

**ALCOHOL, TOBACCO AND ILLICIT DRUGS AMONG YOUTH:
EXPLORING EPIDEMIOLOGICAL TRENDS AND SCHOOL-BASED
DRUG PREVENTION PROGRAMS**

by

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Abstract

The use of alcohol, tobacco and illicit drugs is very common in British Columbia and in Canada. The burden of suffering associated with substance use problems is significant. This paper examines the epidemiological trends in use of alcohol, tobacco and illicit drugs among youth on the North Shore. I also present selected indicators of substance use issues and prevention initiatives implemented by Vancouver Coastal Health to reduce the damage associated with the use of these substances. In addition, I explore empirical research, especially data generated from evaluation research in the implementation of school-based drug prevention programs. Attention is paid to assumptions and theories that underlie these educational interventions. The information presented here can be useful to inform Vancouver Coastal Health's decisions with respect to prevention and policy approaches to identify and address substance use issues in the community.

Keywords: Alcohol; Tobacco, Illicit Drugs; Substance Use; Epidemiological Trends; Prevention;
Subject Terms: Prevention Theories; School-Based Programs; Evaluation Research

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1: Introduction

Public Health Problem

Alcohol, tobacco and illegal drugs pose a heavy burden of disease as well as financial strain on Canadian Society. The Canadian Centre of Substance Abuse (2006) estimates that the overall social cost of substance abuse in Canada in 2002 was \$39.8 billion: tobacco accounted for about \$17 billion (42.7%), alcohol accounted for 14.6 billion (36.6%) and illegal drugs accounted for about \$8.2 billion (20.7%). In 2002, an estimated total of 37,209 Canadians died from tobacco use, accounting for 16.6% of all deaths in Canada in that year. Cancer was the leading cause of death associated with tobacco (17,679 deaths) followed by cardiovascular disease (10,853) and respiratory disease (8,282). Tobacco-attributable deaths resulted in 515,607 potential years of life lost. Tobacco-attributable illness accounted for 2,210,155 days of acute care in hospital.

The study conducted by Taylor et al. (2007) found that a total of 4,258 deaths were attributable to alcohol, accounting for 1.9% of all deaths in Canada in 2002. Cirrhosis was the leading cause of death (1,246 deaths) followed by motor vehicle collisions (909) and alcohol-attributable suicides (603). Alcohol-attributable deaths resulted in 191,136 potential years of life lost. Alcohol-attributable illness accounted for 1,587,054 days of acute care in hospital. There were 195,970 alcohol-related diagnoses among acute care hospitalizations, 2,058 alcohol-attributable psychiatric hospitalizations, and 183,589 alcohol-attributable admissions to specialized treatment centres. These accounted for 1,246,945 hospital days in acute care facilities, 54,114 hospital days in psychiatric hospitals, and 3,018,688 hospital days in specialized treatment centres (inpatient and outpatient). The main causes of alcohol-attributable morbidity were neuropsychiatric conditions, cardiovascular disease, and unintentional injuries.

In 2002, a total of 1,697 Canadians died as a result of illicit drug use accounting for 0.8% of all deaths. The leading causes of deaths associated with illegal drug use were overdose (958), drug-attributable suicide (295), drug-attributable hepatitis C infection (165), and HIV infection (87). Deaths related to illegal drugs resulted in 62,110 potential years of life lost. Illegal drug-attributable illness accounted for 352,121 days of acute care in hospital.

Since the individual and social costs associated with alcohol, tobacco and illicit drugs are significant and the initial use of these substances frequently occurs during the early adolescence, preventing problematic substance use (SU) should be a priority for public policy in this field. This study will provide an overview of trends in use of alcohol, tobacco and illicit drugs among youth. I will use the term "substance use" to denote use that may range from experimental to persistent or dependent use (British Columbia Ministry of Health Services, 2004). It includes the categories of "substance abuse" and "substance dependence" adopted by the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 2000). The term "drugs" will be used to refer to alcohol, tobacco and illicit drugs.

Purpose

This report will provide an overview of epidemiological trends on alcohol, tobacco and illicit drug use among youth in British Columbia. A special focus will be given to the prevalence and incidence of alcohol, tobacco and drug use and prevention initiatives implemented on the North Shore, where I worked during my practicum term from May/2007 to September/2007. In addition, I will also explore the evaluation research in the implementation of school-based drug prevention programs. The objective of this report is to support Vancouver Coastal Health's goals of reducing the damage associated with alcohol, tobacco and illicit drugs among youth and providing the community with the best possible prevention services available within its mandate and resources. This objective will be accomplished by:

- Presenting epidemiologically based data
- Exploring the research evidence in the implementation of school-based drug prevention programs
- Discussing information gaps and research needs
- Summarizing findings and make recommendations for future directions

Findings from this study, as well as the recommendations proposed, will contribute to enhance our understanding of SU use among youth and assist Vancouver Coastal Health to implement effective prevention policy and programs to address this issue.

2: Background

Recent national surveys such as the Health Behaviour in School-Aged Children Surveys have provided valuable information about trends in use of alcohol, tobacco and illicit drugs, as well as trends in problems associated with SU among youth. This information has been fundamental for public health professionals, given the fact that it can be used for assessing the health status of populations and for monitoring the effectiveness of health care programs.

Trends in SU among Youth in Canada

The best data for estimates of SU is provided by population surveys which focus on or include youth (Wallack & Corbett, 1987). The 2004 Canadian Addiction Survey (CAS), the Canadian Community Health Survey (CCHS) and the Health Behaviour in School-Aged Children Survey (HBSC) are some of national studies which provide data on SU among children and adolescents. Results from the HBSC surveys discussed by Boyce (2004) indicate that alcohol and tobacco use is far more common than the use of illegal substances such as marijuana, cocaine and heroin. (See Table 2.1):

Table 2.1: Substance use in the previous year among youth by age group, 2004.

Substance	15 - 17 years	18 - 19 years	20 - 24 years
Alcohol	62.3%	90.8%	89.0%
Cannabis	29.2%	47.2%	36.5%
Illicit drugs *	5.2%	17.8%	11.5%

* Illicit drugs includes any hallucinogens, cocaine, speed, ecstasy or heroin
Data source: 2004 Canadian Addiction Survey.

According to Boyce (2004), the proportion of young Canadians reporting using cigarettes have remained steady in the period 1990 - 2002, except for Grade 8 boys and girls, which have decreased slightly, and for Grade 10 girls, which have dropped considerably; 13% of grade 10 boys were daily smokers in Canada in 1994, compared to 16% in 1998 and to 15% in 2002; 11% of

grade 10 girls were daily smokers in Canada in 2002, compared to 21% in 1998 and to 21% in 1994 and 18% in 1990. According to the 2004 HBSC survey, a substantial number of Canadian students are frequent or heavy drinkers. Results from the 2002 CCHS survey show that 7% of young people between the ages of 15 and 24 years reported symptoms that met the criteria for alcohol dependence; the proportion was higher among young men (11,6%), than among young women (5,5%).

