A meta-analysis of school based intervention studies confirmed that interventions (diet & physical activity based) are successful (Katz et al. 2008). Schools are important avenues for health education, physical activity, diet based interventions and combinations thereof and often have links with stakeholders like parents, advocates, policymakers, organizations and other communities.

A health promoting school programme should; i). Enhance the health of the entire school community, ii). Address issues identified by all stake holders: students, teachers and parents, iii). Be action focused on the individual and the environment, and iv). Be a continuously evolving process. An example of a successful programme is CATCH (Child and Adolescent Trial for Cardiovascular Health) which was conducted in 4 states of the US. The intervention resulted in improved quality of school lunches (reduced fat content), increased moderate to vigorous physical activity in students and improved eating and physical activity behaviours. Similar programmes in Singapore (Toh et al, 2002) and Brazil (Matsudo et al, 2002) have also been successful in reducing obesity in school children. In India a programme called HRIDAY (Health Related Information Dissemination Amongst Youth) incorporated components like school based activities, debates, poster display, parent component (home team material) and ongoing training to successfully address the issue of tobacco use among adolescents.

Research needs:

1. Assessment of critical causal factors and address intervention strategies according to local contexts
2. Methods / tools required to assess their impact
3. Need for different strategies for low and high income group schools



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Suggested reading:

1. Katz D. L., O'Connell M., Njike V. Y., et al., 2008, Strategies for the prevention and control of obesity in the school setting: systematic review and meta-analysis, *Internal Journal of Obesity*, 32(12), pp. 1780-1789.
2. Toh C. M., Cutter J., Chew S. K., 2002, School based intervention has reduced obesity in Singapore, *British Medical Journal*, 324, pp. 427-429

Promoting healthy weights at the community level: Canadian perspectives

According to the WHO (2000) Technical Report, Obesity: Preventing and Managing the Global Epidemic, “the fundamental causes of the obesity epidemic are societal, resulting from an environment that promotes sedentary lifestyles and the consumption of high fat, energy-dense diets.” Increasingly, research is providing evidence to support the connection between environment and behaviours promoting obesity, such as diet, physical inactivity and sedentary behaviour. If the environment is the context for behaviours, then there is promise in addressing obesity through community as a point of access to environmental change for promoting healthy weights.

Using an ecological approach to changing environments as a conceptual framework, the Healthy Alberta Communities Project is working in 4 diverse communities to develop models for effective community participation in the identification of priority areas of intervention unique to each community context. The ANGELO Framework (Swinburn, Egger & Raza, 1999) is used to identify needed changes in the community environments by organizing interventions according to the following types of environments addressed: physical, economic, socio-cultural and political. Some interventions underway include connecting trail systems for active transportation, a social enterprise for food security, Farmers’ Market revitalization, and healthy restaurant choices. Community partnerships can develop into self-sustaining projects that influence a relatively small number of citizens (e.g. community gardens) and broad-level policy action that influence entire communities (e.g. active transportation in urban planning). In addition to a pre-post assessment of community health status, including obesity rates, we are employing novel community evaluation to advance important understandings of how communities change and how transforming environments influences health.

Research Needs:

Canadian-Indian comparisons of community-based interventions for obesity prevention to;



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- a) advance theoretical understanding of social change,
- b) advance and share methodological strategies and
- c) explore how community action influences policy change.

Suggested Reading:

1. Raine, K., Spence, J. C., Church, J., Boulé, N., Slater, L., Marko, J., Gibbons, K. and Hemphill, E. (2008) State of the Evidence Review on Urban Health and Healthy Weights (Ottawa: CIHI). http://secure.cihi.ca/cihiweb/disPage.jsp?cw_page=GR_1929_E
2. Raine, K., & Wilson, E. Obesity Prevention in the Canadian Population: Policy Recommendations for Environmental Change. 2006 Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity in Adults and Children. Canadian Medical Association Journal. 176 (8 Suppl):106-110, 2007.

Community based intervention for tackling obesity

Childhood obesity and other early life determinants play a major role in predicting adult chronic disease. There are several approaches to prevention of chronic diseases through the community; health education and media campaigns, health service intervention, community organization and mobilization. Other approaches where targeting community may play a role including policy formulation and prevention among high risk individuals. The role of conventional approaches such as health education and medical campaign were discussed in more details.

