

Healthiest children possible: why schools matter

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The good news: we're living longer than ever

Overall life expectancy (LE) at birth (Canada)

<u>1991</u>	<u>2005</u>
77.8	80.4

By gender: 2005

Male: 78.0

Female: 82.7

BC (child born in 2005)

- Male: 78.76
- Female: 83.43

The bad news: nearly every chronic disease increasing in prevalence

- Cardiovascular disease
- Diabetes
- Cancers: NHL, colorectal, esophagus, testicular, others
- Arthritis, OP
- Neurological diseases
- Dementias
- Sensory deficits: eye problems, hearing loss
- Chronic pain
- Disability of daily living

Cost of chronic health conditions is appalling

- Chronic health conditions account for 76 % of all direct medical costs
- Chakravarthy MU. *Mayo Clin Proc* 2002;77:165-173

The burden of chronic health conditions

- **Noncommunicable (chronic health) conditions will cause over three quarters of all deaths worldwide in 2030**
 - *WHO World Health Statistics, 2008*

Lifestyle factors are main key variables for chronic diseases

- Seven largely modifiable factors account for 60 % of all chronic health problems

- *WHO Annual Report (2005)*

Heart disease

- 90 % of heart attacks occur from modifiable (i.e. controllable) risk factors

- Yusuf S et al, *Lancet* 2004; 364: 937-52

Heart disease starts in childhood

- The development of heart disease begins in childhood
- Reducing heart disease in mid and late life necessitates healthy habits in nutrition and lifestyle in early life
- Berenson GS. *Bogalusa Heart Study*, *American Journal of Cardiology*. 82(10B):22T-29T, 1998 Nov 26.

The epidemic of Type 2 diabetes, aka “diabesity”

- The prevalence of diabetes in Ontario has (already) exceeded the rate projected for 2030!
 - Lipscombe, L et al *Lancet* 2007; 369:750-756

Why diabetes matters

- Death: 6th leading cause (rising)
- CVD: 70 % of diabetics die of MI or stroke
- Kidneys: No. 1 cause of kidney failure
- Blindness: No. 1 cause of blindness ages 20-74
- Dementia: high risk of AD (Type III DM?)
- Cancer: pancreas, liver, colo-rectal, others

Diabetes starts in childhood

- 1 in 3 kids born in 2000 will get type 2 diabetes
 - Narayan KM et al *JAMA* 2003;290:1884-1890
- Pediatric prescriptions for type 2 diabetic drugs doubled between 2002 and 2005
- Type 2 DM now represents as many as 45% of all cases of diabetes among youth
 - Lafontaine, T *American Journal of Lifestyle Medicine*, 2 (1): 30-36 (2008)

Diabetes in kids

- The prevalence of type 2 diabetes is rising at an alarming rate in children . . . and is **greatest among minority groups**

– Vivian E *Curr Med Res Opin.* 2006;22(2):297-306

So what is making kids so unhealthy?

- Poor nutritional habits
- Exercise, or lack of it

How badly are kids doing because of weight problems?

- Childhood obesity could decrease life expectancy by 2-5 years

- Ludwig, David, *Director, Obesity Program
Children's Hospital, Boston*

Why weight problems matter in kids

- Raises risk of:
 - Premature death at all ages
 - Cardiovascular disease
 - Type 2 diabetes
 - Joint problems
 - Abnormal clotting
 - Hormonal abnormalities, infertility
 - Sleep apnea
 - Psych problems: low self-esteem, depression

Weight problems in kids are especially bad for the heart

- Compared to normal-weight, overweight girls
 - 10 times more likely to have high BP
 - 2.4 times more likely high LDL levels
 - 6.3 times to have low HDL
- Relationship between heart disease risk factors and weight may already be present at age 9
 - Obarzanek, D et al. *The Journal of Pediatrics*, 150 (1): 18-25
- Being overweight as a child increases the risk of heart disease in adulthood as early as age 25
 - Baker J et al. *NEJM* (357):2329-2337

Benefit of exercise

- The single thing that comes close to a magic bullet, in terms of its strong and universal benefits (on overall health), is exercise
 - Frank Hu, epidemiologist, Harvard School of Public Health, *Harvard Magazine*, March-April 2004

Benefits of exercise in kids

- Weight control
- Lower risks of chronic diseases
- Better sleep
- Fewer behaviour problems
- Better school performance
- More energy

Don't need to start with much

- Kids who did 15 minutes a day of moderate exercise (e.g. brisk walk) were 50 % less likely to be obese

- Ekelund U et al. *The European Youth Heart Study.*
PLoS Med 3(12): e488

Exercise starts to work quickly

- Overweight children's arteries: significant reversal of atherosclerotic changes within 6 weeks of exercise, nutrition program
 - Woo K et al. *Circulation*. 2004;109:1981-1986

Should schools be involved?

- “. . . the time has come to consider a markedly expanded role for schools in providing physical activity to our children and youth.
- Schools could become the central element in a community system that ensures that students participate in enough physical activity to develop healthy lifestyles”
- **Pate R et al, *Promoting Physical Activity in Children and Youth - A Leadership Role for Schools: A Scientific Statement From the American Heart Association Council on Nutrition, Physical Activity, and Metabolism* *Circulation*. 2006;114:1214-1224**

Why schools matter

- The more exercise children engaged in, the lower their likelihood of having cardiovascular risk factors
 - Andersen LB et al. *Physical activity and clustered cardiovascular risk in children: A cross-sectional study (The European Youth Heart Study)*. *Lancet* 2006 Jul 22; 368:299-304.

Exercise benefits the school, too

- Children who are active during the school day are more likely to be better focused and more on-task than their more sedentary peers

– Mahar MT et al, *Medicine & Science in Sports & Exercise*. 38(12):2086-2094, December 2006

Every step counts

- The only thing you ever need to become fit is to live in a two-story house
- And have a very poor memory

Dr. George Sheehan