The use of marijuana has increased among Canadian students in the last decade, specially among Grade 10 boys and girls; approximately 30% of Grade 10 boys reported ever using it in 1994, compared to 45,3% in 1998 and 49,9% in 2002; boys are more likely than girls to have tried marijuana; 27% of Grade 10 girls reported ever using marijuana in 1994, compared to 37% in 1998 and 35% in 2002. The proportion of youth who use frequently marijuana has not decreased over the past decade and a substantial number of students are frequent users. Results from the 2002 HBSC survey show that among Grade 10 boys who reported having used marijuana, 19% have used it 20 or more times in the past year; 9% of Grade 10 girls have used it 20 or more times in the past year.

Rates and trends of use of other illicit drugs vary by substance. From the national school data, rates of cocaine use among boys have raised since 1998; 8% of grade 10 boys report ever using cocaine in 2002, compared to 6% in 1998; rates of cocaine use have declined slightly among girls: 4% of grade 10 girls report ever using cocaine in 2002, compared to 5% in 1998. Rates of LSD use show a decline among boys and girls; the use of LSD has declined from 13% in 1998, to 8% in 2002 among grade 10 boys; 13% of Grade 10 girls report using LSD in 1998, compared to 3% in 2002. Rates of ecstasy use among boys and girls have increased since 1998; 8% of grade 10 boys report ever using ecstasy in 2002, compared to 5% in 1998; 5% of grade 10 girls report ever using ecstasy in 2002, compared to 3% in 1998. Rates of amphetamines' use have remained the same 10% among grade 10 boys since 1998, but it has declined significantly among grade 10 girls from 9% in 1998, to 5% in 2002. Rates of heroin use among grade 10 boys have increased slightly from 6% in 1998, to 7% in 2002; rates of heroin use among grade 10 girls remained the same 5% in the period 1998 – 2002 (Boyce, 2004).

Trends in SU among Youth in B.C.

The McCreary Centre Society has published reports of its surveys of students in grades seven to twelve from 1992 - 2003, on the physical and emotional health of B.C. youth, including information on the topic of drug use. Trends and rates of use vary by substance. The use of alcohol and tobacco is far more common than the use of illegal substances such as marijuana, cocaine and heroin (Adolescent Health Survey, 2003). The proportion reporting using cigarettes at least once in the past is showing a substantial downward trend; 73% of youth were non-smokers in B.C. in 2003, compared to 55% in 1998. It represents an 18% decrease in smoking among youth since the 1998 survey. The use of alcohol by B.C. students has decreased 6% from 63% in 1998 to 57% in 2003; 33% of youth were lifetime abstainers in 2003, compared to 37% in 1998 and 35% in 1992. However, a substantial number of students are frequent or heavy drinkers. Among those who reported having consumed alcohol, 10% have used it 100 or more times in their lifetime. This pattern of consumption has remained constant from 1992 (10%), through 1998 (10%). The percentage of binge drinking among youth increased significantly from 14% in 1992 to 19% in 1998, and remained at a high level in 2003 (20%). Binge drinking is defined here as having five or more alcoholic drinks in a couple of hours (Adolescent Health Survey, 2003).

The use of marijuana has decreased slightly from 1998 (40%) to 2003 (37%), but is still considerably higher than in 1992 (25%). However, the proportion of youth who use frequently marijuana has not decreased over the past decade and a substantial number of students are frequent users. Among those who reported having used marijuana, 24% have used it 100 or more times in their lifetime. This pattern of consumption has increased from 1992 (15%), to 1998 (20%). The use of other illicit drugs has declined in B.C. According to the provincial school data, 5% of students on the 2003 survey report ever using cocaine, compared to 7% in 1998; rates of hallucinogens' use, including ecstasy and LSD shows a decline from 11% in 1998, to 7% in 2003; 13% report ever using mushrooms in 2003, compared to 16% in 1998; 4% of students tried amphetamines such as crystal meth and speed in 2003, compared to 5% in 1998; rates of heroin use have declined from 2% in 1998, to 1% in 2003. The number of youth using inhalants such as glue and aerosols decreased slightly to 4% in 2003, compared to 6% in 1998 (Adolescent Health Survey, 2003).

Trends in problems associated with SU among youth in Canada and in B.C.

One of the problems associated with SU is alcohol involvement in fatal motor vehicle collisions. The Traffic Injury Research Foundation of Canada, which provides data on fatal crashes, found that in Canada, the percentage of fatally injured drivers between 16 and 19 who were considered legally intoxicated increased from 39% in 2000 to 50% in 2002, dropped in 2003 (40.4%), and dropped to a low of 37.2% in 2004. In Canada during 2004, 290 youths between 16 and 19 years-old and 473 youths between 20 and 25 years-old died in automobile crashes. Over 37% of fatally injured drivers between the ages of 16 and 19, and 50% of those between 20 and 25, had been drinking (Bryant et al., 2006).

The 2003 Adolescent Health Survey has addressed the issue of problems associated with SU among adolescents in B.C. The results reveal that 51% of the students have used psychoactive substances in the past year. Among the SU students, 72% reported negative consequences of substance use. The distribution of these problems is shown in Table 2.2:

Table 2.2: Distribution of negative consequences of drug use in the past year for youth, B.C., 2003.

Negative consequences	Percentage
Passed out	15.0%
Argue with family members	10.0%
Poor school work/marks	7.5%
Damaged property	6.5%
Got into physical fight	5.5%
Got injured	5.0%

Data source: The McCreary Centre Society - 2003 Adolescent Health Survey.

The Traffic Injury Research Foundation of Canada found that in B.C., the percentage of fatally injured drivers between 16 and 19 who were considered legally intoxicated increased from 34.6% in 2000 to 50.0% in 2002, dropped in 2003 to a low of 12.5%, and rose again in 2004 (21.4%). In B.C. during 2004, 35 youths between 16 and 19 years-old and 65 youths between 20 and 25 years-old died in automobile crashes. This report reveals that over 45% of fatally injured drivers between the ages of 16 and 19, and over 50% of those between 20 and 25, had been drinking (Bryant et al., 2006).

The North Shore is not exempt from the problems associated with SU among youth. VCH develops a wide range of health promotion and illness prevention initiatives and is committed to providing the community with high quality and evidence based prevention services to address SU issues. This report will provide an overview of trends in SU and explore VCH's prevention efforts on the North Shore. It is hoped that the study will be a contribution to VCH's decisions with respect to prevention and policy approaches to address successfully SU issues in the community.

3: Methods

Sources of Information

The report is based upon a variety of sources including data from: BC Stats, the surveys conducted by the McCreary Centre Society and a literature review in public health, prevention of SU, and evaluation research in the implementation of school-based programs. I used local and provincial population-based data to examine the prevalence and changing patterns in SU reported by adolescents in the period 1992 – 2003.

Literature Review

Using Mediline, PsychoINFO and the Cochrane databases, I searched for meta-analysis studies published in English from January 1995 to December 2005 on preventing SU among children and adolescents. Studies for inclusion in this review were accessed primarily through a computerized search of PUBMED/Mediline, PsychoINFO and the Cochrane databases, using the keywords “drug addiction,” “drug use,” “drug abuse,” “drug use prevention,” and “drug abuse prevention”. The search was restricted to articles published in English from January 1990 to December 2006. This preliminary search included systematic reviews that met all the following criteria: (a) intervention populations included youths under the age 21 at base-line; (b) the interventions evaluated were school-based programs; (c) the outcomes assessed in the study included use of alcohol, tobacco and illicit drugs. Reviews focusing only on one of these substances were excluded because our priority was to identify effective interventions for preventing the use of licit and illicit drugs simultaneously. The original parameters of systematic search returned 35 studies that were suitable for examination. To further refine the search, I selected the meta-analyses that examined the effectiveness of school-based drug prevention program because this is the appropriate study for averaging an effect of treatments across studies (Rossi et al., 2004). Further relevant literature was identified from the reference list of papers detected by this literature search. The original parameters of systematic literature search returned two meta-analyses that were suitable for examination.