Very few studies have targeted obesity as an outcome in children. Demattia et. al in their review of 12 studies involving 6 community and 6 clinic based publication observed that there were no real community based studies, but all were school based intervention. Most of these showed a modest reduction in weight. Among adults, we identified 6 community based intervention targeting obesity as an outcome. These include the Stanford three community study, Stanford five city study, Minnesota Heart Health programme, Parvticket Heart Health Program, the North Karelia project and a study from Mauritius. Among these studies despite positive risk factor changes, there was no evidence of obesity reduction in 4 of the 6 studies. Based on their review of several community based prevention studies Ebrahim et. al concluded that the community based studies had limited utility in the general population as the pooled effects of population based multiple risk factor intervention on mortality were insignificant and small. However, they did not rule out potentially important up to 10% reduction in mortality that could have been missed due to the low power and shorten duration of follow up. With this background we designed and implemented a comprehensive risk reduction programme in 6 industrial sites across India and compared the results against a single industrial site without any intervention, and a substantial reduction in cardiovascular disease risk factors was noted over a 5 year period. This model can be modified and adapted for children (at least among the urban upper and middle classes of India).



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While planning a community based programme, the following issues need to be taken into consideration: a). The extent of community outreach and ensuring community participation, b). The expected magnitude of benefit and c). Inclusion of a policy component in the programme. In addition the focus should be multiple risk factor targets with the family/group as a unit rather than individuals.

Research Needs:

- i What should be the design (Cluster randomization vs Individual randomization) and analytical framework of community studies :
- ii How should outcomes assessment done: Process vs quantifiable end point
- iii What is the cost effectiveness?
- iv What should be valid and reliable measures of physical activity and dietary changes in children
- v What are the socio cultural factors that influence the programme
- vi How do we position such programmes within existing health system?

Interventions to tackle obesity at the societal level: A brain-to-society approach to the promotion of healthy eating

Prior work on childhood obesity have either focused on individual or societal interventions, without taking into consideration that biology and environment are part of the same system guiding individual behavior. Domains where choice is partly conditioned by biology and environment include among others, diet, exercise and sedentary behavior; sleep, stress, and other facets of the work/leisure/play balance. A novel Brain-to-Society model of individual and societal choice was presented in the context of eating, with preliminary results.

The “brain-to-society systems” choice model is a broad integrative approach developed to form a solid theoretical bridge between what is known about brain function (dopamine pathways and executive control) and environmental influences upon individual choice. The models articulates a set of complex and dynamic relationships between biology, behavior, and environment affecting choice at the individual-level, which in turn inform choices made at the societal level. Models using agent-based complex systems may further provide a principled way to relate individual choice, decisions made by businesses and social organizations, as well as policy instruments considered by governments. Preliminary results of a field study were presented. The study involve a sample of 415 adults with individual-level measures including (i) personal predispositions related to dopaminergic system (behavioral approach tendency; BAS), to executive control function (restraint), and to overall success in control over one’s life (mastery). Sociodemographic, behavioural, anthropometric, biological and social network data were also collected. A geographic information system or GIS (MEGAPHONE) containing a comprehensive variety of area-level measures was used to contribute contextual data to the study. Generalization of these results for children population and future research on individual and societal interventions to promote healthy lifestyle was discussed.