Limitations

The study presents some methodological limitations due to the lack of epidemiological data at the local health area level. For example, the Adolescent Health Survey conducted by the McCreary Centre Society provides information for the North Shore area as a whole, which does not allow us to assess differences within the region by local health areas. Also, there is a lack of age-disaggregated data readily available. Another limitation is related to the fact that quantitative data have not been analyzed and integrated with qualitative data from other organizations that provide services for youth on the North Shore. There is no study that demonstrates how age interacts with other factors, such as ethnicity, socioeconomic status and gender, in creating the picture of youth's lives and health in the region. Furthermore, at a program/service level, available outcome and utilization data is often not gathered or gathered inconsistently among providers of the services making regional analysis difficult. In order to overcome the lack of information were used country or province data weighted for local socio-demographic characteristics, when the epidemiological data were not available for the North Shore. Similarly, when the epidemiological data were not available by local health area, I used data from the North Shore region. For example, when I estimated the prevalence of SU problems in children and youth in the North Vancouver and West Vancouver local health areas, the estimation was based on the data from the North Shore region. The results in this case are less accurate because of the methodological limitations transferring data from the country/regional level to the local level (Thornicroft & Tansella, 2006)

The Adolescent Health Survey conducted by the McCreary Centre Society was one of the sources used in this study. Unfortunately, as was referred before, the survey does not allow us to disaggregate the data from the North Vancouver and the West Vancouver local health areas. However, the results are representative of the North Shore as a whole. The survey also presents some methodological limitations including the deficiencies of the instrument used for assessing SU and the process by which the data have been collected. Furthermore, despite the fact that population surveys are considered the best tools for measuring use of substances; people may not accurately report their use, especially if the substances are illegal. As a result, the actual use of psychoactive substances is likely to be higher than reported. Another limitation of this survey is linked to the fact that it provides prevalence estimates of SU among youths who attend school, but it does not capture adolescents that are out of the school environment. Considering these

limitations, the findings presented by the Adolescent Health Surveys should be interpreted with caution.

The literature review is not exhaustive. Historically, researchers from different disciplines have studied alcohol, tobacco and illicit drugs placing these substances into distinct categories (Wallack & Corbett, 1987; Hunt & Barker, 2001). Thus, an extensive separate literature exists on each one of these substances. Time and resource constraints limited the ability to thoroughly perform a comprehensive literature review on theoretical frameworks and prevention models targeting alcohol, tobacco and illicit drugs as distinct concepts. However, I believe the articles selected summarize the key findings in youth SU and the prevention literature in this topic.

4: Findings

Demographic Data

The North Shore is situated on the northern shore of the Burrard Inlet. It has 632.50 Km² and consists of 5 municipalities: North Vancouver City, North Vancouver District, West Vancouver District, Bowen Island Municipality and the Village of Lions Bay. North Shore/Coast Garibaldi is one of 16 administrative areas, called Health Service Delivery Areas (HSDAs), established by the B.C. government in 2001. Vancouver Coastal Health Authority manages health services for 3 lower mainland HSDAs: Vancouver, Richmond and North Shore/Coast Garibaldi. North Shore is part of the North Shore/Coast Garibaldi Health Service Delivery Area and it is made up of smaller two Local Health Areas: North Vancouver LHA #44 and West Vancouver LHA #45, including Bowen Island and Lions Bay.

Population

The demands for public services, such as health care are determined by the population size and characteristics. Population is an essential tool for planning the services provided in public health.

The North Shore has an estimated 187,660 residents; it represents 4.35% of the total population of 4,310,425 residents of BC. Table 4.1 outlines the North Shore and B.C population estimates, based on 2006 census data.

Table 4.1: Total Population Estimates by Area and Gender, 2006.

GEOGRAPHIC AREA	FEMALES	MALES	TOTAL
North Vancouver	69,684	66,306	135,990
West Vancouver	27,211	24,467	51,678
B.C.	2,173,557	213,895	4,310,452

Data source: BC STATS, Demographics profile, 2007.

Composition of the Children and Youth Population by Local Health Area.

The following table breaks down the population by area and by age categories based on 2006 census data. There are 42,609 children and youth living in the North Shore. It represents approximately 22.7% of the total population in this region (Table 4.2).

Table 4.2: North Shore Children and Youth Population Estimates, 2006

Local Health Area	< 1	1 to 4	5 to 9	10 to 14	15 - 19	Total
North Vancouver	1,261	5,254	7,230	8,588	8,963	31,296
West Vancouver	270	1,465	2,383	3,279	3,916	11,313
North Shore	1,531	6,719	9,613	11,867	12,879	42,609

Data source: BC STATS, Demographic profile, 2007.

Composition of children and youth population by age and gender in the North Shore, 2006.

Table 4.3 outlines the breakdown by age categories and gender across the North Shore, based on 2006 census data. Of importance is the trend that boys outnumber girls in all age groups in West Vancouver and the North Vancouver Health Areas. Males constitute an overall majority in the North Shore (51,1%).

Table 4.3: North Shore Children and Youth Population by Age and Gender, 2006.

Area	Gender	< 1	1 to 4	5 to 9	10 to 14	15 - 19	Total
North Vancouver	F	610	2,626	3,425	4,127	4,435	15,223
	M	651	2,628	3,805	4,461	4,528	16,073
	T	1,261	5,254	7,230	8,588	8,963	31,296
West Vancouver	F	129	725	1,172	1,609	1,949	5,584
	M	141	740	1,211	1,670	1,967	5,729
	T	270	1,465	2,382	3,279	3,916	11,312
North Shore	F	739	3,351	4,597	5,736	6,384	20,807
	M	792	3,368	5,016	6,131	6,495	21,802
	T	1,531	6,719	9,613	11,867	12,879	42,609

Data source: BC STATS, Demographic Profile, 2007.

Epidemiological Data on Substance Use among Youth:

Epidemiology is one of the disciplines that have studied determinants and factors associated with substance use. Epidemiologic studies have explored the relationship between genetic, psychological and social factors and the different stages of substance use (Galea et al., 2004). The strongest, most consistent associations with substance use are neither personality characteristics nor psychopathology, but intrapersonal, social, and environmental factors (Corbett & Wallace, 1987 and Galea et al., 2004). For example, a number of studies have shown that adverse family conditions, including low levels of parental supervision and single-parent families, have been prominently associated with cigarette, alcohol and illicit substance use initiation. Also, family and social network norms are the factors that have been considered the primary determinants of cigarette, alcohol and illicit drug use and misuse (Corbett & Wallace, 1987 and Galea et al., 2004). Furthermore, growing evidence suggests that family and social network norms and social support are the most important determinants of substance use cessation (Galea et al., 2004).

Trends in Alcohol, Tobacco and Illicit Drugs among Youth on the North Shore

The McCreary Centre Society has produced regional reports of its surveys of students in grades seven to twelve from 1992-2003, on the physical and emotional health of B.C. youth, including information on the topic of drug use. Trends and rates of use vary by substance on the North Shore. The use of alcohol and tobacco is far more common than the use of illegal substances such as marijuana, cocaine and heroin (Adolescent Health Survey, 2003). The proportion of students considered current smokers is showing a substantial downward trend. Current smoker is defined as having smoked 100+ cigarettes and smoked in the past month (daily and non-daily). Seventeen percent of adolescents considered themselves current smokers in 1998, in contrast with 7% in 2003. (Table 4.4)

Table 4.4: Trends in current tobacco use among youth on the North Shore.

Year	Percentage of current smokers
1993	17.0 %
2003	7.0 %

Data source: The McCreary Centre Society, 2005.

In 2003, 70% of girls and 75% of boys considered themselves non-smokers. Also, younger students were more likely to be non-smokers than older students in this year. Non-smokers include 88% of youth 14 years and under, 68% of 15 and 16 years olds and 54% of students 17 years or older.

The use of alcohol by North Shore students has decreased 9% in the past decade from 75% in 1992, to 68% in 1998 and to 66% in 2003. Thirty-four percent of youth never had a drink of alcohol in 2003, compared to 32% in 1998 and 25% in 1992. However, a substantial number of students are frequent or heavy drinkers. The comparison of the all three Adolescent Health Surveys conducted by the McCreary Centre Society in 1992, 1998 and in 2003 shows that the proportion of youth in the region that ingested alcohol frequently have not decreased over the past decade and has remained at a high level. In 1992, thirty-one percent of students who have consumed alcohol reported binge drinking in the past month, 32% who have used alcohol reported binge drinking 1998, and 33% who have used alcohol reported binge drinking in 2003. The survey data do not show any gender differences among youth with regards to the prevalence of binge drinking in 2003. Among students who have consumed alcohol, 32% of males and 30% of females reported binge drinking in the past month in 2003.

The use of marijuana has decreased slightly from 1998 (49%) to 2003 (46%), but is still considerably higher than in 1992 (34%). However, the proportion of youth who are frequent users of marijuana has increased significantly over the past decade and a substantial number of students are heavy users. Among those who reported having used marijuana, 14% have used it 20 or more times in the past month. This pattern of consumption has increased from 1992 (5%), through 1998 (11%). Among those students who have used marijuana, 17% of male students and 7% of female students reported have used it 20 or more times in the past month in 2003.

The use of other illicit drugs has declined on the North Shore. From the regional school data, five percent of students on the 2003 survey report ever using cocaine, compared to 8% in 1998; rates of hallucinogens' use, including ecstasy and LSD shows a decline from 14% in 1998, to 7% in 2003; Fourteen percent report ever using mushrooms in 2003, compared to 20% in 1998; four percent of students tried amphetamines such as crystal meth and speed in 2003, compared to 5% in 1998; rates of heroin use have declined from 2% in 1998, to 1% in 2003 (Adolescent Health Survey, 2003).

Problems associated with drug use among youth on the North Shore

The 2003 Adolescent Health Survey asked youth if substance use in the past year resulted in negative consequences, such as family arguments, poor school marks, injuries or troubles with the police. The findings show that 57% of the students who live in this region drank and used drugs in the past year. Among those who reported drug use in the past year, 27% reported negative consequences of substance use. The distribution of these problems is shown in Table 4.5:

Table 4.5: Distribution of negative consequences of drug use in the past year for youth, North Shore, 2003.

Negative consequences	Percentage
Passed out	16.5%
Argue with family members	11.0%
Poor school work/marks	8.0%
Damaged property	7.5%
Got injured	6.0%
Got in trouble with police	6.0%
Got into physical fight	5.5%
Had sex when did not want to	3.0%

Data source: The McCreary Centre Society – 2003 Adolescent Health Survey.

The North Shore average 2003-2005 of juvenile non-cannabis drug charges is relatively low compared to the province. However, the North Vancouver average of juvenile non-cannabis drug charges is two fold higher than the average of the West Vancouver. (See Table 4.6):

Table 4.6: Juvenile (Age 12-17) Non-Cannabis Drug Charge by Area, Avg 2003-2005

Geographic Area	Rates
North Vancouver	23.5
West Vancouver	8.9
British Columbia	46.8

Data source: Indicators of Children at Risk 2003-2005 – Statistical Profile, BC STATS Web Site.

Service Utilization Data

Service utilization data refers to numbers of children and youth seen by health care providers in mental health and related programs and services. These might include utilization data

from primary care, school programs, community-based programs, hospital care, residential care and crises services. When we match service utilization data with prevalence rates, it gives an estimate of the treated prevalence of child and youth mental disorders and the degree of unmet needs for services, or of mismatches between needs and services (Wallace et al., 2002).

Hospital Care

The hospital emergency department is an important source of information for mental health care. The Lions Gate Hospital reports 400 hospitalizations of adolescents aged 13 -19 years in 2006. The top six diagnostic reasons for youth's admission to the hospital were: esophagitis/gastroenteritis, eating disorders, sore throat, tonsillectomy/adenoidectomy, vaginal delivery and thoraco-abdominal injuries. Table 4.7 shows the leading causes of youth hospitalization in North Shore in 2006:

Table 4.7: Leading Causes for Youth Hospitalization, Lions Gate Hospital, 2006

Cause of Hospitalization	Number of cases	% Population
Esophagitis, Gastroenteritis	23	5.75
Eating Disorders	23	5.75
Sore Throat	15	3.75
Tonsillectomy & Adenoidectomy	12	3.00
Vaginal Delivery	11	2.75
Thoraco-abdominal injuries	10	2.50
Drug Reactions	10	2.50

Data source: 3M database, Lions Gate Hospital.

The most common causes of youth hospitalization due to mental health problems in this region were eating disorders, schizophrenia and other psychotic disorders, depressive mood disorders, disruptive behaviour disorders, anxiety disorders and adjustment disorders. Eating disorders accounted for 5.75 % of the total admissions (23), schizophrenia and other psychotic disorders accounted for 8 admissions (2%), depressive mood disorders accounted for 6 youth admissions (1.5%), disruptive behaviour disorder account for 6 youth hospital admissions (1.5%), anxiety disorder account for 5 youth admissions (1.25%), adjustment disorders accounted for 4 youth admissions (1%). (Table 4.8)

Table 4.8: Leading Mental Health Causes for Youth Hospitalization, Lions Gate Hospital, 2006.

Cause of Hospitalization	Number of cases	% Population
Eating Disorders	23	5.75
Schizophrenia and Other Psychotic Disorders	8	2.00
Depressive Mood Disorder	6	1.50
Disruptive Behaviour Disorders	6	1.50
Anxiety Disorders	5	1.25
Adjustment Disorders	4	1.00
Substance Abuse	4	1.00

Data source: 3M database, Lions Gate Hospital.

Mental health problems were responsible for approximately 13% of the total youth hospitalization at the Lions Gate Hospital in 2006. The frequency and morbidity of mental health disorders on the North Shore support the evidence that child and youth mental health disorders contribute significantly to the burden of diseases (Wallace et al., 2002). In 2006, there were 121 visits to the emergency department of the Lions Gate Hospital due to alcohol and SU by adolescents. Girls were more likely than boys to seek emergency care for alcohol and SU (53.7% vs. 46.3%). See Table 4.9.