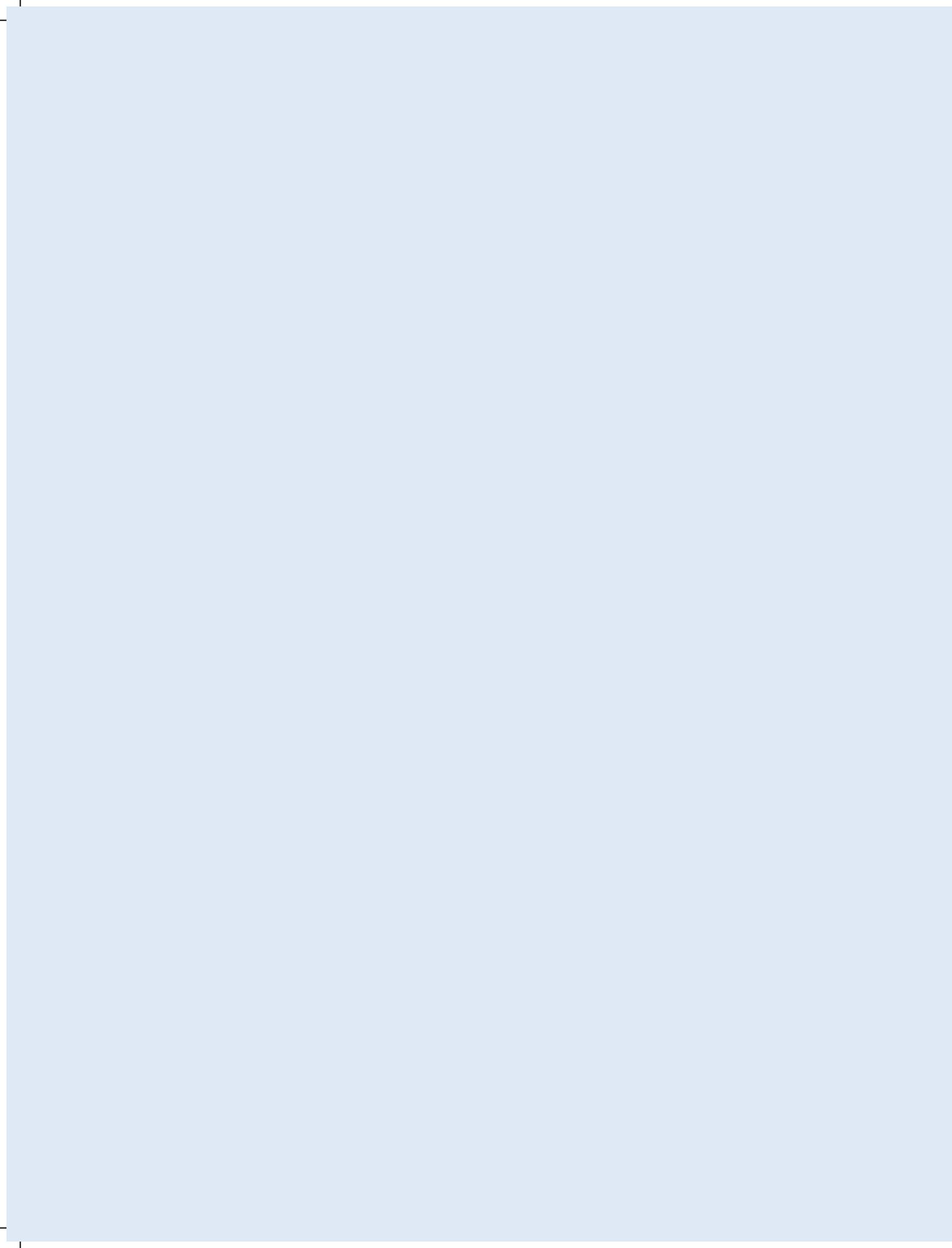


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Research Needs:

Study the genetic, epigenetic, neural and psychological processes operating at the individual level in the broader context of decisions made by social and economic actors at all levels in society.



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WORKING GROUP
REPORTS

4. Working Group - I

Behavioral and Social Strategies

Interventions for prevention and control of obesity require strong behavioral and social strategies at individual, family, community, system and policy levels.

Recommendations:

1. Study the perceptions of risk of Noncommunicable diseases in relation to actual health risk and determining and intervening on multi-level, multi-sector drivers of social norms which position risk distributions
2. Social modeling of positive parental health practices to which children are exposed. Includes determinants of health literacy (reading ability, health knowledge, attitudes, values and beliefs) and multi-level strategies to improve health literacy in parents and children
3. Evaluation of “food-scapes” and “activity-scapes” around schools and homes, and actual behaviours within these areas, in relation to childrens’ BMIs
4. Evaluating the effectiveness of government and institutional strategies to reduce social inequity related to the double burden of Noncommunicable diseases



4. Working Group - II

Public health strategies

These strategies include those described under individual sections. The focus is to understand, assess, innovate, implement, monitor and evaluate all research programs directed at improving population level health indicators. It synergies with other health promoting activities.

Recommendations:

1. Determine what are acceptable public health interventions for different groups (opinion).
2. Devise or adapt peer led teaching for obesity prevention
3. Assess role and impact of media and advocacy on inducing obesity-related behaviours, to promote awareness in specific groups (e.g., politicians).
4. Create a business model for policy changes.
 - a. Assess economic & health impact of the obesity epidemic. Report above in a way that moves evidence to action
5. Identify barriers creating obesogenic environment (including policy)
6. Assess political and policy interventions
 - Assess food industry legislation (e.g. food labels, trans fats)
 - Cluster randomized trials of impact of changing tax (e.g. reduced cost for active transport, healthy foods)
 - Mandate healthy school meals and evaluate its impact.
 - Subsidize businesses that “create health”.
 - Employ research to action methodologies to create & assess policies.
7. Advocate for mandated & marked Physical Education in all grades in schools.
8. Compare across jurisdictions with different policies / approaches / incentives, International and / or cross-state within countries
9. Establish Multi-level systems approaches – quantitative modeling
10. Assess evidence of interventions that specifically reduce Indo phenotype of truncal obesity (e.g., Yoga)
 - a. Assess feasibility of yoga implementation for Canadian population.
11. Identify and promote traditionally acceptable foods.