Table 4.9: ER visits to the Lions Gate Hospital due to alcohol and substance use by age and gender, 2006.

Age Group	Female		Male		Total	
	Number	%	Number	%	Number	%
10 to 14	24	36.9	13	23.2	37	30.5
15 to 19	41	63.1	43	76.8	84	69.5
Total	65	100	56	100	121	100

Data source: CHMHA- North Shore/VCH, 2007.

Community-Based Programs

North Vancouver School District has approximately 17,000 students enrolled in kindergarten to grade 12. The school district has 28 elementary schools, 7 secondary schools and 2 alternate schools/programs (North Vancouver School District, 2007). West Vancouver School District has approximately 7,000 students enrolled in kindergarten to grade 12. The School District has 14 elementary schools, 3 secondary schools. West Vancouver School District has 3,480 students enrolled in grade 8 to grade 12 for the 2006/07 school year (West Vancouver School

District, 2007). VCH in collaboration with North Vancouver and West Vancouver School Districts provide two programs which assist children and youth who have been affected by SU disorder and by concurrent mental health/substance use disorders. Mental health care workers of these programs develop school-based prevention activities in collaboration with educators of the North Vancouver and West Vancouver Schools Districts. The educational activities offered include: social skills training and resistance skills training; information to increase awareness of social influences promoting drug use; information about the substance and its harms; skills training to increase protective factors and social skills.

The other program that has been implemented in the region is the Constructive Alternative to Teen Suspension (CATS), a special community-based program, which targets high school students with SU disorder. In the period 2004 – 2007, the CATS program provided mental health care to 392 adolescents in Grade 8 to 12, who have experienced substance use disorder. Table 4.10 shows the distribution of referrals to CATS program by gender:

Table 4.10: Referrals to CATS program by gender, 2004 – 2007

Gender	2004 - 2005		2005 - 2006		2006 - 2007	
	Number	%	Number	%	Number	%
Female	30	26.3	59	35.9	41	35.9
Male	84	73.7	105	64.1	73	64.1
Total	114	100	164	100	114	100

Data source: CHMHA- North Shore/VCH, 2007.

Boys were more likely to be referred to CATS program (66.9% vs. 33.1%). The male overrepresentation in the CATS program might arise from the higher prevalence of SU disorder among male adolescents and the management of these students within the school setting.

Evaluation Research Data on School-Based Drug Prevention Programs

The original parameters of the systematic literature search returned two meta-analyses on the evaluation of school-based drug prevention programs that were suitable for examination. The findings are summarized in Table 4.11:

Table 4.11: Preventing Substance Use among Youth

Author	Studies Included	Type of Program	Effectiveness of school-based programs
Tobler, Roona, Ochshorn, Marshall, Streke & Stackpole.	207 universal school-based drug prevention programs	<ul style="list-style-type: none"> • Knowledge only program • Affective-only program • Knowledge-plus-affective program • Decision/value/attitude program • DARE-type program • Social Influence Program(SI) • Comprehensive life skills (CLS) • System-wide change program • 	No effect No effect No effect No effect No effect Little effect Little effect Little effect
Faggiano, Vigna-Taglianti, Versino, Zambon, Borraccino & Lemma	29 RCTs & 3 CPSs	<ul style="list-style-type: none"> • Knowledge focused programs • Affective focused program • Skill-focused program • 	No effect No effect Little effect

Data source: Faggiano et al., 2005 & Tobler et al., 2000.

Tobler et al. (2000) identified 207 universal school-based drug prevention program evaluations that compared the self-reported drug use of treatment groups to control or comparison groups. Programs are classified into Interactive and Non-Interactive groups based on a combination of content and delivery method. The Interactive programs are subsumed under three groups: social influences programs, which focus primarily on interpersonal skills development, knowledge component, refusal skill training and may include a limited affective component; Comprehensive life skills programs have similar content to that of the social influences programs, have a strong refusal skills component, add comprehensive life skills training and may have an affective component; and System-wide change programs, are classified into two types: school-based interactive programs (supported by either community, media or family involvement) and the school-based plus community/media/family programs, which may either mobilize the entire community to reduce adolescent drug use and/ or provide an extensive media component in the

community and/or require parent participation in such activities as parenting skills classes, or communications skills classes.

The Non-interactive programs are classified under five categories: the knowledge-only programs, which provide knowledge about the long-term physical and psychological effects of drug use; the affective-only programs, which focus entirely on developing self-esteem and gaining personal insight; knowledge-plus-affective programs instruct about the long-term physical and psychological consequences of drug use, while attempting to build self-esteem and personal insight; Decision-value-attitude programs include a knowledge component, build on belief system, and focus on the individual's problem-solving skills regarding personal drug use; and DARE-type program includes a knowledge component, generic skill training (i.e., communication, assertiveness coping) and have limited emphasis on refusal skills. The review of the evidence show that Non-interactive lecture-oriented prevention programs that stress drug knowledge or affective development have no effects and Interactive programs that foster development of interpersonal skills show significantly greater effects than Non-interactive programs, but these effects decrease with large-scale implementation (Tobler et al., 2000).

In a more recent meta-analysis, Faggiano et al. (2005) identified 29 Randomized Controlled Trials (RCTs) and 3 Controlled Prospective studies (CPSs) that compared knowledge focused programs with usual curricular activities or a different school-based intervention in: giving specific knowledge, developing specific skills or promoting change in attitudes and behaviours; reducing incidences of first time usage, frequency and amount of illicit substances used and prevalence of users among primary or secondary school students. The review of the evidence show that affective focused programs produced inconsistent effect on drug use; knowledge focused programs were not effective in reducing drug use; and skills focused programs are effective in preventing early drug use among Grade 6 and 7 students (Faggianno et al., 2005).

5: Discussion

Implications for Public Health Practice

The general use of alcohol, tobacco and illicit drugs on the North Shore is not much different from usage in B.C. as a whole. The results presented here suggest that a large majority of youths on the North Shore have not experienced adverse consequences from their own SU. However, the results of the national, provincial and regional surveys suggest that adverse consequences from SU are significant and are differentially distributed among youths. Therefore, if social policy directed to address prevention of SU problems at the population level is to be successful, it is crucial to explore the issue appropriately. As suggested by Kreiger (1994), it is necessary to differentiate between determinants of disease in individuals and in populations. Thus, if we are interested in understanding the prevalence of SU problems, the most appropriate question might be: "Why do some populations have much more SU disorder than others?"

Exploring Epidemiological Trends

The results from the Adolescent Health Survey (2003) show a substantial downward trend in cigarette smoking among adolescents. Seven percent of the students on the North Shore reported to be current smokers in 2003, compared to 17% of youth in 1998. There is no gender difference in prevalence of current smokers: 7% of males and 7% of females reported to be current smokers in 2003.

The trends data for alcohol consumption is a reason for concern. Rates of binge drinking have been consistently high since 1992. Over 30% of students, who have consumed alcohol, have engaged in binge drinking at least once during the 30 days preceding the survey. The survey data indicate that there is a convergence in the rates of binge drinking in boys and girls, with rates for girls not far behind those for boys: 32% of male students and 30% of female students engaged in binge drinking in the thirty days preceding the survey in 2003. According to Hill (2000), the physical and mental health consequences of these patterns alcohol use should be considered a major focus of public health because the health impacts may be grater for girls. Women who drink excessively

may be more prone to developing alcohol-related diseases than men due to gender differences in alcohol metabolism. In addition to the direct effects of alcohols on the cardiovascular system, liver, brain, and gastro-intestinal tract, there are indirect effects on women's health that should be considered. For example, girls who drink excessively may be at greater risk for alcohol-induced depressive disorders, and are more likely to associate with others who use alcohol and drug excessively, thereby increasing the likelihood of women being victims of violence (Hill, 2000).

Marijuana remains the mostly used illicit drug among youth on the region. There appears to have a strong upward trend in usage of this substance. Rates of frequent marijuana use (having used it 20 or more times in the past month) have increased from 11% in 1998 to 14% in 2003. The survey data indicate that there is a gender difference among youth with regards to the prevalence of frequent marijuana use: 17% of males and 7% of females reported frequent use of marijuana in 2003. The sharp increase in marijuana use between 1992 and 2003 might be associated to the availability of the product and the low cost of the substance in B.C. It is important to point out that, even though government regulations of substance use in Canada and in B.C. prohibit the use of alcohol and marijuana, there is a remarkable high consumption of alcohol and marijuana among youth in the region.

There appears to have an overall downward trend in use of other illicit drugs such as cocaine, hallucinogens, mushrooms and heroin. The biggest drop in the prevalence rates was for hallucinogens, including ecstasy and LSD, from 14% in 1998, to 7% in 2003. However, it should be noted that school-based surveys typically underestimate illicit drug use compared with use reported by out-of-school adolescents and street youth (Bauman & Phongsavan, 1999).

Understanding the historical trends in substance use may shed some lights on why there are different patterns of substance use among social groups. For example, it can help us to formulate and test hypothesis about the risk factors associated with the gender differences in alcohol and marijuana use among adolescents.

School-Based Drug Prevention Programs

VCH in collaboration with the North Vancouver and the West Vancouver School Districts have implemented educational programs to prevent, delay, or reduce drug use among youth. Prevention is a term that has different meanings depending on the type of program used to alter

behaviours or prevent certain conditions (Flay & Petraitis, 2003). In the drug prevention field, prevention is defined in terms of attempting to reduce demand (Brotman and Suffet in Wallack & Corbett, 1987). Approaches to prevention may be divided under three general categories: educational, which primarily attempts to modify the susceptibility of individuals to SU; environmental, which emphasizes interventions at the familial, organizational and community level; and regulatory, which focuses on drug laws in order to benefit whole populations (Wallack & Corbett, 1987).

Traditional prevention efforts in public health suggest three level of prevention: (1) Primary prevention seeks to prevent or delay the onset of problematic SU. It targets the general public, large subpopulation or smaller subpopulations that have above-average risk for developing problematic SU. (2) Secondary prevention focuses on early detection and intervention and seeks to promote connectedness and social inclusion, and reduce harm, (3) Tertiary prevention seeks to treat problematic SU. It aims to reduce long-term disability and harm. The nature of SU is unclear; there is no agreement about its causes and the point when SU becomes a medical or psychological problem (Flay & Petratis, 2003). These features of the SU issues impose barriers for prevention approaches in public health. Prevention becomes a challenge to the traditional model when we want to promote nonuse or abstinence and the majority of adolescents use drugs in some point of their lives (Bonomo, & Bowes, 2001; Poulin, & Nicholson, 2005; Poulin, 2006).

An alternative to the traditional approach is the model proposed by Gordon (1987), which suggests three categories of prevention: (1) Universal prevention, which intervention aims to prevent or delay the onset of problematic substance use; it targets the general public or large subpopulations. (2) Selective prevention delivers more intensive intervention to subgroups that have above-average risk for developing for developing problematic SU, (3) Indicative prevention is designed to target individuals, who through individual screening, are found to have early signs of problem drug use (Flay & Petratis, 2003). Similarly to the traditional model, there is confusion about which prevention approach to promote; abstinence or harm reduction (Dickson et al., 2004).

Another alternative prevention framework is the harm reduction approach. This model seeks to help individuals without requiring abstinence from an activity that may result in short-term or long-term harm. The underlying assumption of this model is the acknowledgment that it is difficult to prevent individuals from participating totally in a particular risky behaviour (Bonomo, &

Bowes, 2001; Poulin, & Nicholson, 2005; Poulin, 2006). Concerns about the harm reduction perspective are based on the assumptions that this model can not be fully adopted as a universal approach to address all substance issues, given that the consumption of substances such as tobacco, cocaine and heroin have been shown to result in significant harm regardless the level of use (Dickson et al., 2004).

With regard to evaluation research on school-based drug prevention programs, the available evidence indicates that school-based drug prevention programs are not effective or have small impact on substance consumption among youth. The effectiveness of these programs has been disputed during the last thirty years (Tobler et al., 2000). One of the explanations for the ineffectiveness of educational programs is related to their reductionist approaches to SU. As noted by Flay and Petraitis (2003), the school-based drug prevention programs have the developmental model of "adolescence" as its underlying theoretical framework. In his assessment of the developmental model, Moore (2002) points out the focus on the interaction between biology and environment:

The twin focus on biology and environment is central to the developmental model, whatever the precise weighting given to them in different versions....The psychological and social features of adolescence revolve around the acquisition of individuality: the gradual discover o a "self" that is unique, individual, private, autonomous and independent, bounded in a single body separate from other bodies, the site of agency and emotion, and an integrated motivational and cognitive universe (Moore, 2002, p. 18)

The developmental model has influenced Bandura's Social Learning Theory, which is one of the most influential theories in the drug field that has been used to develop school-based drug prevention programs (Flay and Petraitis, 2003). In their assessment of Social Learning Theory, Norman and Turner (1993) argue:

One prominent feature of Social Learning Theory is the importance it places on an individual's self-regulating capacities. People have the capacity to anticipate the consequences of their own behaviour, as well as the reactions of other people to that behaviour. In this way, they are able to exercise control over their own behaviour within the confines of their environment and to establish social bonds through conventional activities and interactions (Norman & Turner, 1993, p. 18)

The developmental model has been facing numerous and varied, criticisms including critiques from within psychology and from disciplines such as sociology, anthropology and history.

Some caveats include aspects that I note here. First, in this model, the consumption of drugs is viewed as primarily individually determined and atomized. These assumptions totally ignore that the consumption of substances is eminently social, relational, and active rather than private, atomic or passive (Hunt & Barker, 2001). While the more recent versions of the development model have taken greater note of the social and cultural context, it is an “individualized subject” who moves through these contexts (Moore, 2002). Second, the use of substances is perceived to be a result of a “deficit” in the personality and/ or the environment. There is a disproportionate emphasis on pathology in explanations of youth alcohol and other drug use, while the majority of adolescents who use drugs do not become habitual or problems users as adults (Wallack & Corbett, 1987; Paglia & Room; Poulin, 2006; and Bonono, 2001). Third, this model that dominates the contemporary debate on SU field is characterized by positioning social or environmental as opposed to personal causes of SU disorders (Moore, 2002). In this vision, the environment is dangerous to the individuals, who need to be equipped with the best possible skills to negotiate a “hazardous” environment that is external to them. Theoretical developments in anthropology and sociology have challenged this model by emphasizing that all consumers operate within structured relationships determined by the individual consumer’s social and cultural class position, and an individual actor’s choice of ingesting any substance represents key indicators of his/her social position (Appadurai in Hunt and Barker, 2001). Also, a feminist criticism of this model reported by Moore (2002) is based on the implicit masculinization of “adolescence”. For example, attaining economic independence was seen to be one of the key features of adult maturation, yet Western society actively encouraged economic dependence for women, particularly those from working-class backgrounds (Moore, 2002).

It is relevant to mention that Social Learning Theory has emerged in parallel to a major shift in the public health’s traditional approach from environmental and population bases of disease to individual and personal causes (Rhodes, 2002). The public health focus is no longer on understanding body signs and symptoms or on cataloguing or curing discrete disease in the present, so much as on transforming the future by changing health attitudes and health behaviours (Armstrong in Hunt & Barker, 2001). The influence of the Social Learning Theory and the new public health approach on school-based drug prevention programs increases within a political, economic and social context dominated by the neo-liberal paradigm. This paradigm asserts that in order to achieve human welfare, it is necessary to promote economic growth through implementing

free enterprise policies (Coburn, 2006). Neo-liberal ideology demands changes to make the health care system more “efficient”. In this vision, efficiency is achieved through reducing health care costs and increasing individuals’ responsibility for their own self care (Rhodes, 2002). Similarly to Social Learning Theory and the new public health approaches, individuals in the neo-liberal paradigm become responsible for the production of their own sickness through their willing and “irrational” adoption of “unhealthy lifestyles” (Armstrong in Hunt & Barker, 2001).

Epidemiological trends suggest that social suffering associated with SU is significant. Evaluation research shows the lack of effectiveness of school-based drug prevention programs informed by the developmental model of “adolescence” to address these issues. Moreover, there are theoretical developments in epidemiology (Krieger, 2001), in prevention theory (Gorman, 1998), and in social sciences (Hunt & Barker, 2001; Moore, 2002), which point to the need for more holistic explanations in public health to inform social policies and practices in the field. It is necessary to narrow the gap between theoretical developments and prevention practices which are still used to address SU issues at the individual level through traditional educational practices.

6: Conclusion

This report provides an overview of epidemiological trends and data generated from evaluation research in the implementation of school-based drug prevention programs. The findings can be used to inform Vancouver Coastal Health's decision to implement the best evidence-based prevention practices for SU problems.

I have integrated information from many different sources in order to assess the burden of suffering associated with SU among youth in the region. Changing and emerging trends observed in epidemiological data indicate SU issues among youth that need to be better understood and addressed. Among those trends are: (1) the rates of binge drinking have been consistently high among male and female students; (2) the risen rates of frequent marijuana use; and (3) the unequal distribution of substance use problems. These results presented here foster further questions. What are the social forces that shape these consumption practices and the prevalence of SU problems? What are the links between the production and distribution of drugs and the rising rates of heavy consumption of alcohol and marijuana? Why have social policies and prevention initiatives been ineffective in reducing the social suffering associated with SU? What are the impacts of these patterns of consumption on the health status of young people?

I have also reviewed the literature concerning the effectiveness of school-based drug prevention programs. The findings suggest that educational interventions are not effective in reducing SU. As argued by Waddell et al. (2005), implementing evidence-based practice can be difficult in real-world settings. Despite the evidence showing the ineffectiveness of school-based drug prevention programs, it might be a challenge for the service managers, educators, health care workers, community members and researchers to develop and implement alternative prevention approaches within a social environment that has been highly supportive of school-based drug prevention programs for the last three decades (Gorman, 1998).

A number of current researchers have suggested alternative approaches for improving drug prevention programs, only a few of which I note here: (1) Abandoning the universal approach to prevention in favour of targeting specific high-risk groups. This suggestion is supported by

Gorman (1998), who emphasizes that drug prevention programs might be more effectively targeted at the most in need of them; (2) Expanding the base of drug prevention programs so as to involve the broader community in the form of the media, the family, local government, the business community, and resident organizations (Wagenaar & Perry in Gorman, 1998); and (3) Adopting a comprehensive approach to prevention emphasizing a shared responsibility for addressing SU problems at the different levels of the government and the community, as well as developing long-term planning and short-term crisis interventions (Wallack & Corbett, 1987). Nonetheless, these suggestions might bring some improvements for school-base drug prevention programs; they cannot improve significantly the effectiveness of these programs, if other levels of the government and/or the community do not support the same approaches to SU promoted by educational interventions. For example, the impact of a well designed school-base program on preventing SU can be compromised by regulatory mechanisms that allow companies to advertise alcohol and cigarettes without major restrictions.

In summary, studies in epidemiology and evaluation research are important tools for assessing the health status of populations and monitoring the effectiveness of prevention programs. They are necessary, but not sufficient for changing institutional practices. The response to the social suffering associated with SU is fundamentally political and ideological, and it demands actions at these levels. There are theoretical developments in prevention theory, epidemiology and social sciences that point to the need for public policies, which acknowledge the economic, social, cultural and politic context where individuals consume substances. However, the formulation and implementation of social policies to address SU issues is ultimately, a product of power relations implicit in much of the discussion of the best strategies for promoting health and reducing SU problems in our society.

The best prevention approaches for reducing the harms associated with SU should focus on the social context where individuals live and use substances, instead of emphasizing individuals' vulnerabilities and life-choices. This perspective is based on the assumption that the use of alcohol, tobacco, illicit drugs and any other substance is intrinsically social. Furthermore, this vision brings to the debate issues such as marginalisation, poverty, racism and oppression in the lives of drug users, aspects that frequently are not interesting to debate in the contemporary public health field. However, these conditions need to be considered by public health professionals, if we are really committed to reduce the harms of SU in our society.

VCH is engaged in providing the community with the best possible prevention services to reduce SU problems among youth on the North Shore. As part of this commitment, VCH is promoting community meetings and inviting health care workers, educators, community members and researchers to discuss about how to improve prevention efforts in the area. This report will hopefully contribute to this discussion and to the development of effective prevention practices on the North Shore.

Reference List

- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washinton: American Psychiatric Association.
- Aschengrau, A. & Seage, G.A., (2003). *Essentials of Epidemiology in Public Health*. Boston. Sudbury.
- Bauman, Adrian & Phongsavan, P. (1999). Epidemiology of substance use in adolescence: prevalence, trends and policy implications. *Drug and Alcohol Dependence*. 55:187-207.
- BC Stats (2007). Census Profile, North Vancouver, FED. Retrieved September 14 from <http://www.bcstats.gov.bc.ca/data/cen06/profiles/detailed/FED59019.pdf>
- BC Stats (2007). Census Profile, West Vancouver, FED. Retrieved September 14 from <http://www.bcstats.gov.bc.ca/data/cen06/profiles/detailed/59015055.pdf>
- BC Stats (2006). Statistical Profile, Local Health Area 44 – North Vancouver, Indicators of Children at Risk. Retrieved September 14 from http://www.bcstats.gov.bc.ca/DATA/sep/lha/Lha_44.pdf
- BC Stats (2006). Statistical Profile, Local Health Area 45 – West Vancouver, Indicators of Children at Risk. Retrieved September 14 from http://www.bcstats.gov.bc.ca/data/sep/sd/SD_45.pdf
- Bonomo, Y., & Bowes, G. (2001). Putting harm reduction into an adolescent context. *Journal of Paediatrics & Child Health*. 37(1), 5–8.
- Botvin, J.G., Botvin, M.E., & Ruchlin, H. (1998). School-Based Approaches to Drug Abuse Prevention: Evidence for Effectiveness and Suggestions for Determining Cost-Effectiveness. *NIDA Research Monograph*. Washington: National Institute on Drug Abuse.
- Boyce, W. (2004). *Young people in Canada: their health and well-being*. Retrieved November 15 from http://www.phac-aspc.gc.ca/dca-dea/publications/hbsc-2004/pdf/hbsc_report_2004_e.pdf
- British Columbia Ministry of Health Services (2004). Every door is the right door. *A British Columbia planning framework to address problematic substance abuse and addiction*. Retrieved October 4 from http://www.housing.gov.bc.ca/ptf/framework_for_substance_use_and_addiction.pdf
- Bryant, C., Crosby, L., Gibbs, L., Kettle, S., Solomon, R., Usprich, E. & Zahnleiter, C. (2006). *Alcohol, Trauma and Impaired Driving* (6th ed.) Retrieved November 3 from http://www.madd.ca/english/research/real_facts.pdf

- Canadian Centre of Substance Abuse (2006). *The Costs of Substance Abuse in Canada 2002 HIGHLIGHTS*. Retrieved November 5 from <http://www.ccsa.ca/NR/rdonlyres/18F3415E-2CAC-4D21-86E2-CEE549EC47A9/0/ccsa0113322006.pdf>
- Coburn, D. (2006). Health and Health Care: A Political Economy Perspective. In D. Raphael, T. Bryant & Marcia Rioux (eds): *Staying Alive: Critical Perspectives on Health Illness, and Health Care*. Toronto: Canadian Scholars' Press.
- Faggiano, F., Vigna-Taglianti, F. D., Versino, E., Zamboni, A., Borraccino, A., & Lemma, P. (2006). School-based prevention for illicit drugs' use. *Cochrane Database of Systematic Reviews*, Issue 1.
- Flay, B.R. & Petraitis, J. (2003). Bridging the Gap between Substance Use Prevention Theory and Practice. In Z. Sloboda, & W. Bukoski (eds): *Handbook of Drug Abuse Prevention: Theory, Science and Practice*. New York: Springer.
- Galea, S., Nandi, A. & Vlahov, D. (2004). The Social Epidemiology of Substance Use. *Epidemiologic Reviews*. 26:36-52.
- Gorman, D.M.(1998). The Irrelevance of Evidence in the Development of School-Based Drug Prevention Policy, 19986 – 1996. *Evaluation Review*. 22(1):118-146.
- Hill, S.Y. (2000). Addictive Disorders. In Marlene B. Goldman & Maureen C. Hatch (eds): *Women & Health*. San Diego: Academic Press.
- Hunt G. & Barker, C. (2001). Socio-cultural anthropology and alcohol and drug research: towards a unified theory. *Social Science and Medicine*. , 53(2),165-188.
- Krieger, N (1994). Epidemiology and the web of causation: Has anyone seen the spider? *Social Science and Medicine*, 39(7), 887-903.
- Laurie, D., Derevensky, J & Gupta, R. (2004). Youth Gambling Problems: A Harm Reduction Prevention Model. *Addiction Research and Therapy*. 12(4): 305-316.
- McCreary Centre Society (2003). Adolescent Health Survey. Regional Report: Health Youth Development: North-Shore/Coast Garibaldi Region. Retrieved August 12 from <http://www.mcs.bc.ca/pdf/north-shore-coast-garibaldi-ahs-3.pdf>
- McCreary Centre Society (2005). Adolescent Health Survey. British Columbia Youth Health Trends: A Retrospective, 1992 – 2003. Retrieved August 15 from <http://www.mcs.bc.ca/pdf/AHS-Trends-2005-report.pdf>
- Moore, David (2002). Opening Up the cul-de-sac of youth drug studies: a contribution to the construction of some alternative truths. *Contemporary Drug Problems*. 29(1):13-52.
- Norman, E. & Turner, S. (1993). Adolescent substance abuse prevention programs: Theories, models, and research in the encouraging 80's. *The Journal of Primary Prevention*.14(1):3-20.
- North Shore Task Force on Substance Abuse (2001). *North Shore Substance Abuse Strategy*. Retrieved October 12 from http://www.nscg.ca/pdfs/strategy_sept13.pdf

- Paglia, A., & Room, R. (1999). Preventing substance use problems among youth: A literature review and recommendations. *Journal of Primary Prevention, 20*, 3–50.
- Poulin, C. (2006). *Harm Reduction Policies and Programs for Youth*. Ottawa, ON: Canadian Centre on Substance Abuse.
- Poulin, C., & Nicholson, J. (2005). Should harm minimization as an approach to adolescent substance use be embraced by junior and senior high schools? Empirical evidence from an integrated school- and community-based demonstration intervention addressing drug use among adolescents. *International Journal of Drug Policy, 16*(6), 403–414.
- Rehm, J., Patra, J. & Popova, S. (2006). Alcohol-attributable mortality and potential years of life lost in Canada 2001: implications for prevention and policy. *Addiction, 101*(3), 373-84.
- Rossi, P., Lipsy, M., & Freeman, H. (2004). *Evaluation: A systematic approach* (7th ed.). Thousand Oaks: Sage Publications.
- Rhodes, T. (2002). The “risk environment”: a framework for understanding and reducing drug-related harm. *International Journal of Drug Policy, 13*:85-94.
- Taylor, B., Rehm, J., Prata, J., Popova, S. & Baliunas, D. (2007). Alcohol-attributable morbidity and resulting health care costs in Canada in 2002: recommendations for policy and prevention. *Journal of Studies on Alcohol and Drugs, 68*(1): 36-47.
- Thornicroft, G. & Tansella, M. (2006). *The Mental Health Matrix: A manual to improve services*. New York. Cambridge University Press.
- Tobler, S.N., & Stratton, H.H. (1997). Effectiveness of school-based drug prevention programs: A meta-analysis of the research. *Journal of Primary Prevention, 18*(1), 71–128.
- Tobler, N.S., Roona, M.R., Ochshorn, P., Marshall, D.G., Streke, A.V., & Stackpole, K.M. (2000). School-based adolescent drug prevention programs: 1998 Meta-Analysis. *Journal of Primary Prevention, 20*(4), 275–336.
- Waddell, C., Godderis, R., Wong, W. & Garland, O. (2005). *Implementing Evidence-Based Practice in Children’s Mental Health*. Vancouver, BC: University of British Columbia.
- Waddell, C., McEwan, K, Hua, J., & Shepherded, C. (2002). *Child and youth mental health: Population health and clinical services consideration*. Vancouver, BC: UBC.
- Wallack, L. & Corbett, K. (1987). Alcohol, Tobacco and Marijuana Use among Youth: An Overview of Epidemiological, Program and Policy Trends. *Health Education Quarterly, 14*(2), 223-249.